

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

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2022 Season Hurdles Report

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Notes:

- The times listed as TV Analysis are taken from [youtube.com](https://www.youtube.com) videos and generally coming from Television broadcasts. These are not always the best angles or coverage for getting times. They are often trying to tell a story by focusing on one athlete, and sometimes while shifting camera angles an extra frame can get added or removed.
- Where times are taken from the first movement, instead of the gun, there is at least a ± 0.12 second difference/error. This will show up from the start to the first hurdle and then from hurdle 10 to the finish. The between hurdle intervals should be fairly consistent, but there is still the usual ± 0.03 second
- 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

Allen, Devon (USA) (1994)			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
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)			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
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)			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
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)			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
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)			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
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)			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
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)			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
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)			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
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	5.56	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)			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
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)			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
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)			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
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)			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
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)			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
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)			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
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)			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
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)

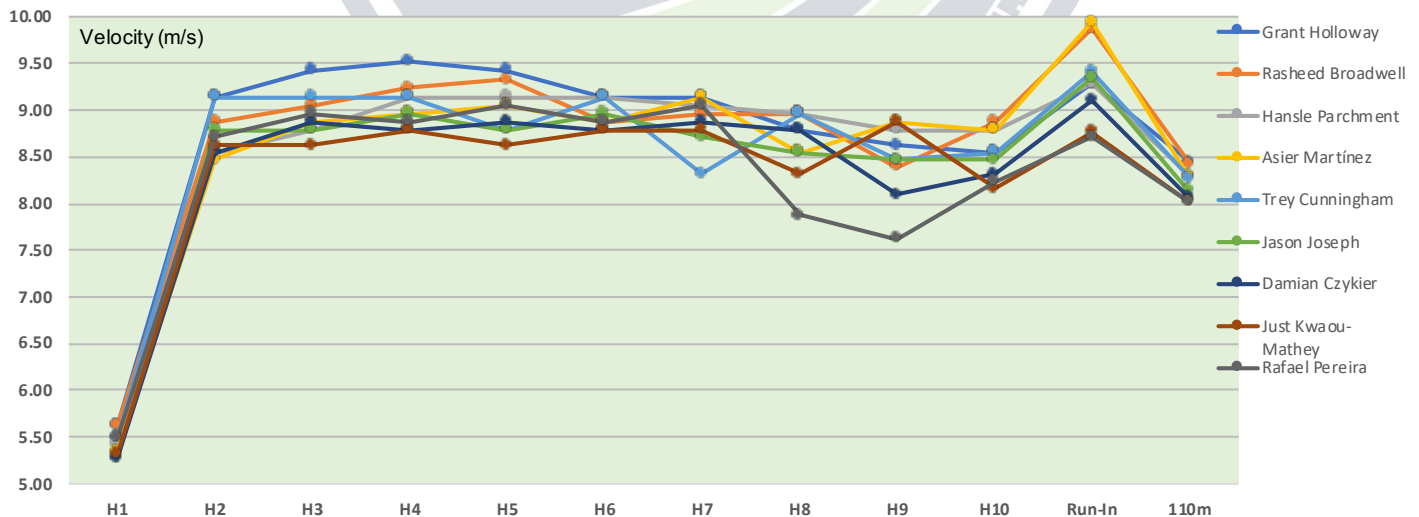
110m Hurdles

Date: 2022.09.08

Wind: -1.0 m/s

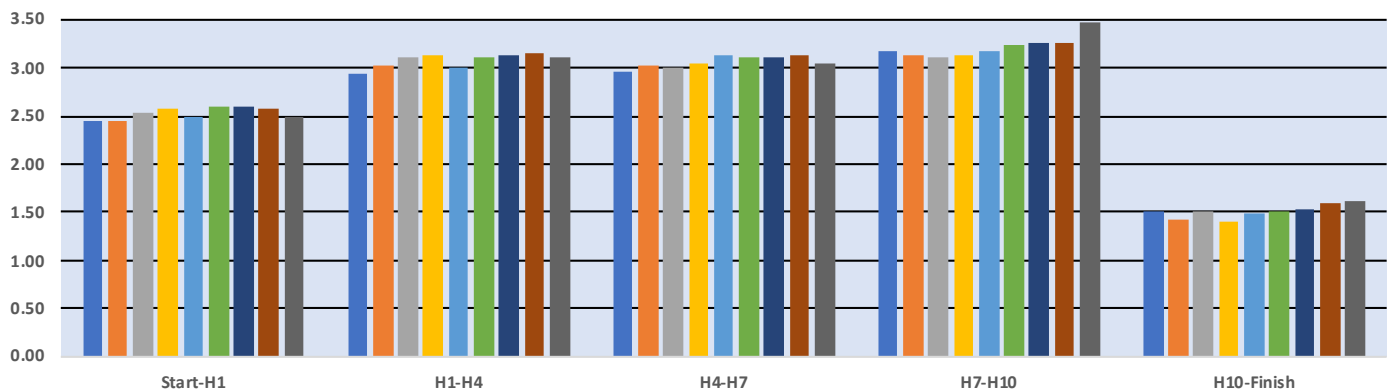
FINAL

		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 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
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 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
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 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		8.82	9.11	8.85
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 velocity	5.34	8.46	8.87	8.96	9.05	8.87	9.14	8.54	8.87	8.79	9.94	8.28		8.76	9.02	8.73
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 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		9.14	8.73	8.65
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 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		8.85	8.82	8.49
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 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		8.73	8.85	8.39
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 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		8.68	8.73	8.44
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 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		8.85	8.99	7.90



Time Intervals (s)

Hurdle Phases



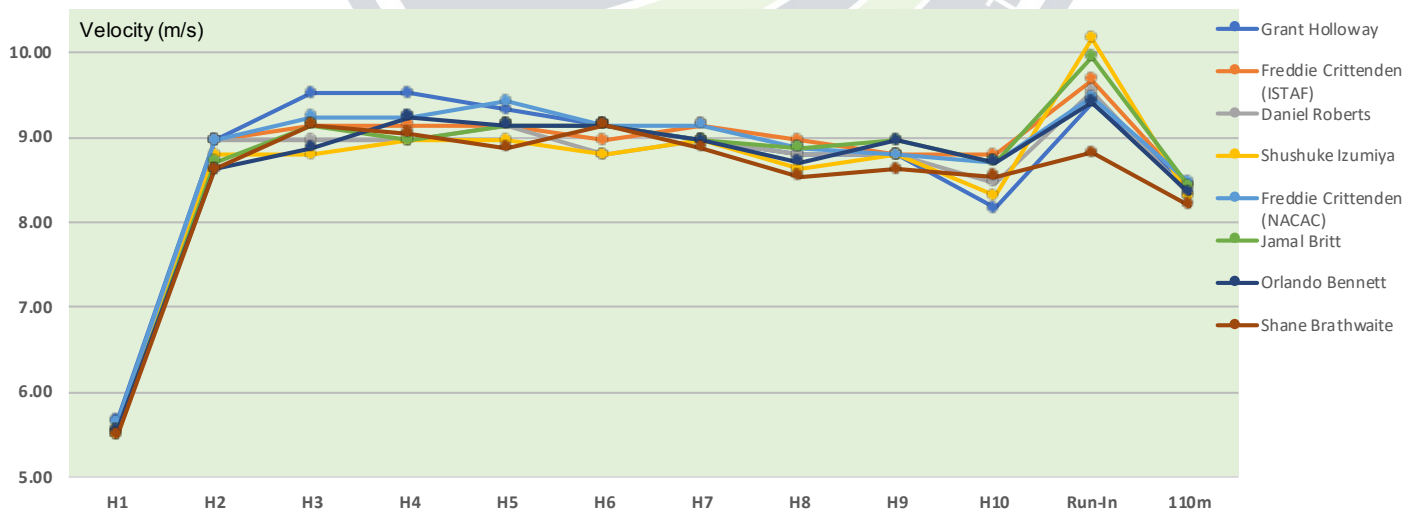
Evaluated with: ObjectusVideo
 Quality & Frame Rate: 1920 x 1080 @ 30ps
 Timing From: First Movement
 Source: <https://www.youtube.com/watch?v=Ik8Dpmk5FBM&t=29s>

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												1.49			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												1.45			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												1.47			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												1.38			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						

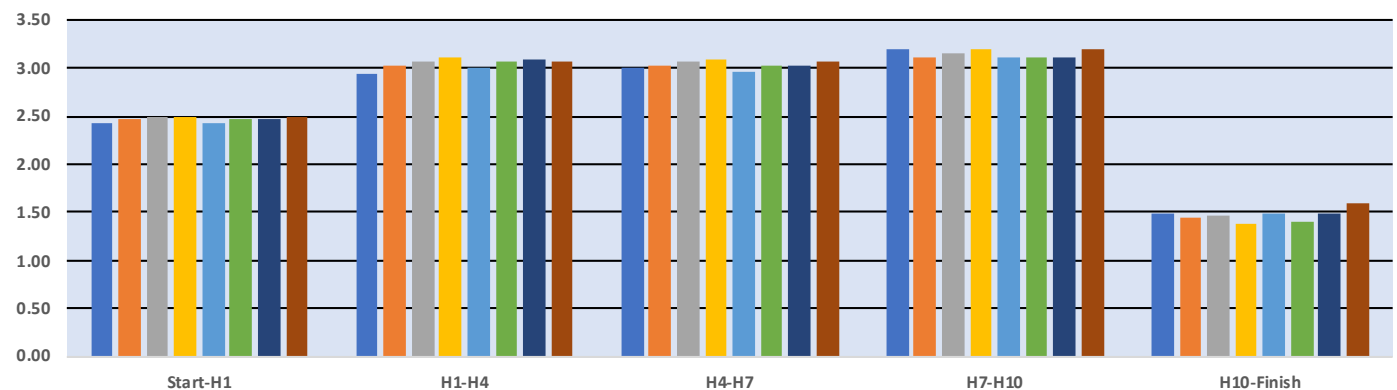
2022 NACAC Championships (Freeport, BAH) (TV Analysis)

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		
Britt, Jamal (USA) (1998)	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							
	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		1.05	1.00	1.02	1.00	1.00	1.02	1.03	1.02	1.05	1.41	PB			3.07	3.02	3.10		
Bennett, Orlando (JAM) (1999)	interval	5.53	8.70	9.14	8.96	9.14	9.14	8.96	8.87	8.96	8.70	9.94	8.41			8.93	9.08	8.85		
	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		1.06	1.03	0.99	1.00	1.00	1.02	1.05	1.02	1.05	1.49	PB			3.08	3.02	3.12		
Brathwaite, Shane (BAR) (1990)	interval	5.55	8.62	8.87	9.23	9.14	9.14	8.96	8.70	8.96	8.70	9.41	8.35			8.90	9.08	8.79		
	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		1.06	1.00	1.01	1.03	1.00	1.03	1.07	1.06	1.07	1.59				3.07	3.06	3.20		
	interval	5.49	8.62	9.14	9.05	8.87	9.14	8.87	8.54	8.62	8.54	8.82	8.20			8.93	8.96	8.57		
	velocity																			



Time Intervals (s)

Hurdle Phases



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=8B41eyFexT8>

2022 Athletissima (Lausanne, SUI) (TV Analysis)

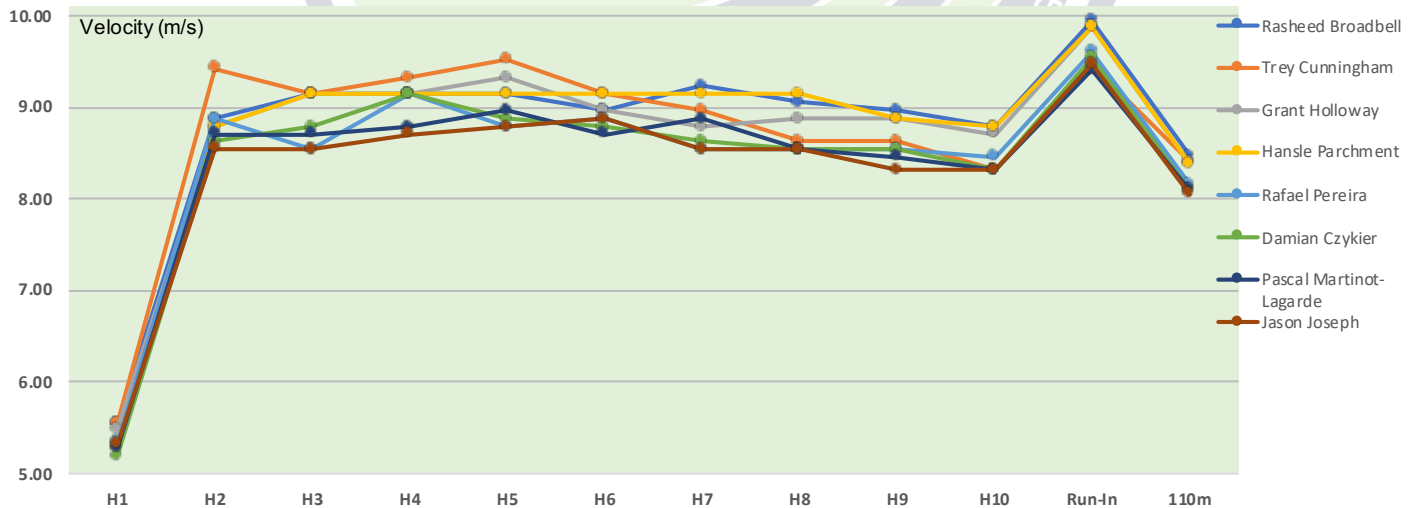
110m Hurdles

Date: 2022.08.26

Wind: 0.0 m/s

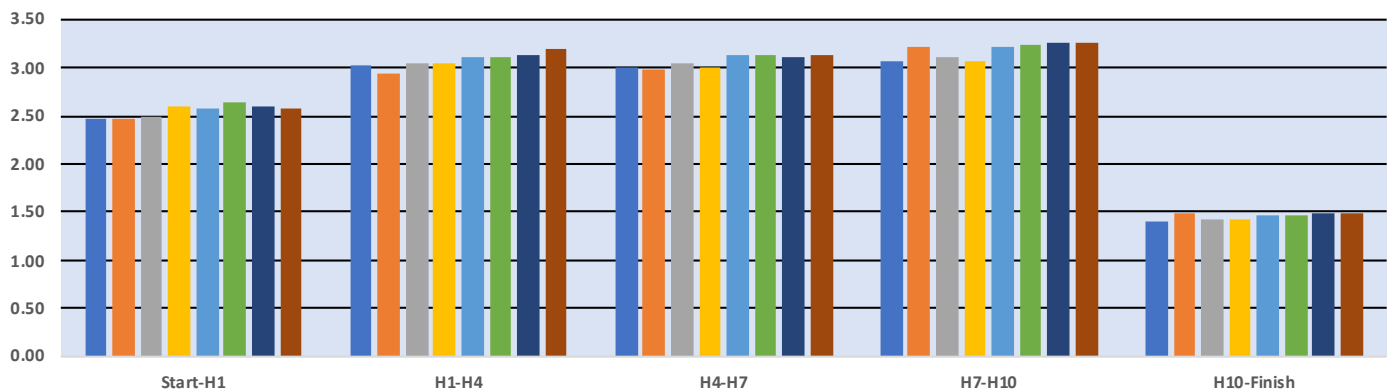
FINAL

		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	3.03	3.01	3.07
	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				
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	2.95	2.98	3.22
	reaction time	0.140															
	interval	7 steps	0.97	1.00	0.98	0.96	1.00	1.02	1.06	1.06	1.10	1.48					
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	3.04	3.04	3.11
	reaction time	0.122															
	interval	7 steps	1.04	1.00	1.00	0.98	1.02	1.04	1.03	1.03	1.05	1.42					
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	3.04	3.00	3.07
	reaction time	0.151															
	interval	7 steps	1.04	1.00	1.00	1.00	1.00	1.00	1.00	1.03	1.04	1.42					
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	3.10	3.14	3.22
	reaction time	0.140															
	interval	7 steps	1.03	1.07	1.00	1.04	1.03	1.07	1.07	1.07	1.08	1.46					
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	3.10	3.13	3.24
	reaction time	0.166															
	interval	7 steps	1.06	1.04	1.00	1.03	1.04	1.06	1.07	1.07	1.10	1.47					
Martinot-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	3.14	3.10	3.25
	reaction time	0.155															
	interval	7 steps	1.05	1.05	1.04	1.02	1.05	1.03	1.07	1.08	1.10	1.49					
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	3.19	3.14	3.27
	reaction time	0.158															
	interval	7 steps	1.07	1.07	1.05	1.04	1.03	1.07	1.07	1.10	1.10	1.48					
	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		8.60	8.73	8.39



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=DqJURil_g8aGk

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

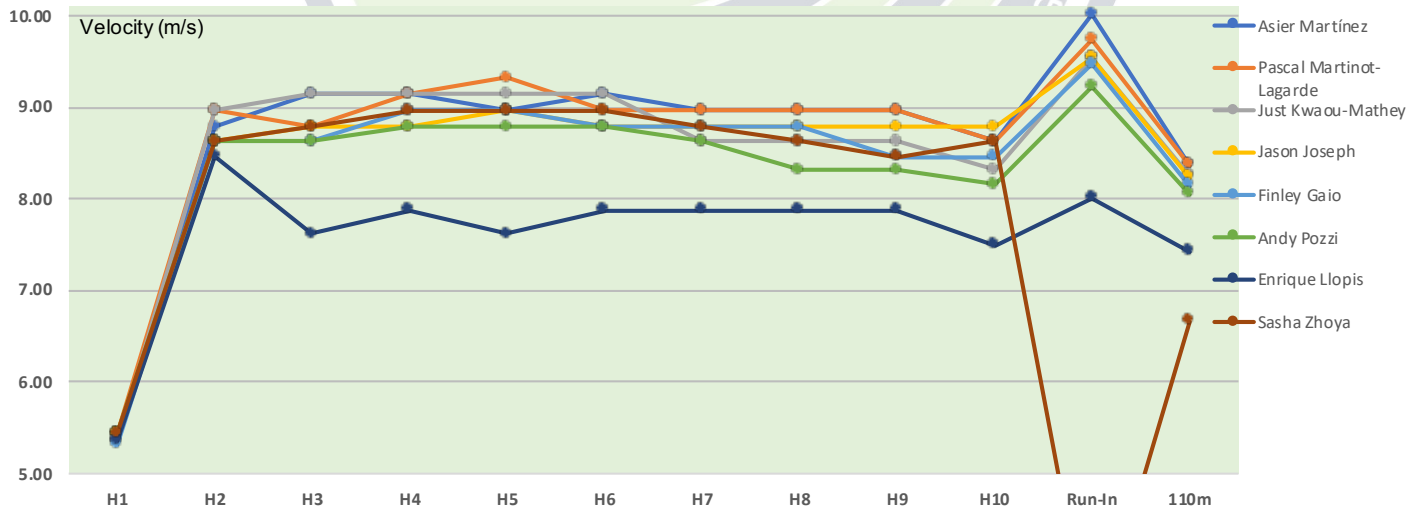
110m Hurdles

Date: 2022.08.17

Wind: -0.2 m/s

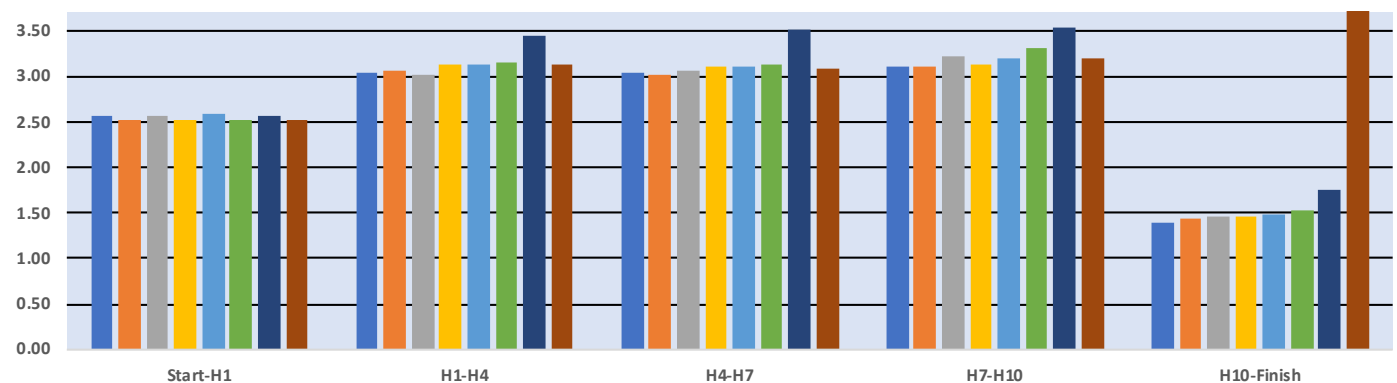
FINAL

			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
Martínez, 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	4 / 1	3.04	3.04	3.10
	reaction time	0.149																
	interval		7 steps	1.04	1.00	1.00	1.02	1.00	1.02	1.02	1.02	1.06	1.40	PB				
	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		9.02	9.02	8.85
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	5 / 2	3.06	3.02	3.10
	reaction time	0.167																
	interval		7 steps	1.02	1.04	1.00	0.98	1.02	1.02	1.02	1.02	1.06	1.44					
	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		8.96	9.08	8.85
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	3 / 3	3.02	3.06	3.22
	reaction time	0.178																
	interval		7 steps	1.02	1.00	1.00	1.00	1.00	1.06	1.06	1.06	1.10	1.47					
	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		9.08	8.96	8.52
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	8 / 4	3.14	3.10	3.12
	reaction time	0.169																
	interval		7 steps	1.06	1.04	1.04	1.02	1.04	1.04	1.04	1.04	1.04	1.47					
	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		8.73	8.85	8.79
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	2 / 5	3.14	3.10	3.20
	reaction time	0.172																
	interval		7 steps	1.06	1.06	1.02	1.02	1.04	1.04	1.04	1.08	1.08	1.48					
	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		8.73	8.85	8.57
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	1 / 6	3.16	3.14	3.32
	reaction time	0.166																
	interval		7 steps	1.06	1.06	1.04	1.04	1.04	1.06	1.10	1.10	1.12	1.52					
	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		8.68	8.73	8.26
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	6 / 7	3.44	3.52	3.54
	reaction time	0.145																
	interval		7 steps	1.08	1.20	1.16	1.20	1.16	1.16	1.16	1.16	1.22	1.75					
	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		7.97	7.79	7.75
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	7 / 8	3.12	3.08	3.20
	reaction time	0.153																
	interval		7 steps	1.06	1.04	1.02	1.02	1.02	1.04	1.06	1.08	1.06	4.59					
	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		8.79	8.90	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=wXCF8uTtT68>

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

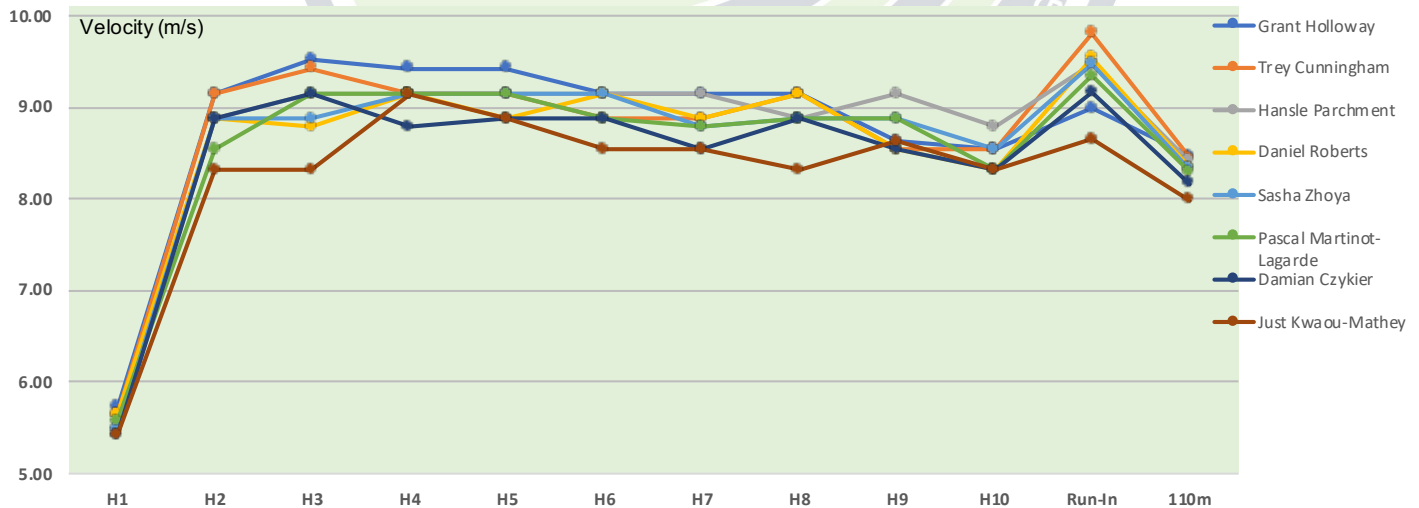
110m Hurdles

Date: 2022.08.10

Wind: 0.6 m/s

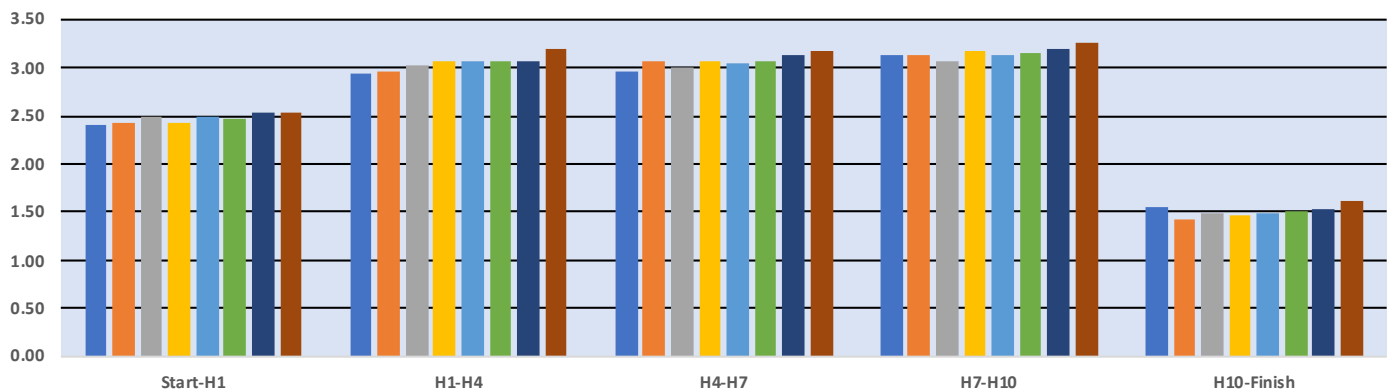
FINAL

		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				



Time Intervals (s)

Hurdle Phases

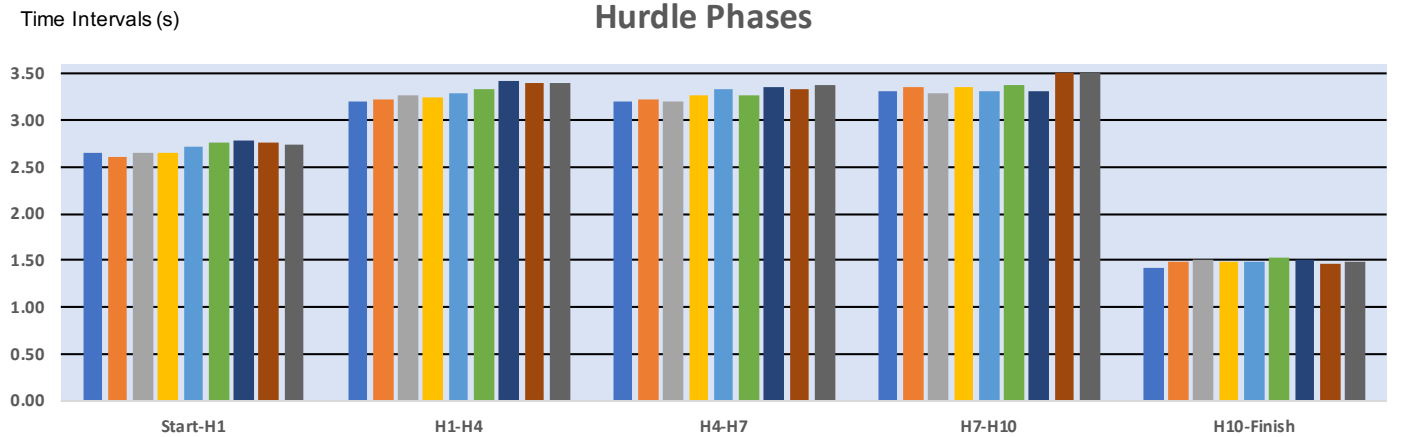
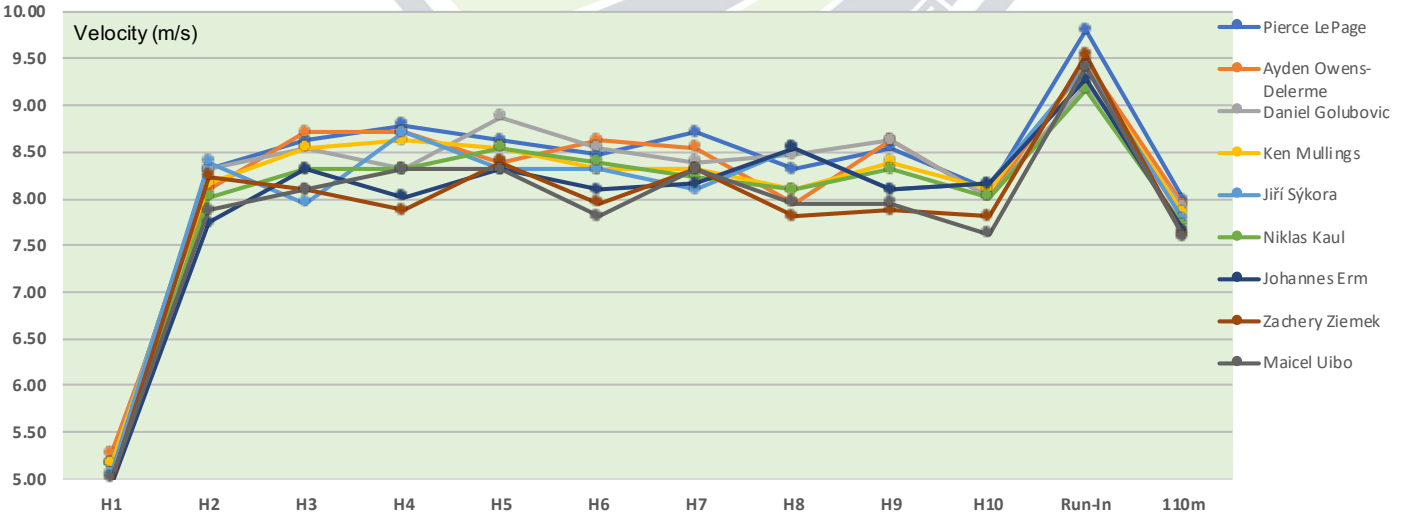


Evaluated with: ObjectusVideo
 Quality & Frame Rate: 1920 x 1080 @ 30ps
 Timing From: First Movement
 Source: <https://www.youtube.com/watch?v=gPZE18RRJgI>

Biomechanical Analysis

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

Decathlon - 110m Hurdles															Heat 3						
Date: 2022.07.24					Wind: 1.1 m/s																
LePage, Pierce (CAN) (1996)			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10			
time		2.66	3.76	4.82	5.86	6.92	8.00	9.05	10.15	11.22	12.35		13.78	5 / 1		3.20	3.19	3.30			
reaction time	0.154	interval	7 steps	1.10	1.06	1.04	1.06	1.08	1.05	1.10	1.07	1.13	1.43					PB	8.57	8.60	8.31
		velocity	5.16	8.31	8.62	8.79	8.62	8.46	8.70	8.31	8.54	8.09	9.80					7.98			
Owens-Delerme, Ayden (PUR) (2000)			2.60	3.73	4.78	5.83	6.92	7.98	9.05	10.20	11.26	12.40		13.88	7 / 2		3.23	3.22	3.35		
time		2.60	3.73	4.78	5.83	6.92	7.98	9.05	10.20	11.26	12.40		13.88								
reaction time	0.133	interval	1.13	1.05	1.05	1.09	1.06	1.07	1.15	1.06	1.14	1.48									
		velocity	5.28	8.09	8.70	8.70	8.39	8.62	8.54	7.95	8.62	8.02	9.47	7.93		8.49	8.52	8.19			
Golubovic, Daniel (AUS) (1993)			2.66	3.76	4.83	5.93	6.96	8.03	9.12	10.20	11.26	12.40		13.92	6 / 3		3.27	3.19	3.28		
time		2.66	3.76	4.83	5.93	6.96	8.03	9.12	10.20	11.26	12.40		13.92								
reaction time	0.150	interval	1.10	1.07	1.10	1.03	1.07	1.09	1.08	1.06	1.14	1.52	PB	8.39					8.60	8.36	
		velocity	5.16	8.31	8.54	8.31	8.87	8.54	8.39	8.46	8.62	8.02	9.22	7.90							
Date: 2022.07.24					Wind: 0.4 m/s										Heat 2						
Mullings, Ken (BAH) (1997)			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10			
time		2.66	3.78	4.85	5.91	6.98	8.08	9.18	10.31	11.40	12.53		14.02	4 / 1		3.25	3.27	3.35			
reaction time	0.117	interval	7 steps	1.12	1.07	1.06	1.07	1.10	1.10	1.13	1.09	1.13	1.49					PB	8.44	8.39	8.19
		velocity	5.16	8.16	8.54	8.62	8.54	8.31	8.31	8.09	8.39	8.09	9.41					7.85			
Sýkora, Jiří (CZE) (1995)			2.71	3.80	4.95	6.00	7.10	8.20	9.33	10.40	11.53	12.65		14.14	7 / 2		3.29	3.33	3.32		
time		2.71	3.80	4.95	6.00	7.10	8.20	9.33	10.40	11.53	12.65		14.14								
reaction time	0.126	interval	1.09	1.15	1.05	1.10	1.10	1.13	1.07	1.13	1.12	1.49									
		velocity	5.06	8.39	7.95	8.70	8.31	8.31	8.09	8.54	8.09	8.16	9.41	7.78		8.33	8.23	8.26			
Kaul, Niklas (GER) (1998)			2.76	3.90	5.00	6.10	7.17	8.26	9.37	10.50	11.60	12.74		14.27	8 / 3		3.34	3.27	3.37		
time		2.76	3.90	5.00	6.10	7.17	8.26	9.37	10.50	11.60	12.74		14.27								
reaction time	0.143	interval	1.14	1.10	1.10	1.07	1.09	1.11	1.13	1.10	1.14	1.53	PB	8.21					8.39	8.14	
		velocity	4.97	8.02	8.31	8.31	8.54	8.39	8.23	8.09	8.31	8.02	9.16	7.71							
Date: 2022.07.24					Wind: 1.5 m/s										Heat 1						
Erm, Johannes (EST) (1998)			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10			
time		2.78	3.96	5.06	6.20	7.30	8.43	9.55	10.62	11.75	12.87		14.38	6 / 1		3.42	3.35	3.32			
reaction time	0.171	interval	7 steps	1.18	1.10	1.14	1.10	1.13	1.12	1.07	1.13	1.12	1.51								
		velocity	4.94	7.75	8.31	8.02	8.31	8.09	8.16	8.54	8.09	8.16	9.28					7.65			
Ziemek, Zachery (USA) (1993)			2.76	3.87	5.00	6.16	7.25	8.40	9.50	10.67	11.83	13.00		14.47	3 / 2		3.40	3.34	3.50		
time		2.76	3.87	5.00	6.16	7.25	8.40	9.50	10.67	11.83	13.00		14.47								
reaction time	0.116	interval	1.11	1.13	1.16	1.09	1.15	1.10	1.17	1.16	1.17	1.47									
		velocity	4.97	8.23	8.09	7.88	8.39	7.95	8.31	7.81	7.88	7.81	9.54	7.60		8.06	8.21	7.83			
Uibo, Maicel (EST) (1992)			2.74	3.90	5.03	6.13	7.23	8.40	9.50	10.65	11.80	13.00		14.49	2 / 3		3.39	3.37	3.50		
time		2.74	3.90	5.03	6.13	7.23	8.40	9.50	10.65	11.80	13.00		14.49								
reaction time	0.166	interval	1.16	1.13	1.10	1.10	1.17	1.10	1.15	1.15	1.20	1.49									
		velocity	5.01	7.88	8.09	8.31	8.31	7.81	8.31	7.95	7.95	7.62	9.41	7.59		8.09	8.14	7.83			



Evaluated with: ObjectusVideo
Quality & Frame Rate: 1920 x 1080 @ 30ps
Timing From: First Movement
Source: <https://www.youtube.com/watch?v=xJzXcuoNaw&list=PLz-gfY4so9kYmaYY5iANqk0HOYKY-NhzB&index=6&pp=iAOB>

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

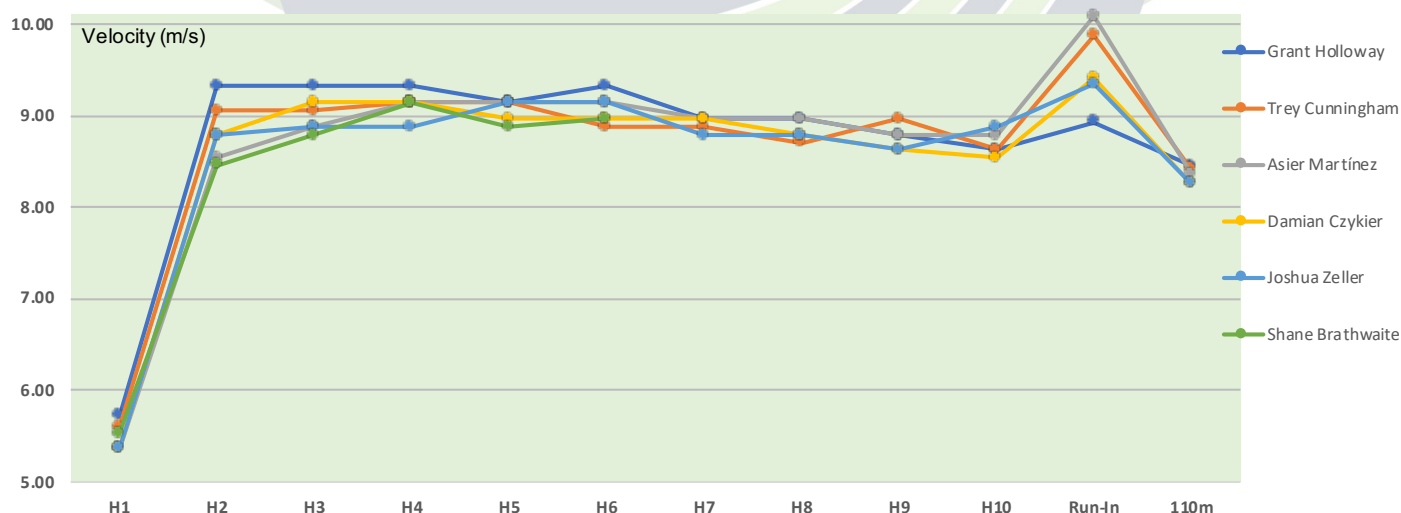
110m Hurdles

Date: 2022.07.17

Wind: 1.2 m/s

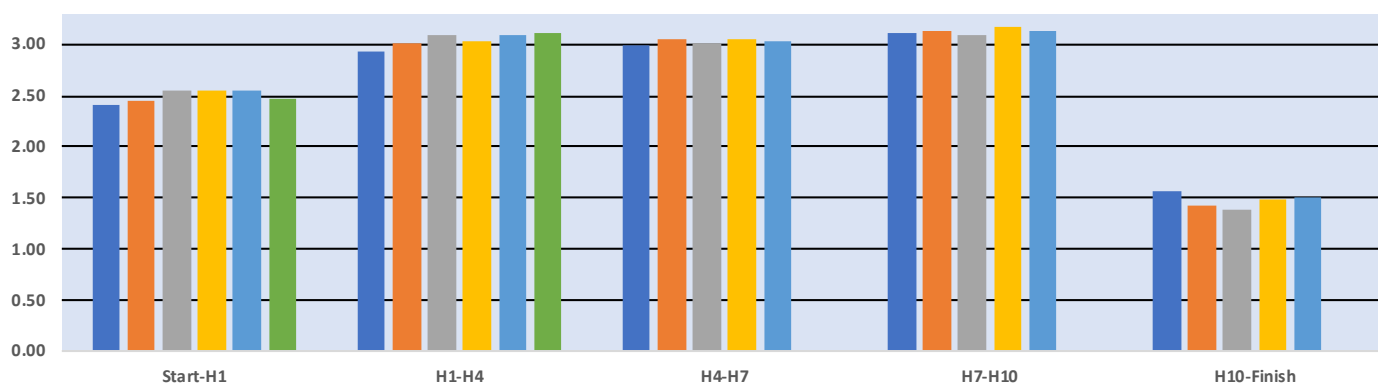
FINAL

		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
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
Martínez, 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
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
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
Brathwaite, Shane (BAR) (1990)	time	2.48	3.56	4.60	5.60	6.63	7.65						dnf	1 / --			
	reaction time	0.108													3.12		
	interval	7 steps	1.08	1.04	1.00	1.03	1.02						DQ		8.79		
Allen, Devon (USA) (1994)	time																
	reaction time		0.099														
Parchment, Hansle (JAM) (1990)	time																
	reaction time																



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=lu7cOzY50p8>

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

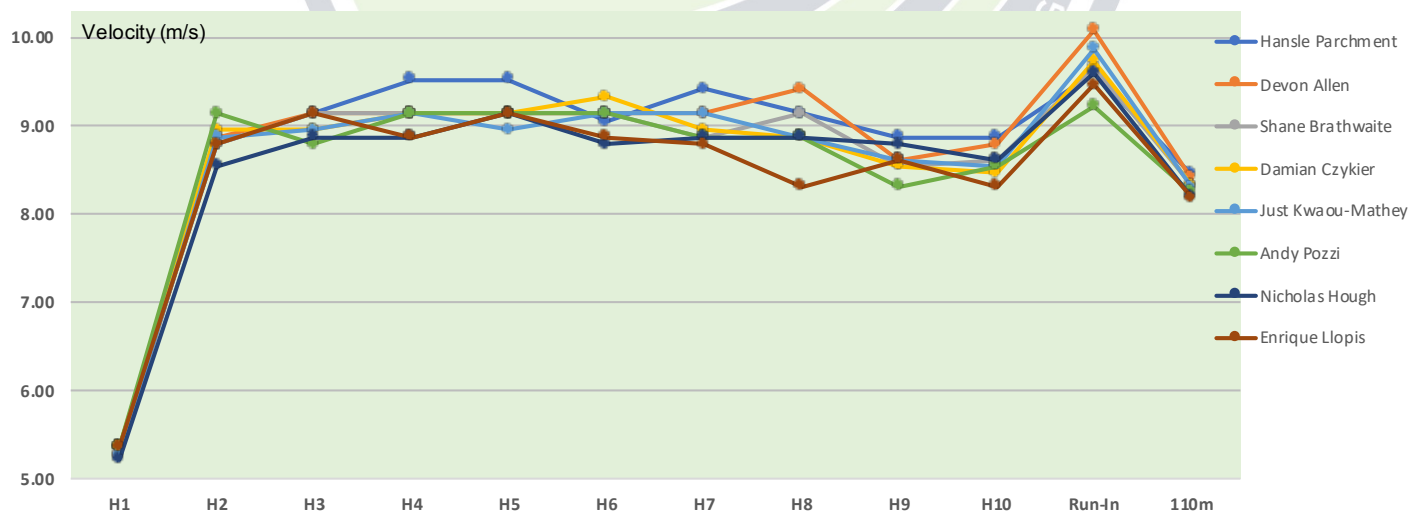
110m Hurdles

Date: 2022.07.17

Wind: 2.5 m/s

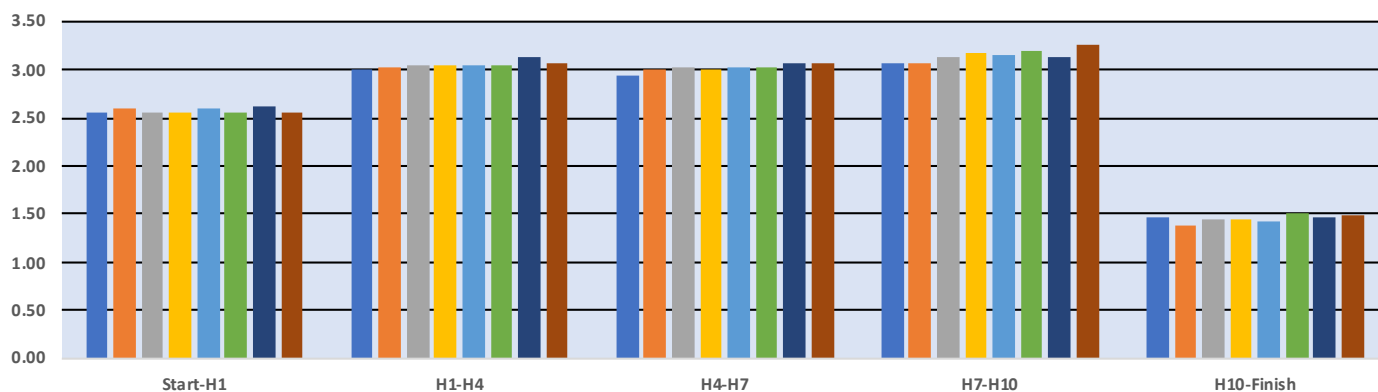
Semi-Final 3

			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	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	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	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	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	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	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	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	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				



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=lu7cOzY50p8>

110m Hurdles

Date: 2022.07.17

Wind: 0.3 m/s

Semi-Final 2

[illegible]

Hurdle Phases



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

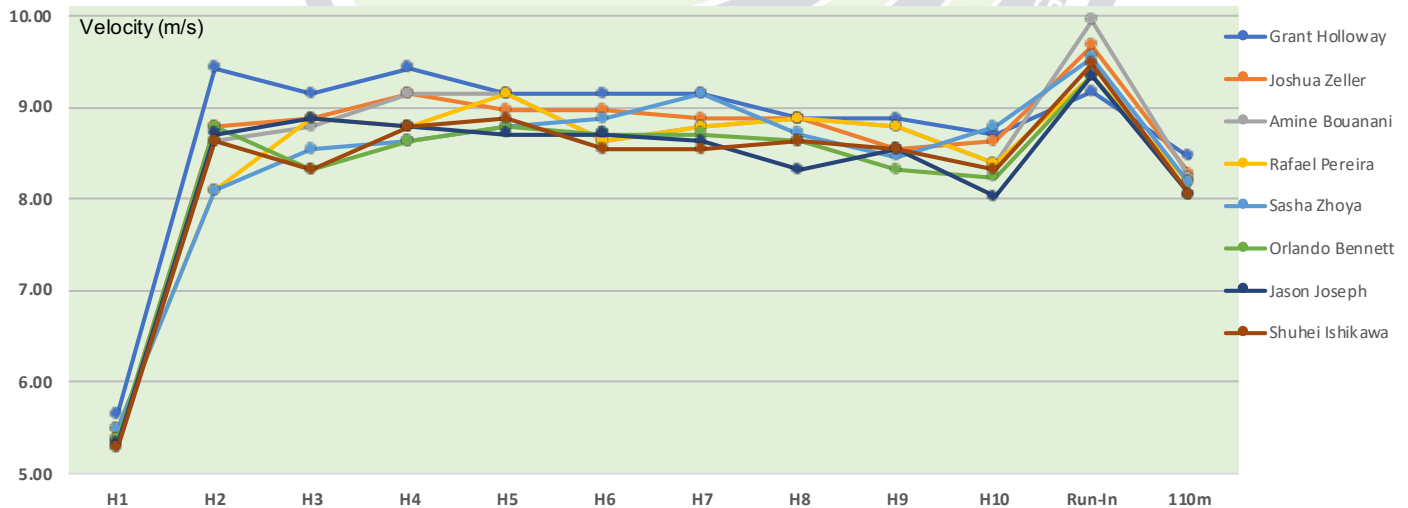
110m Hurdles

Date: 2022.07.17

Wind: -0.6 m/s

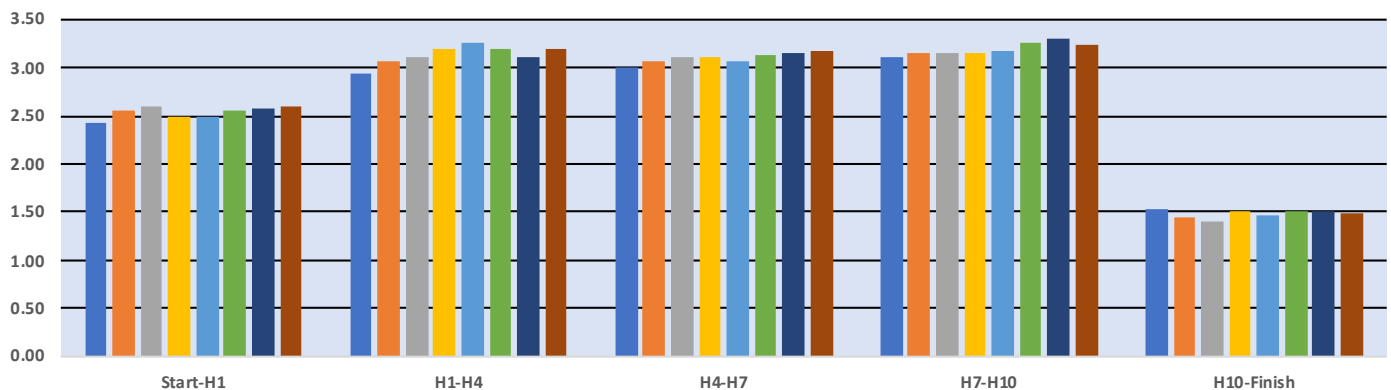
Semi-Final 1

			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	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	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	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	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	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	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	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	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=lu7cOzY50p8>

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

110m Hurdles

Date: 2022.07.16

Wind: 0.4 m/s

Heat 5

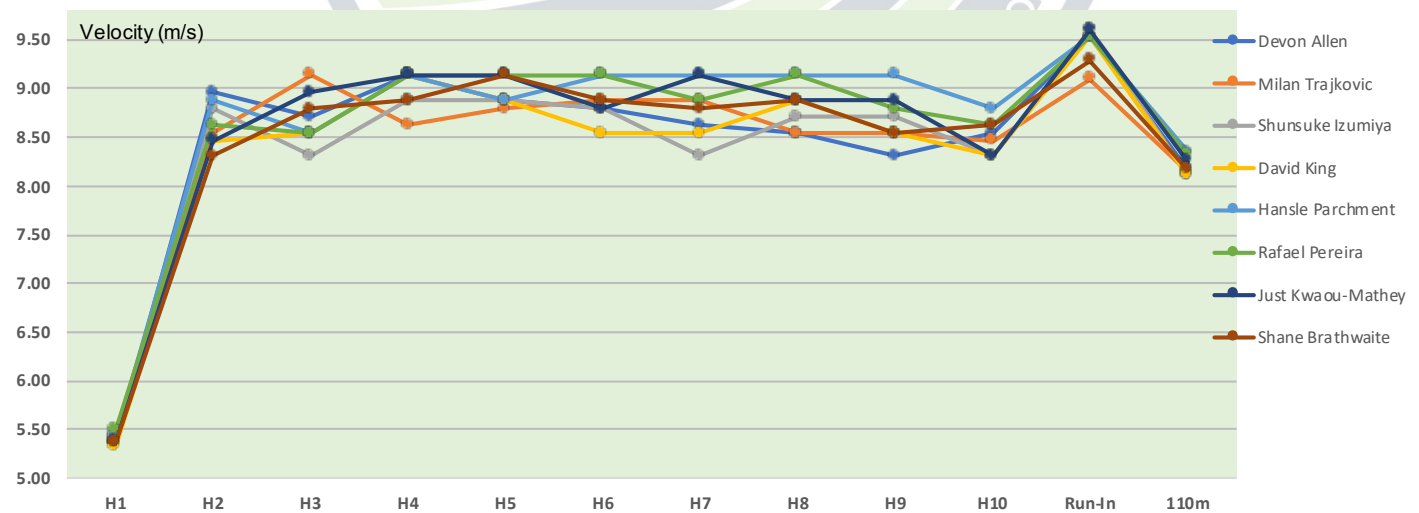
		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
Allen, Devon (USA) (1994)	time	2.56	3.58	4.63	5.63	6.66	7.70	8.76	9.83	10.93	12.00		13.47	3 / 1			
	reaction time	0.123													3.07	3.13	3.24
	interval	7 steps	1.02	1.05	1.00	1.03	1.04	1.06	1.07	1.10	1.07	1.47			8.93	8.76	8.46
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													3.13	3.10	3.22
	interval	7 steps	1.07	1.00	1.06	1.04	1.03	1.03	1.07	1.07	1.08	1.54			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													3.17	3.17	3.20
	interval	7 steps	1.04	1.10	1.03	1.03	1.04	1.10	1.05	1.05	1.10	1.46			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													3.15	3.17	3.20
	interval	7 steps	1.08	1.07	1.00	1.03	1.07	1.07	1.03	1.07	1.10	1.47			8.70	8.65	8.57
	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				

Date: 2022.07.16

Wind: 0.2 m/s

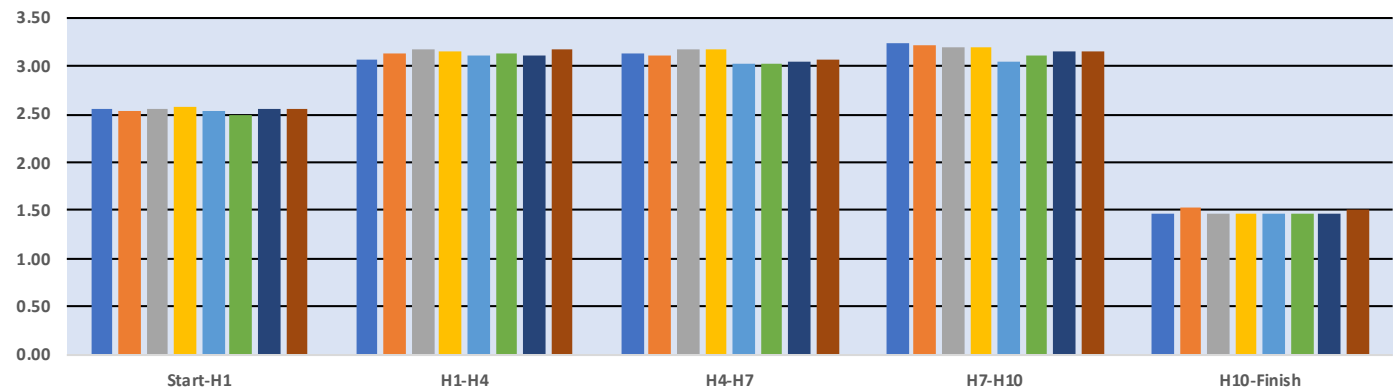
Heat 4

		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													3.10	3.03	3.04
	interval	7 steps	1.03	1.07	1.00	1.03	1.00	1.00	1.00	1.00	1.04	1.47			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													3.13	3.03	3.10
	interval	7 steps	1.06	1.07	1.00	1.00	1.00	1.03	1.00	1.04	1.06	1.47			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													3.10	3.04	3.16
	interval	7 steps	1.08	1.02	1.00	1.00	1.04	1.00	1.03	1.03	1.10	1.46			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													3.17	3.07	3.16
	interval	7 steps	1.10	1.04	1.03	1.00	1.03	1.04	1.03	1.07	1.06	1.51			8.65	8.93	8.68
	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				



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

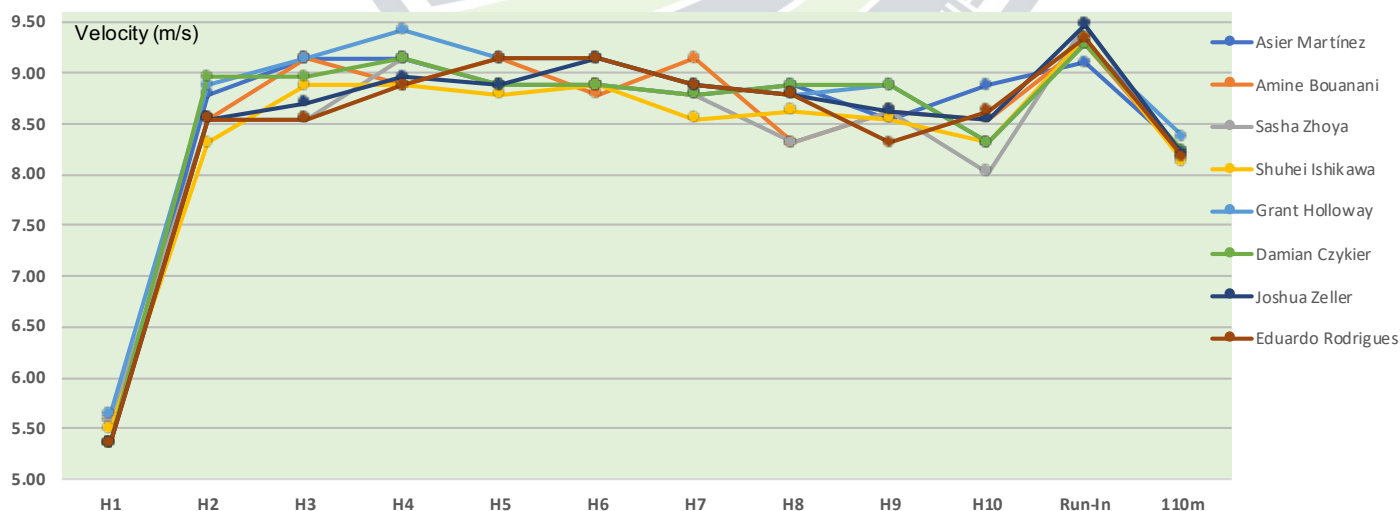
		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	110m	Lane/Place	H1-H4	H4-H7	H7-H10
Martínez, Asier (ESP) (2000)	time	2.56	3.60	4.60	5.60	6.63	7.66	8.70	9.73	10.80	11.83		13.37	2 / 1			
	reaction time	0.137													3.04	3.10	3.13
	interval	7 steps	1.04	1.00	1.00	1.03	1.03	1.04	1.03	1.07	1.03	1.54			9.02	8.85	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											DQ		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

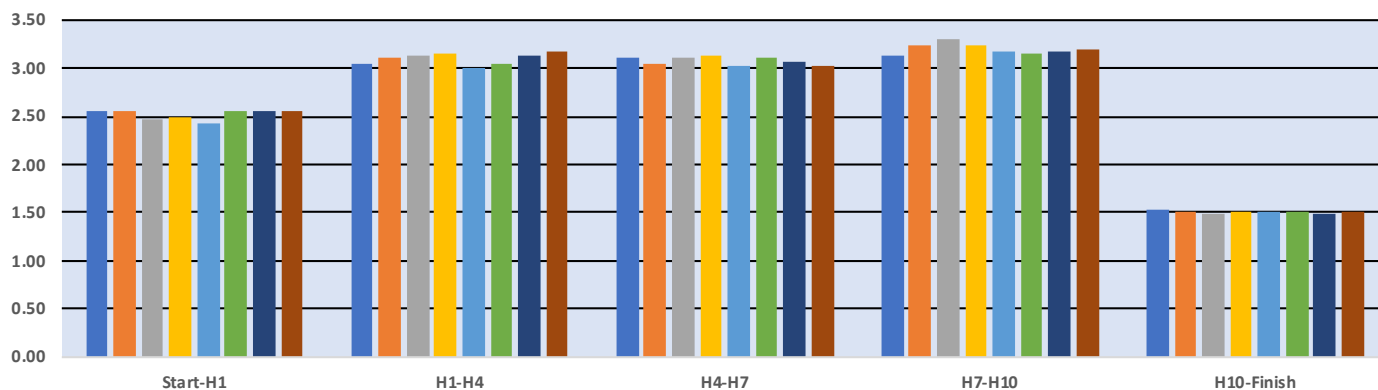
Heat 2

		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)

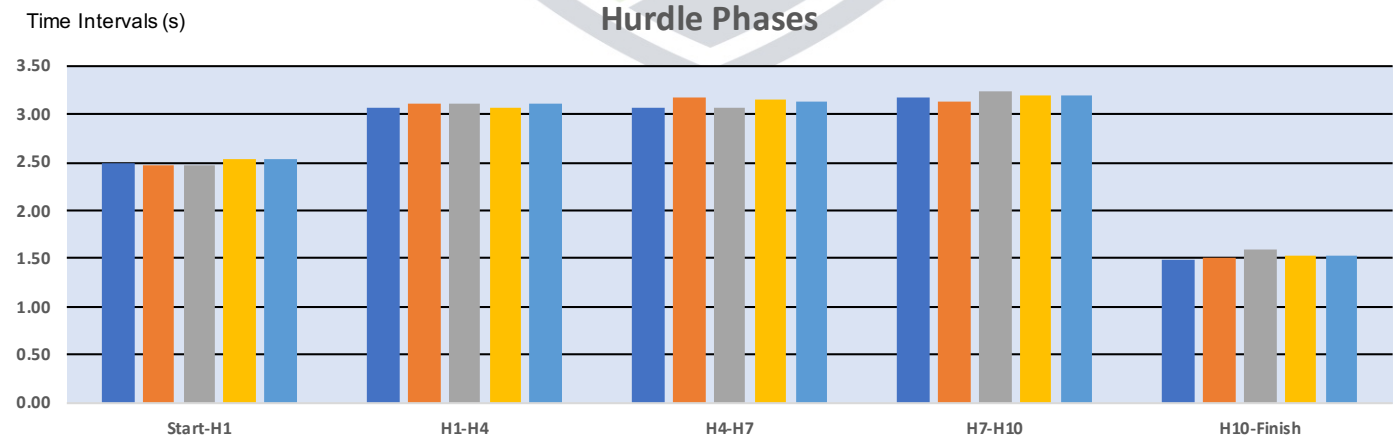
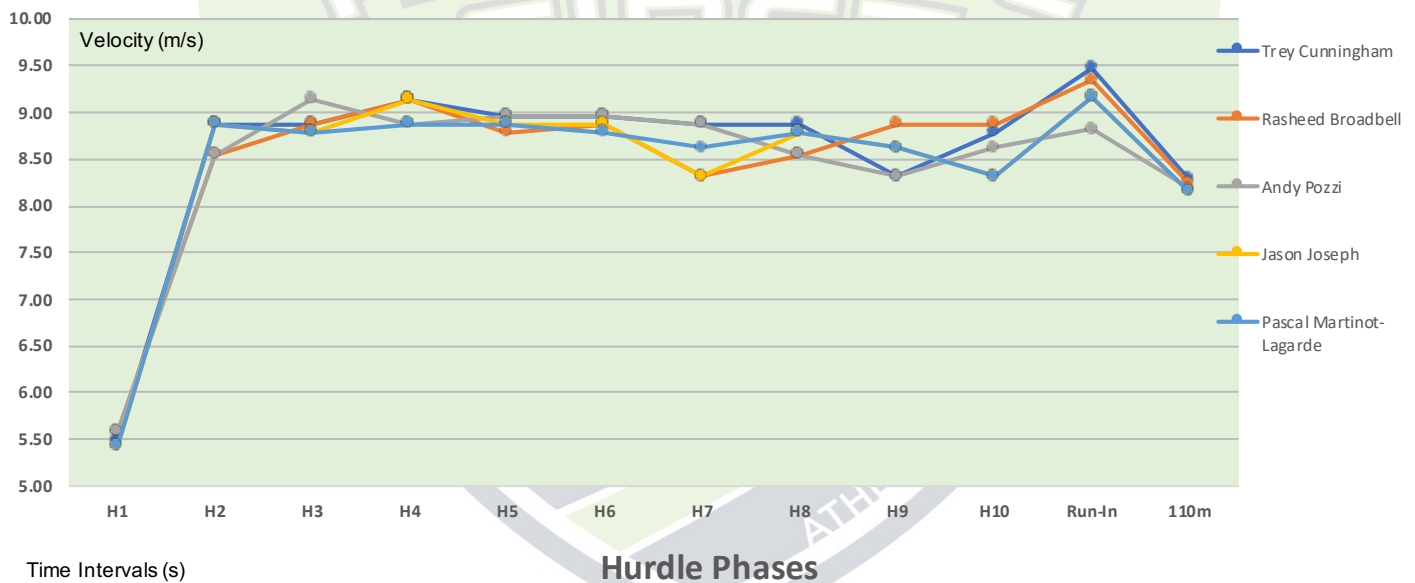
110m Hurdles

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				



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)

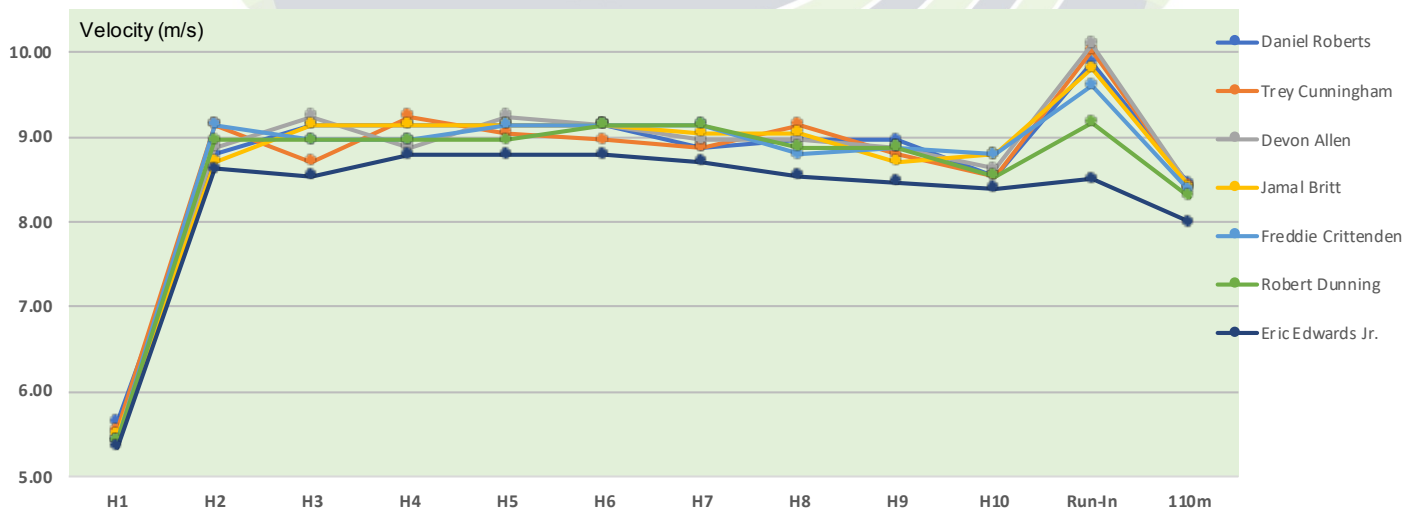
110m Hurdles

Date: 2022.06.26

Wind: 1.2 m/s

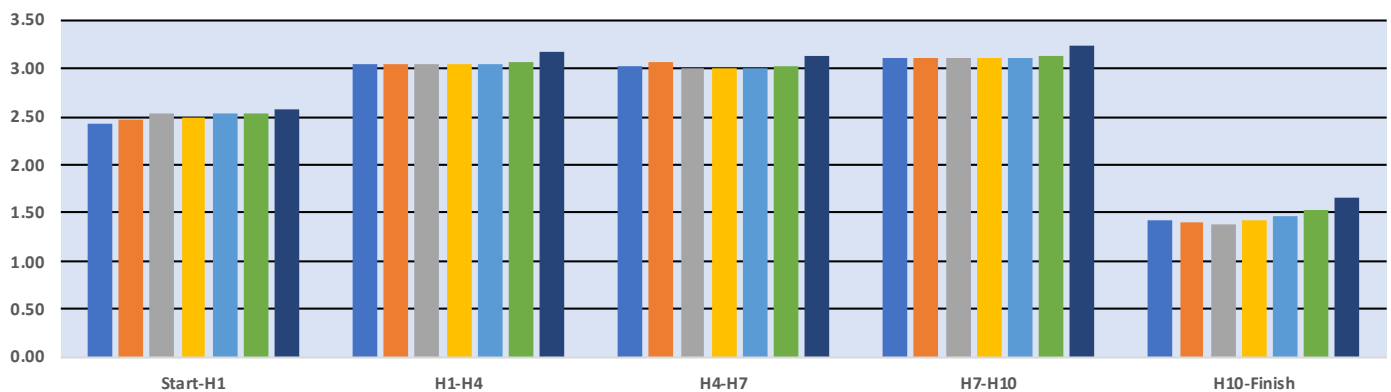
FINAL

		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											1.42			3.04	3.03	3.11
	interval		1.04	1.00	1.00	1.00	1.00	1.03	1.02	1.02	1.07				9.02	9.05	8.82
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											1.40			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				9.02	8.96	8.82
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											1.39			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				8.99	9.11	8.82
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											1.43			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				8.99	9.11	8.85
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											1.46			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				9.02	9.14	8.82
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											1.53			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				8.96	9.08	8.76
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											1.65			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				8.65	8.76	8.46
	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				
	velocity	5.49	8.70	9.14	9.14	9.14	9.14	9.14	8.79	8.87	8.79	9.60	8.37				
	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				
	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				
	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				



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=0Onvw33Czys>

2022 USATF National Championships (Eugene, OR)

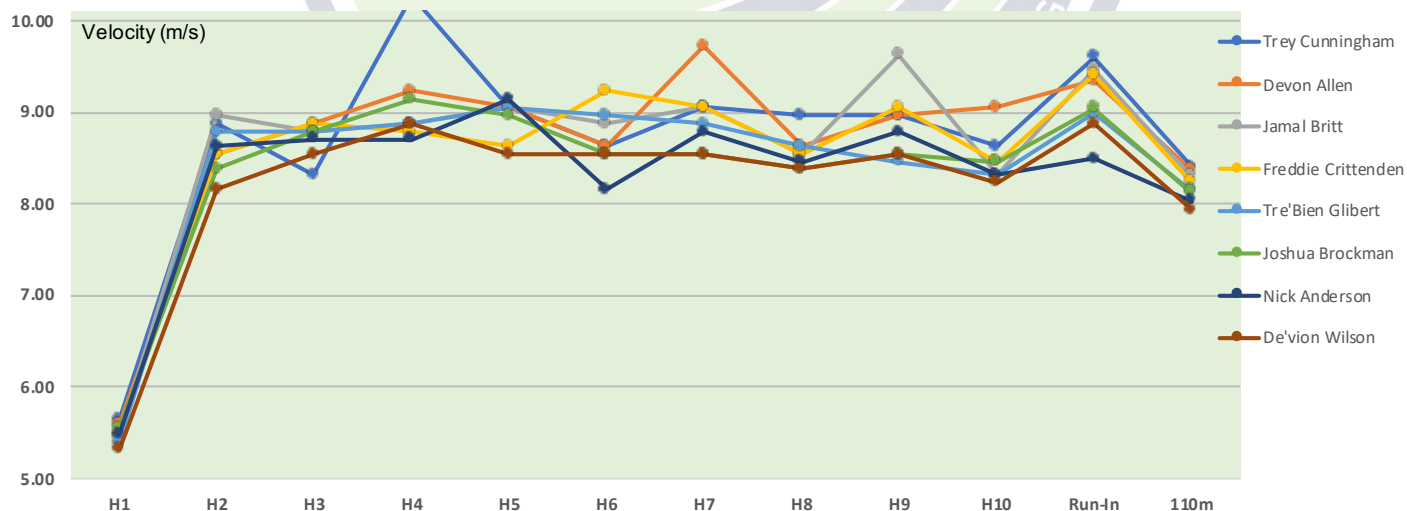
110m Hurdles

Date: 2022.06.26

Wind: 0.1 m/s

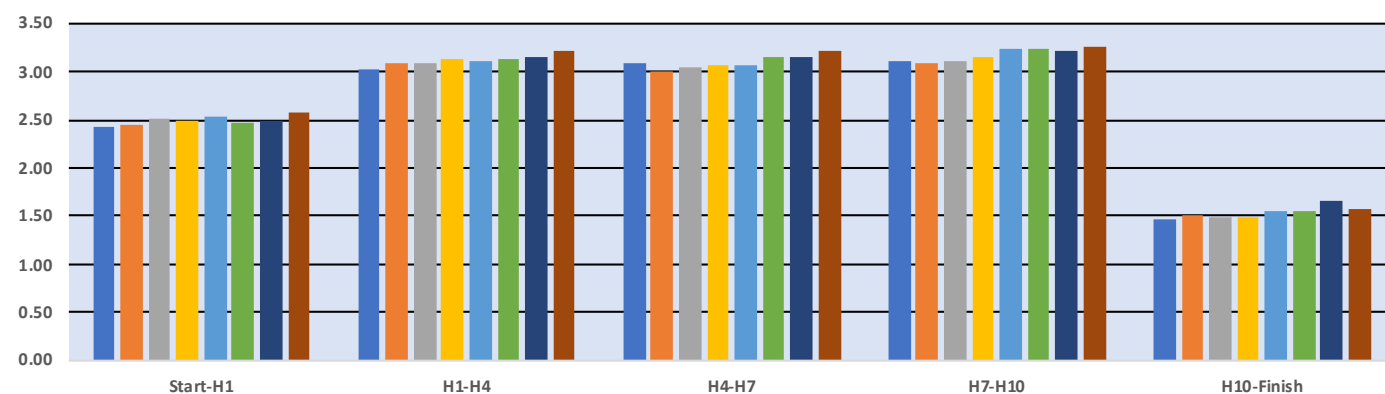
Semi-Final 2

		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	3.02	3.08	3.10
	reaction time																
	interval	7 steps	1.03	1.10	0.89	1.01	1.06	1.01	1.02	1.02	1.06	1.46					
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	3.09	3.01	3.09
	reaction time																
	interval	7 steps	1.07	1.03	0.99	1.01	1.06	0.94	1.06	1.02	1.01	1.50					
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	3.09	3.05	3.12
	reaction time																
	interval	7 steps	1.02	1.04	1.03	1.01	1.03	1.01	1.07	0.95	1.10	1.48					
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	3.14	3.06	3.16
	reaction time																
	interval		1.07	1.03	1.04	1.06	0.99	1.01	1.07	1.01	1.08	1.49					
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	3.11	3.06	3.24
	reaction time																
	interval		1.04	1.04	1.03	1.01	1.02	1.03	1.06	1.08	1.10	1.56					
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	3.13	3.16	3.24
	reaction time																
	interval		1.09	1.04	1.00	1.02	1.07	1.07	1.09	1.07	1.08	1.55	PB				
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	3.16	3.16	3.22
	reaction time																
	interval		1.06	1.05	1.05	1.00	1.12	1.04	1.08	1.04	1.10	1.65					
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	3.22	3.21	3.27
	reaction time																
	interval		1.12	1.07	1.03	1.07	1.07	1.07	1.09	1.07	1.11	1.58					
	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		9.08	8.90	8.85
	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		8.87	9.11	8.87
	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		8.87	8.99	8.79
	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		8.73	8.96	8.68
	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		8.82	8.96	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		8.76	8.68	8.46
	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		8.68	8.68	8.52
	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		8.52	8.54	8.39



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)

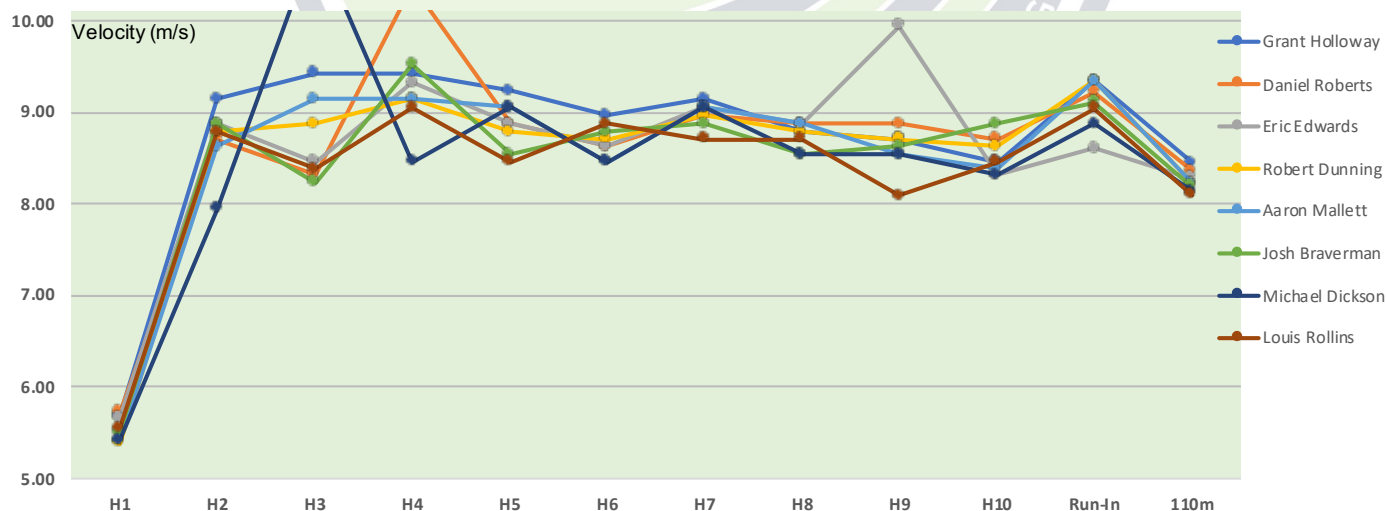
110m Hurdles

Date: 2022.06.26

Wind: 0.4 m/s

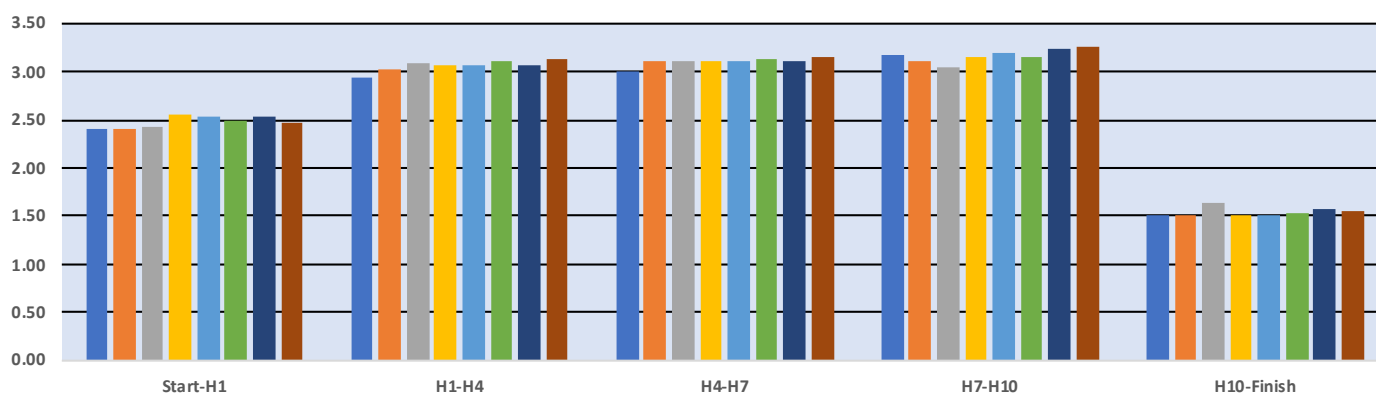
Semi-Final 1

		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 velocity	7 steps	1.00	0.97	0.97	0.99	1.02	1.00	1.04	1.05	1.08	1.50	8.44		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 velocity		1.05	1.10	0.88	1.03	1.06	1.02	1.03	1.03	1.05	1.52	8.35		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 velocity		1.03	1.08	0.98	1.03	1.06	1.01	1.03	0.92	1.10	1.63	8.28		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 velocity		1.04	1.03	1.00	1.04	1.05	1.02	1.04	1.05	1.06	1.50	8.22		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 velocity		1.06	1.00	1.00	1.01	1.08	1.01	1.03	1.07	1.09	1.50	8.22		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 velocity		1.03	1.11	0.96	1.07	1.04	1.03	1.07	1.06	1.03	1.54	8.19		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 velocity		1.15	0.84	1.08	1.01	1.08	1.01	1.07	1.07	1.10	1.58	8.14		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 velocity		1.04	1.09	1.01	1.08	1.03	1.05	1.05	1.13	1.08	1.55	8.10		8.73	8.68	8.41



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)

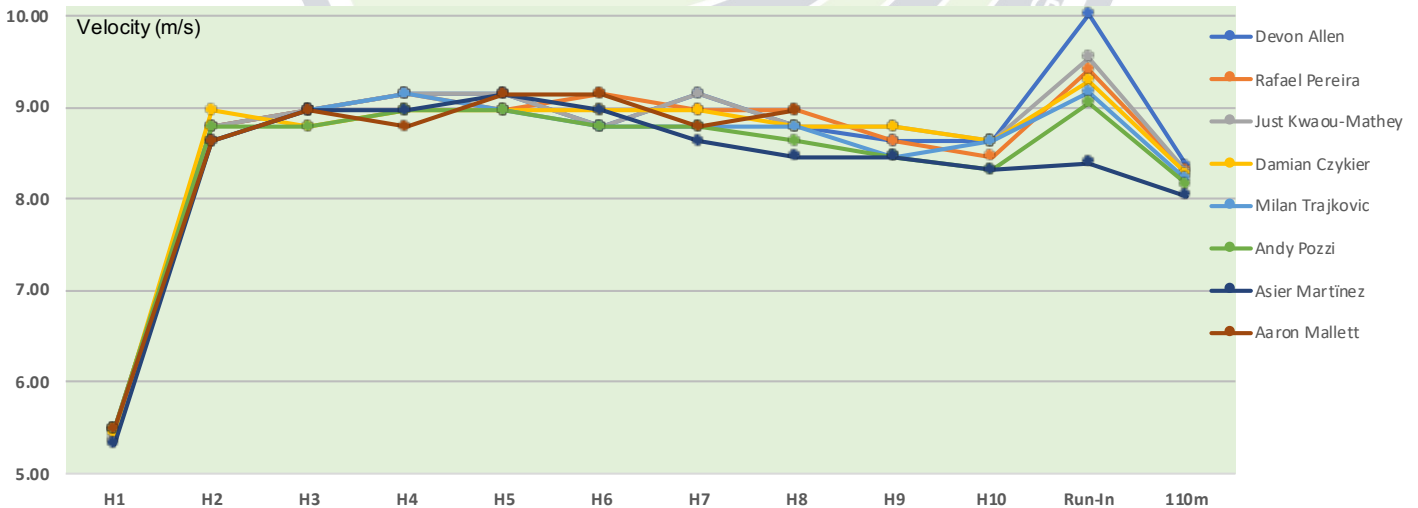
110m Hurdles

Date: 2022.06.18

Wind: -0.2 m/s

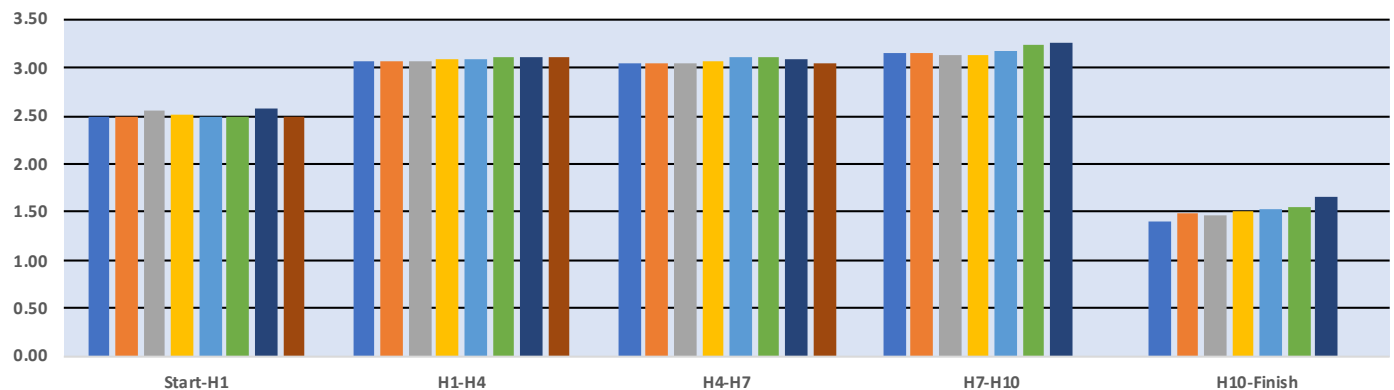
FINAL

		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														3.06	3.04	3.16
interval		7 steps	1.04	1.02	1.00	1.00	1.04	1.00	1.04	1.06	1.06	1.40			8.96	9.02	8.68
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				
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														3.06	3.04	3.16
interval			1.04	1.02	1.00	1.02	1.00	1.02	1.02	1.06	1.08	1.49	=PB		8.96	9.02	8.68
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				
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														3.06	3.04	3.14
interval		7 steps	1.04	1.02	1.00	1.00	1.04	1.00	1.04	1.04	1.06	1.47	PB		8.96	9.02	8.73
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				
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														3.08	3.06	3.14
interval		7 steps	1.02	1.04	1.02	1.02	1.02	1.02	1.04	1.04	1.06	1.51			8.90	8.96	8.73
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				
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														3.08	3.10	3.18
interval		7 steps	1.06	1.02	1.00	1.02	1.04	1.04	1.04	1.08	1.06	1.53			8.90	8.85	8.62
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				
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														3.10	3.10	3.24
interval		7 steps	1.04	1.04	1.02	1.02	1.04	1.04	1.06	1.08	1.10	1.55			8.85	8.85	8.46
velocity		5.49	8.79	8.79	8.96	8.96	8.79	8.79	8.62	8.46	8.31	9.05	8.15				
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														3.10	3.08	3.26
interval		7 steps	1.06	1.02	1.02	1.00	1.02	1.06	1.08	1.08	1.10	1.67			8.85	8.90	8.41
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				
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														3.12	3.04	
interval		7 steps	1.06	1.02	1.04	1.00	1.00	1.04	1.02				DQ		8.79	9.02	
velocity		5.49	8.62	8.96	8.79	9.14	9.14	8.79	8.96								



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=0Onvw33Czs>

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

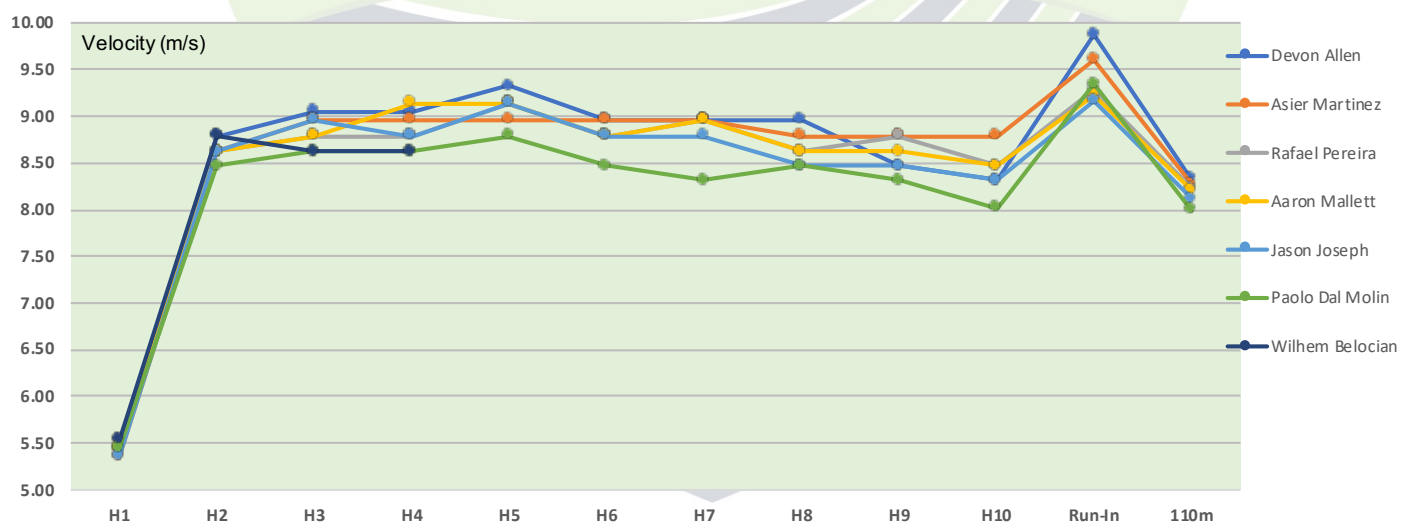
110m Hurdles

Date: 2022.06.16

Wind: -1.2 m/s

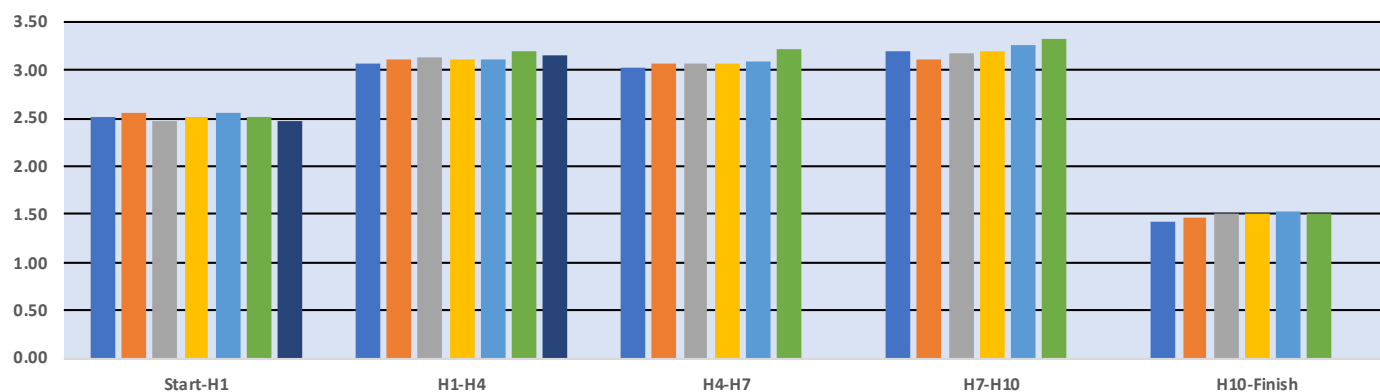
FINAL

			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														3.06	3.02	3.20
	interval velocity		7 steps	1.04	1.01	1.01	0.98	1.02	1.02	1.02	1.08	1.10	1.42			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														3.10	3.06	3.12
	interval velocity		7 steps	1.06	1.02	1.02	1.02	1.02	1.02	1.04	1.04	1.04	1.46			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														3.14	3.06	3.18
	interval velocity		5.53	8.62	8.79	8.79	9.14	8.79	8.96	8.62	8.79	8.46	9.28			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														3.10	3.06	3.20
	interval velocity		7 steps	1.06	1.04	1.00	1.00	1.04	1.02	1.06	1.06	1.08	1.52			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														3.12	3.08	3.26
	interval velocity		7 steps	1.06	1.02	1.04	1.00	1.04	1.04	1.08	1.08	1.10	1.53			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														3.20	3.22	3.32
	interval velocity		7 steps	1.08	1.06	1.06	1.04	1.08	1.10	1.08	1.10	1.14	1.50			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														3.16		
	interval velocity		7 steps	1.04	1.06	1.06										8.68		



Time Intervals (s)

Hurdle Phases



Evaluated with: ObjectusVideo
 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)

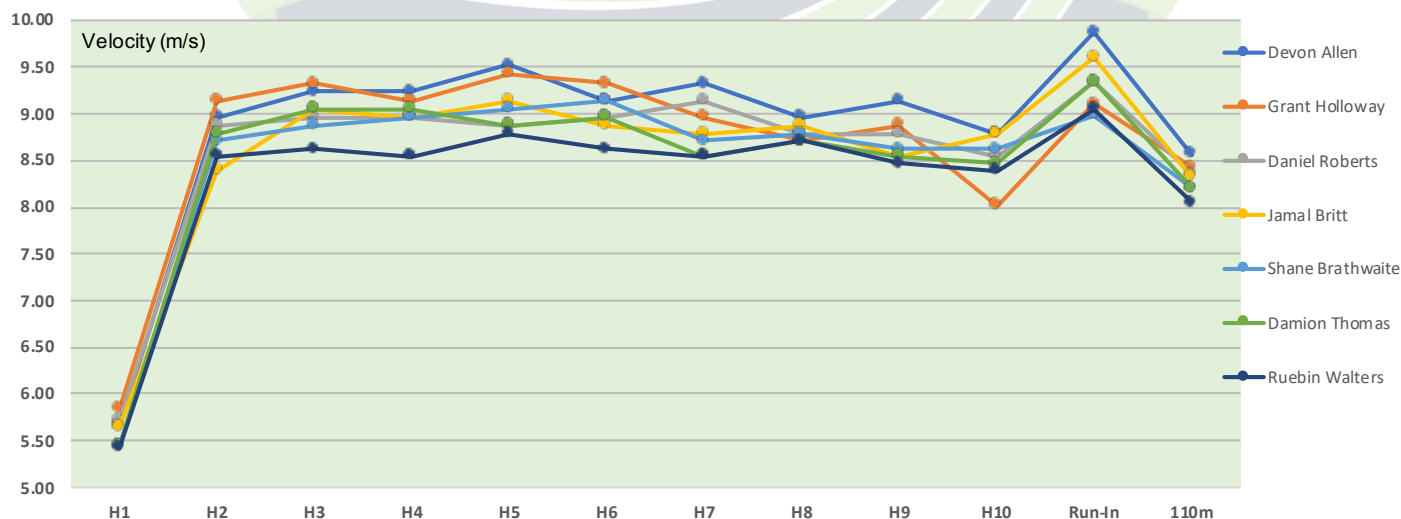
110m Hurdles

Date: 2022.06.12

Wind: 1.6 m/s

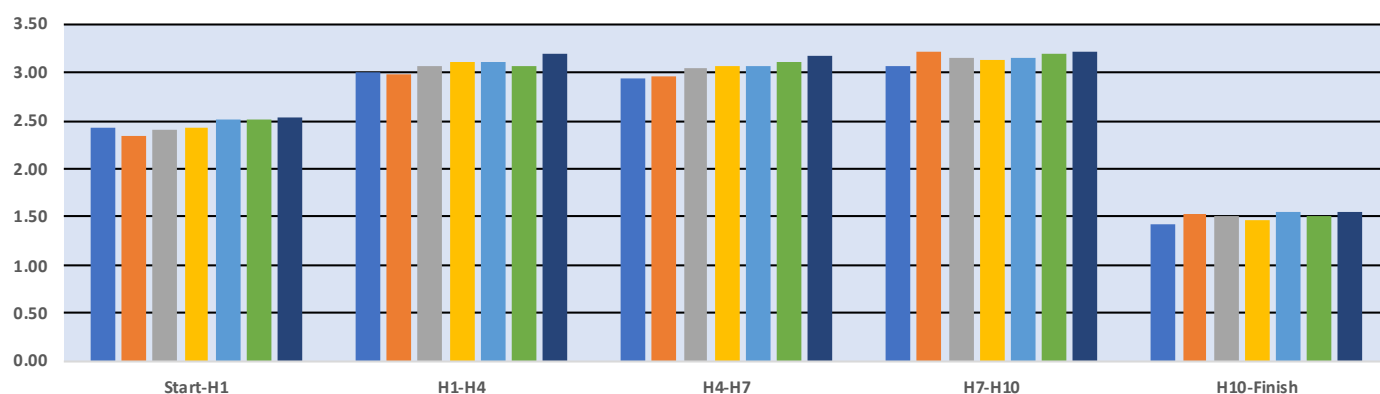
FINAL

			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	5 / 1			
	reaction time	0.128												PB		3.00	2.94	3.06
	interval velocity		7 steps	1.02	0.99	0.99	0.96	1.00	0.98	1.02	1.00	1.04	1.42	8.57		9.14	9.33	8.96
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			
	reaction time	0.116											1.54			2.98	2.97	3.22
	interval velocity		7 steps	5.84	9.14	9.33	9.14	9.42	9.33	8.96	8.70	8.87	8.02	9.10		9.20	9.23	8.52
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			
	reaction time	0.156											1.50	PB		3.07	3.05	3.15
	interval 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		8.93	8.99	8.70
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			
	reaction time	0.139											1.46	PB		3.12	3.07	3.14
	interval velocity		7 steps	5.65	8.39	9.05	8.96	9.14	8.87	8.79	8.87	8.54	9.60	8.32		8.79	8.93	8.73
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			
	reaction time	0.133											1.56			3.10	3.06	3.16
	interval 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		8.85	8.96	8.68
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			
	reaction time	0.149											1.50			3.06	3.12	3.20
	interval velocity		7 steps	5.44	8.79	9.05	9.05	8.87	8.96	8.54	8.70	8.54	9.35	8.21		8.96	8.79	8.57
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			
	reaction time	0.139											1.55			3.20	3.17	3.22
	interval 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		8.57	8.65	8.52



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)

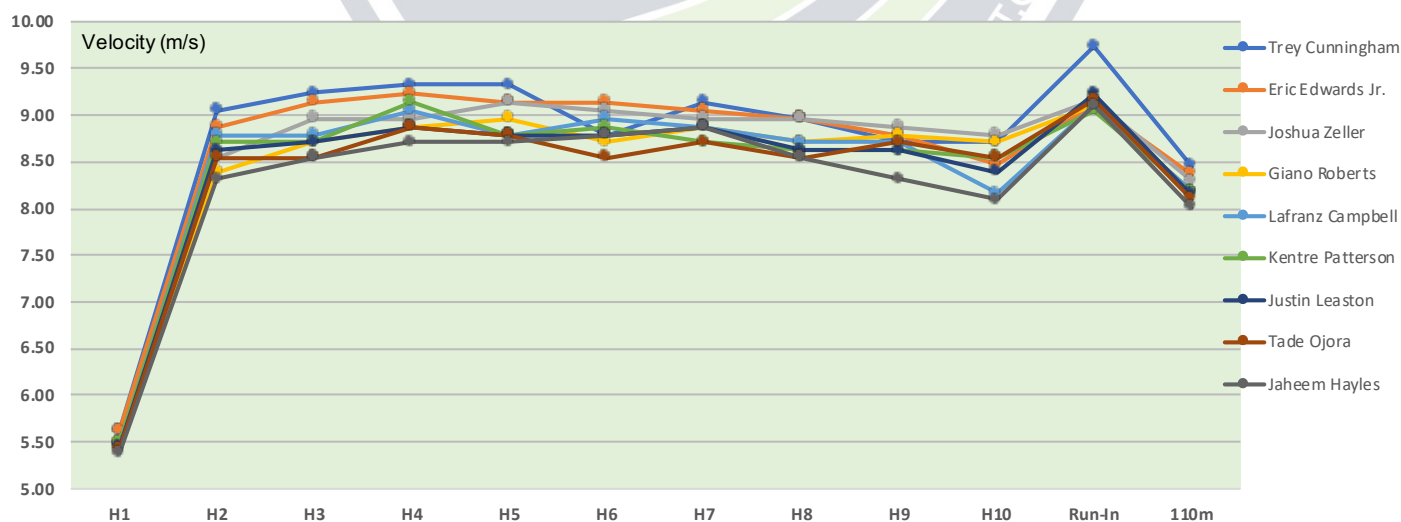
110m Hurdles

Date: 2022.06.10

Wind: 0.0 m/s

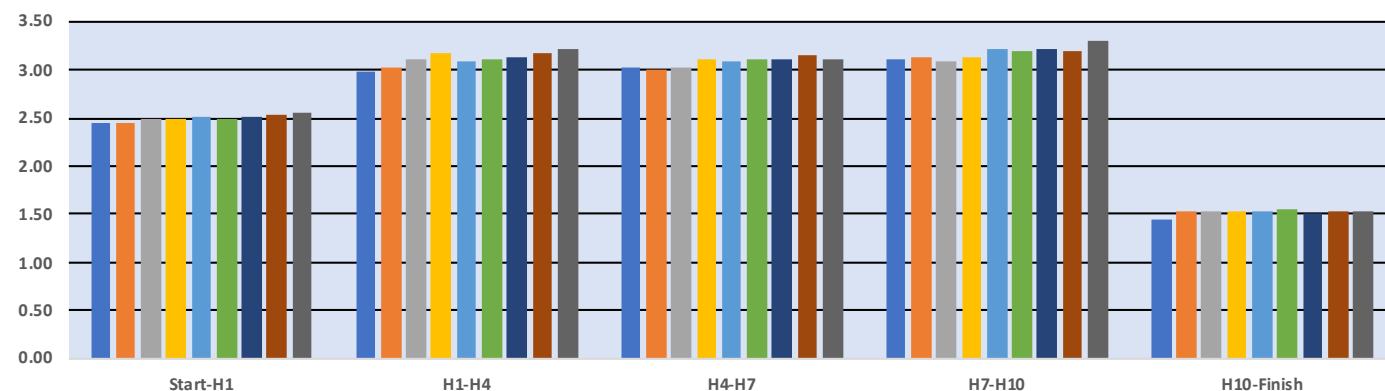
FINAL

		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	1.04	1.03	1.07	1.10	1.13	1.14	1.54			8.52	8.79	8.31
	velocity																



Time Intervals (s)

Hurdle Phases

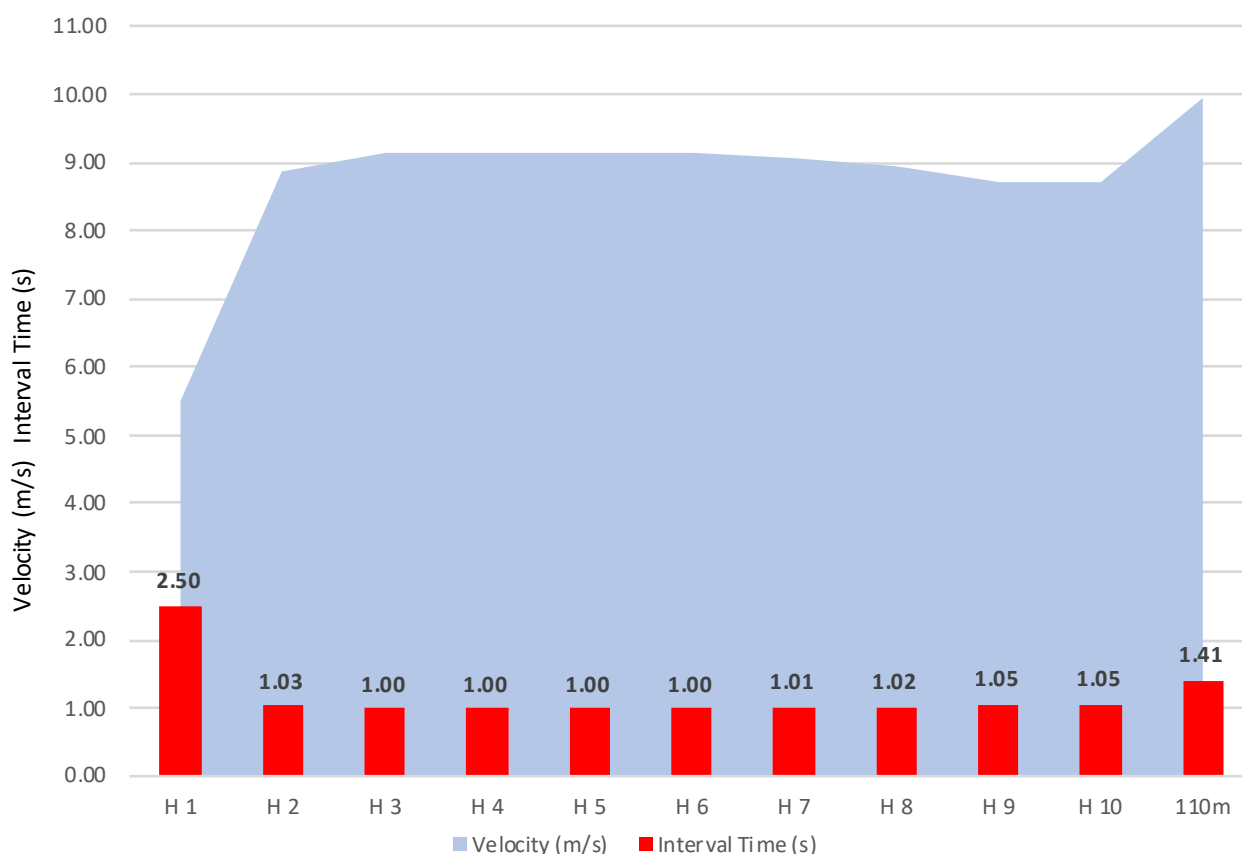


Evaluated with: ObjectusVideo
 Quality & Frame Rate: 1280 x 720 @ 60fps
 Timing From: First Movement
 Source: https://www.youtube.com/watch?v=ebAHN_JTeRI&t=1s

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	Hurdle 1 → Hurdle 4 3.03
H 3	4.53	1.00	9.14	
H 4	5.53	1.00	9.14	
H 5	6.53	1.00	9.14	Hurdle 4 → Hurdle 7 3.01
H 6	7.53	1.00	9.14	
H 7	8.54	1.01	9.05	Hurdle 7 → Hurdle 10 3.12
H 8	9.56	1.02	8.96	
H 9	10.61	1.05	8.70	
H 10	11.66	1.05	8.70	Hurdle 10 → Finish 1.41
Manual Time (MT)	13.07	1.41	9.94	
Official Time	13.07	Ave Interval = 1.02	Ave Velocity = 8.98	



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

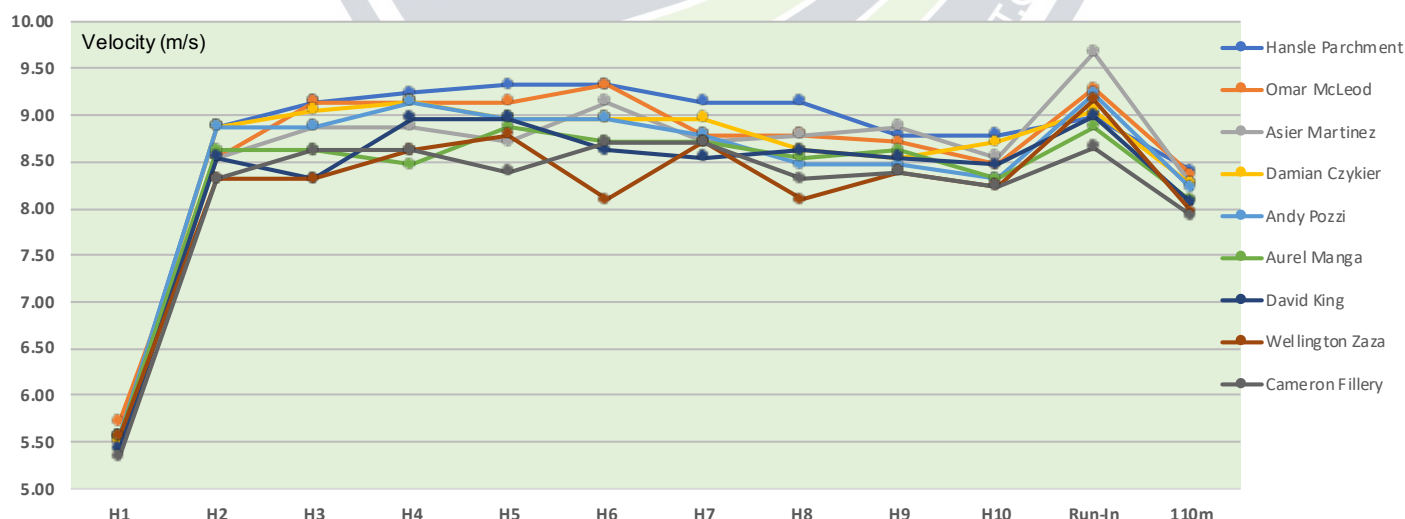
110m Hurdles

Date: 2022.05.21

Wind: 0.2 m/s

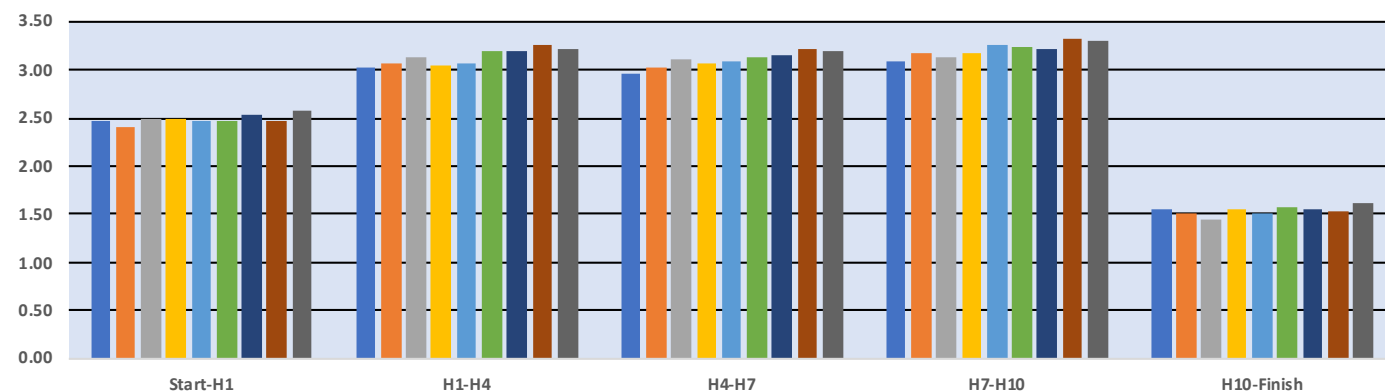
FINAL

			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
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	1.08	1.51			8.93	9.08	8.65
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
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
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
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
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
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
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=MW6WqY1qkBs>

Biomechanical Analysis

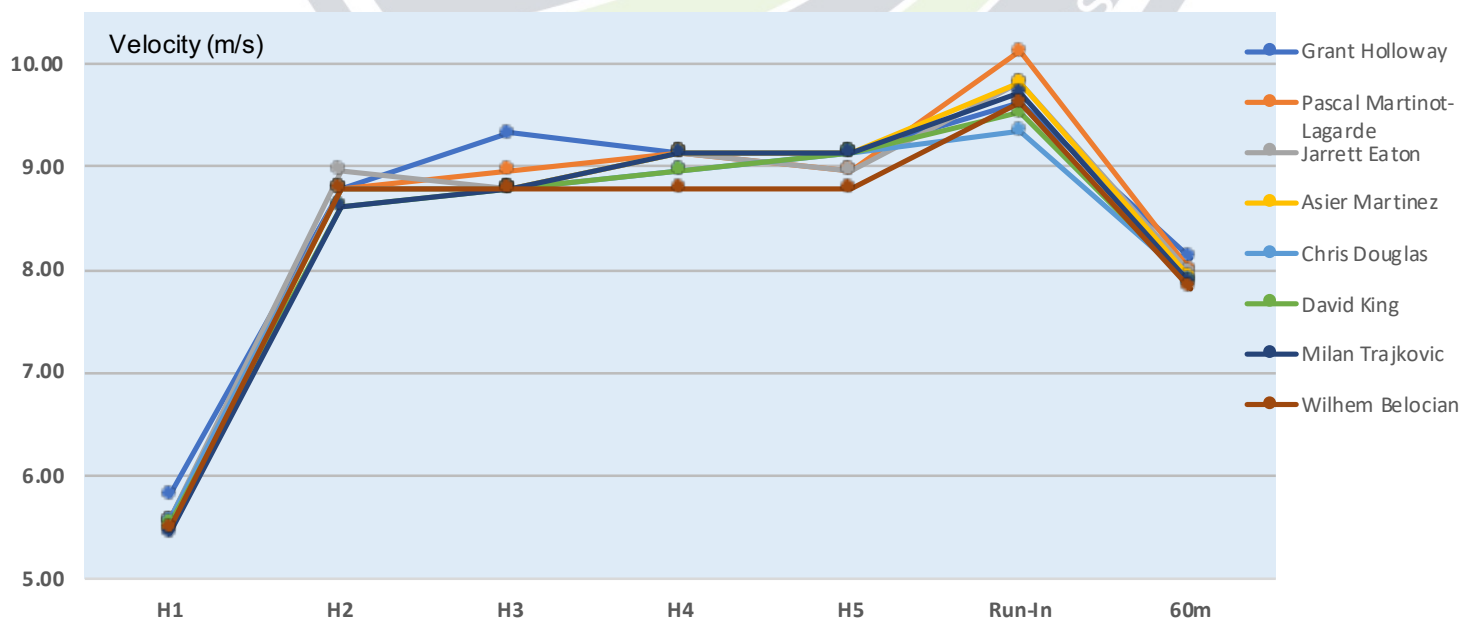
World Athletics Indoor Championships (Belgrade, SRB) (TV Analysis)

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	1.00	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	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_kiMlqgpeg

Biomechanical Analysis

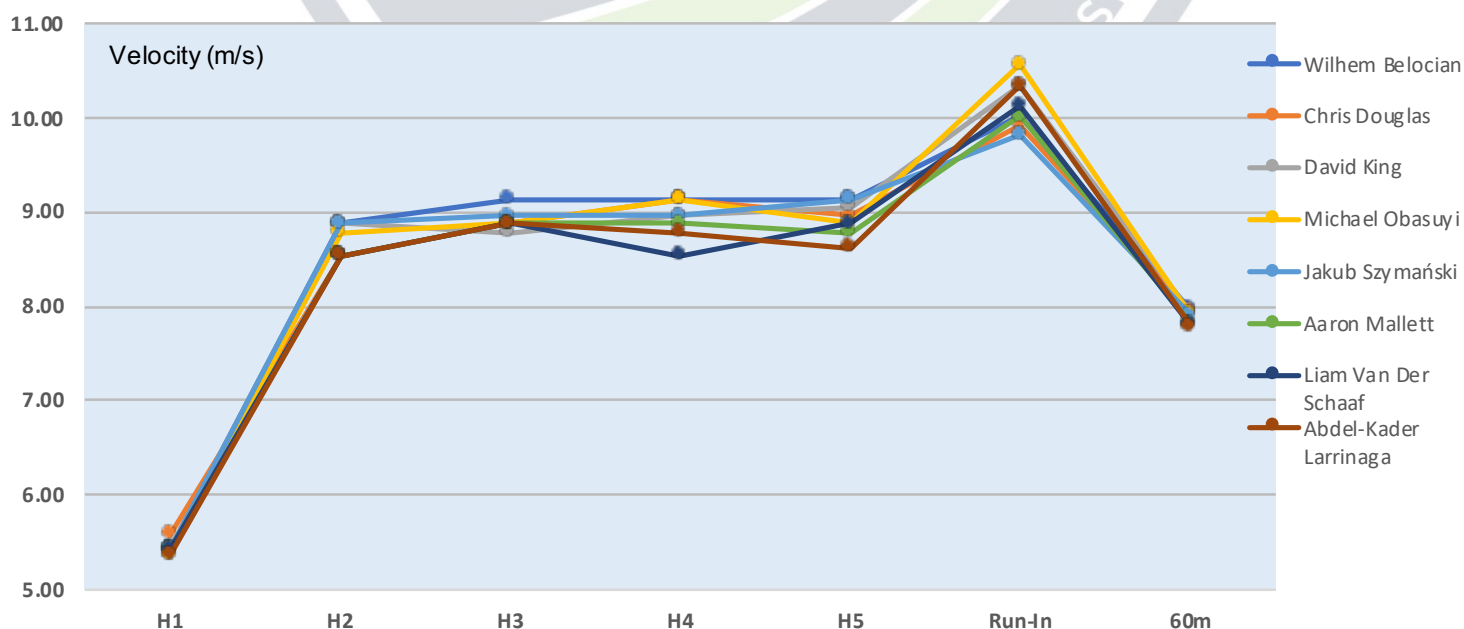
World Athletics Indoor Championships (Belgrade, SRB) (TV Analysis)

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					0.97		
	interval		1.03	1.00	1.00	1.00			
	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					0.98	NR PB	
	interval	7 steps	1.07	1.03	1.00	1.02			
	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					0.94	=PB	
	interval	7 steps	1.03	1.04	1.02	1.01			
	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					0.92	PB	
	interval	7 steps	1.04	1.03	1.00	1.03			
	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					0.99	PB	
	interval	7 steps	1.03	1.02	1.02	1.00			
	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					0.97		
	interval	7 steps	1.07	1.03	1.03	1.04			
	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					0.96	PB	
	interval	7 steps	1.07	1.03	1.07	1.03			
	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					0.94		
	interval	7 steps	1.07	1.03	1.04	1.06			
	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_kiMlqgpeg

Biomechanical Analysis

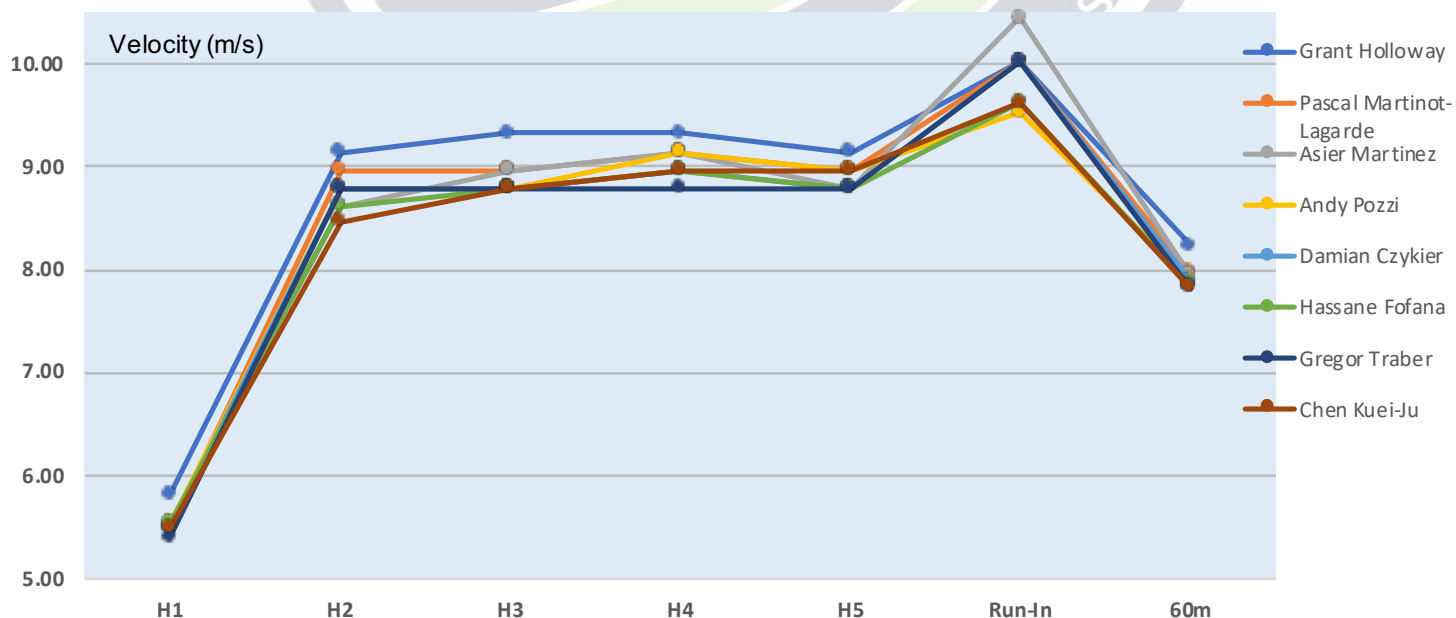
World Athletics Indoor Championships (Belgrade, SRB) (TV Analysis)

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	7 steps	1.00	0.98	0.98	1.00	0.97	=WR	
	interval 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	7 steps	1.02	1.02	1.00	1.02	0.97		
	interval 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	7 steps	1.06	1.02	1.00	1.04	0.93	=PB	
	interval 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	7 steps	1.04	1.04	1.00	1.02	1.02		
	interval 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	7 steps	1.04	1.04	1.02	1.04	0.97		
	interval 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		1.06	1.04	1.02	1.04	1.01	PB	
	interval 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	7 steps	1.04	1.04	1.04	1.04	0.97		
	interval 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	7 steps	1.08	1.04	1.02	1.02	1.01	NR PB	
	interval 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

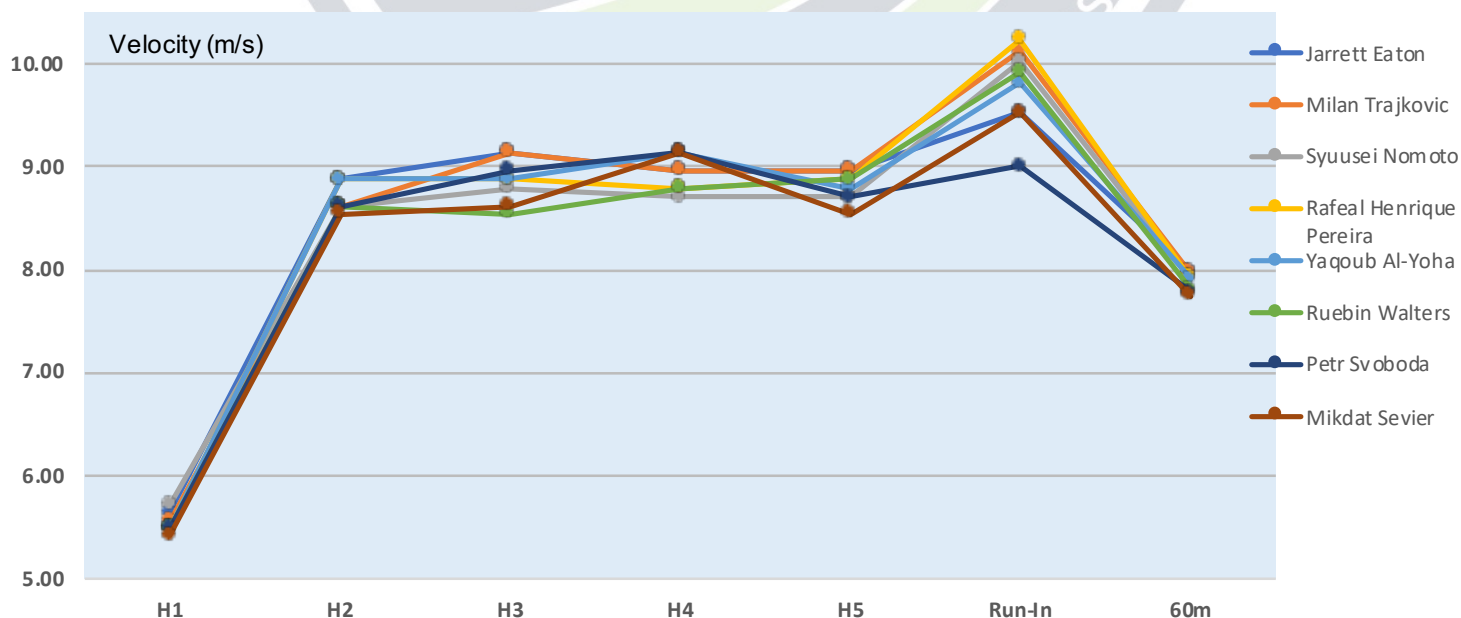
World Athletics Indoor Championships (Belgrade, SRB) (TV Analysis)

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) (1991)	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, Yaqub (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_kiM1ggpeg

Women's 100m Hurdles

2022 Top 10 Times - Women's 100m Hurdles

Amusan, Tobi (NGR) (1997)	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
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	9.63	8.29		8.95	9.21	8.79
Amusan, Tobi (NGR) (1997)	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
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	9.05	8.25		8.89	9.21	8.92
Anderson, Britany (JAM) (2001)	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
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	9.13	8.18		8.89	8.95	8.70
Camacho-Quinn, Jasmine (PUR) (1996)	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
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	8.75	8.18		8.70	9.11	8.95
Harrison, Kendra (USA) (1992)	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
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	8.82	8.15		8.79	9.14	8.70
Camacho-Quinn, Jasmine (PUR) (1996)	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
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	9.21	8.15		8.61	9.04	8.85
Camacho-Quinn, Jasmine (PUR) (1996)	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
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	8.75	8.15		8.76	8.98	8.85
Amusan, Tobi (NGR) (1997)	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
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	8.82	8.14		8.79	9.04	8.76
Amusan, Tobi (NGR) (1997)	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
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	9.21	8.13		8.79	8.98	8.67
Anderson, Britany (JAM) (2001)	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
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	9.46	8.12		8.73	8.98	8.67
Armstrong, Alia (USA) (2000)	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
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	9.29	8.12		8.73	8.92	8.44
Harrison, Kendra (USA) (1992)	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
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 0.098 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	9.21	8.12		8.92	8.98	8.67
Camacho-Quinn, Jasmine (PUR) (1996)	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
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	9.46	8.12		8.70	8.92	8.82
Armstrong, Alia (USA) (2000)	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
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 0.098 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	9.13	8.11		8.79	8.82	8.73

2022 Weltklasse (Zürich, SUI) (TV Analysis)

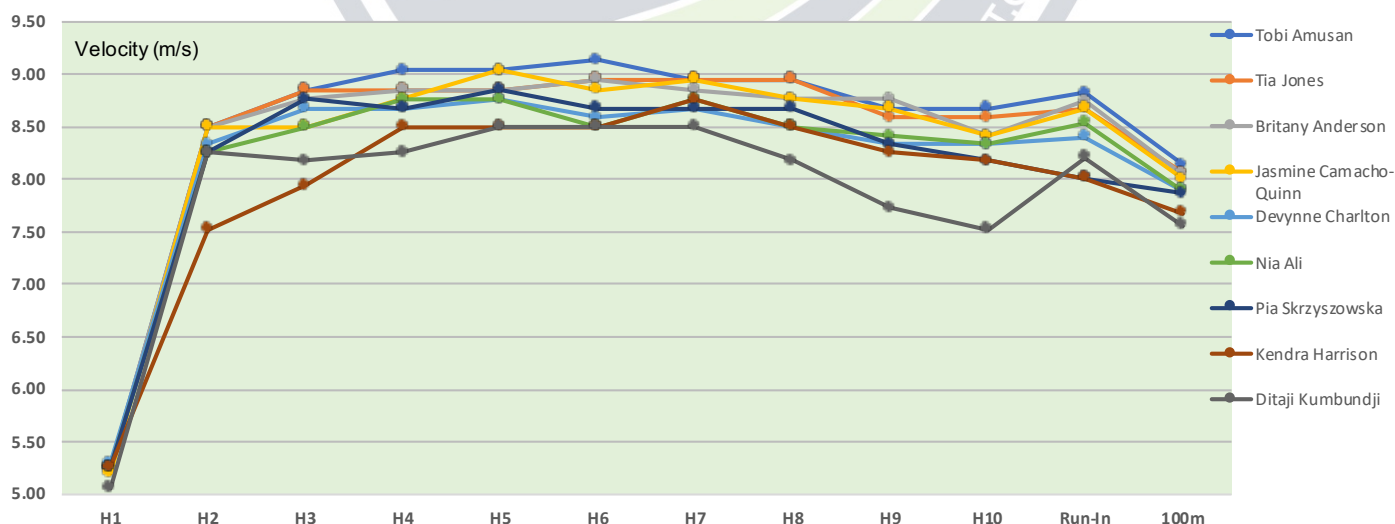
100m Hurdles

Date: 2022.09.08

Wind: -0.3 m/s

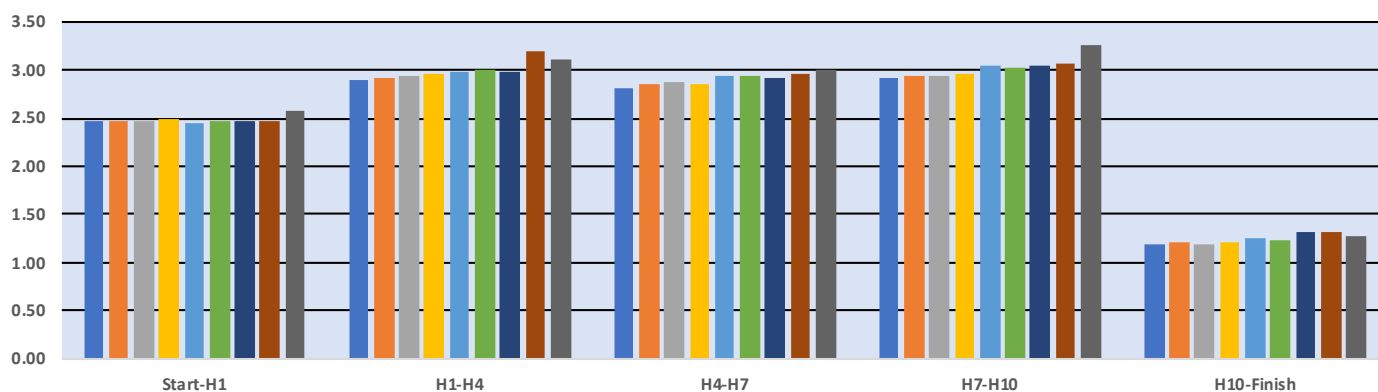
FINAL

			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											1.19			2.90	2.82	2.91
	interval velocity		5.26	8.50	8.85	9.04	9.04	9.14	8.95	8.95	8.67	8.67	8.82	8.14		8.79	9.04	8.76
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											1.21			2.92	2.86	2.93
	interval velocity		5.24	8.50	8.85	8.85	8.85	8.95	8.95	8.95	8.59	8.59	8.68	8.06		8.73	8.92	8.70
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											1.20			2.93	2.87	2.95
	interval velocity		5.26	8.50	8.76	8.85	8.85	8.95	8.85	8.76	8.76	8.42	8.75	8.05		8.70	8.89	8.64
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											1.21			2.97	2.85	2.96
	interval velocity		5.20	8.50	8.50	8.76	9.04	8.85	8.95	8.76	8.67	8.42	8.68	8.01		8.59	8.95	8.61
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											1.25			2.98	2.94	3.04
	interval velocity		5.31	8.33	8.67	8.67	8.76	8.59	8.67	8.50	8.33	8.33	8.40	7.90		8.56	8.67	8.39
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											1.23			3.00	2.94	3.03
	interval velocity		5.26	8.25	8.50	8.76	8.76	8.50	8.76	8.50	8.42	8.33	8.54	7.89		8.50	8.67	8.42
Skrzysowska, 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											1.31			2.98	2.92	3.04
	interval velocity		5.26	8.25	8.76	8.67	8.85	8.67	8.67	8.67	8.33	8.17	8.02	7.86		8.56	8.73	8.39
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											1.31			3.20	2.97	3.07
	interval velocity		5.26	7.52	7.94	8.50	8.50	8.50	8.76	8.50	8.25	8.17	8.02	7.68		7.97	8.59	8.31
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											1.28			3.10	3.00	3.27
	interval velocity		5.06	8.25	8.17	8.25	8.50	8.50	8.50	8.17	7.73	7.52	8.20	7.56		8.23	8.50	7.80



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=EzJKqdw5GFU&t=9s>

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

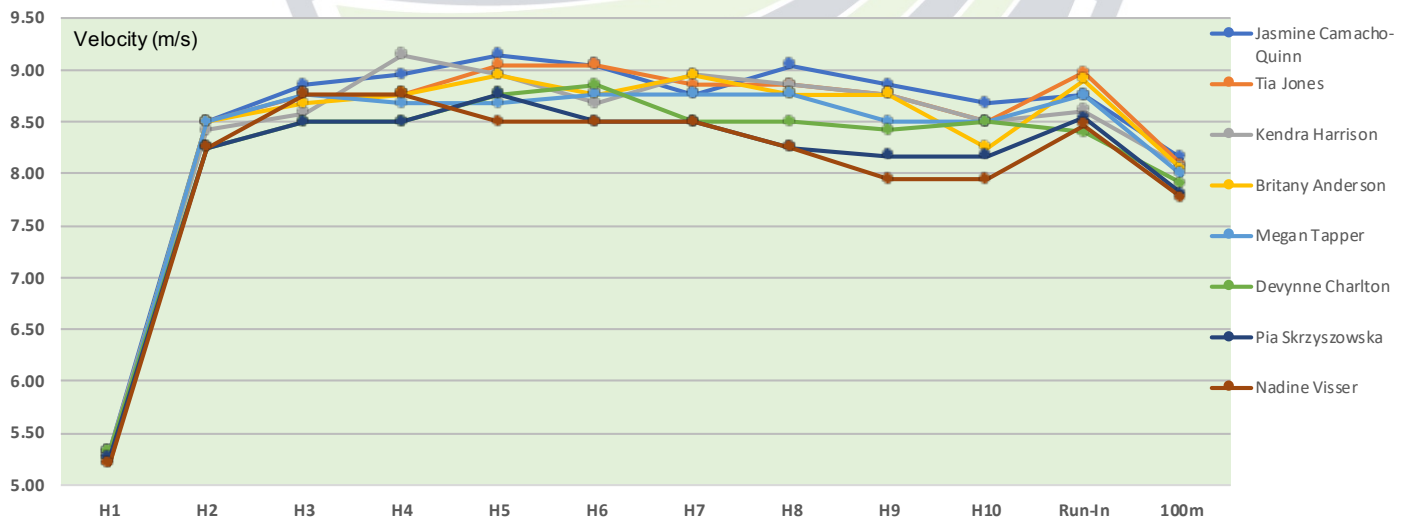
100m Hurdles

Date: 2022.09.02

Wind: 0.1 m/s

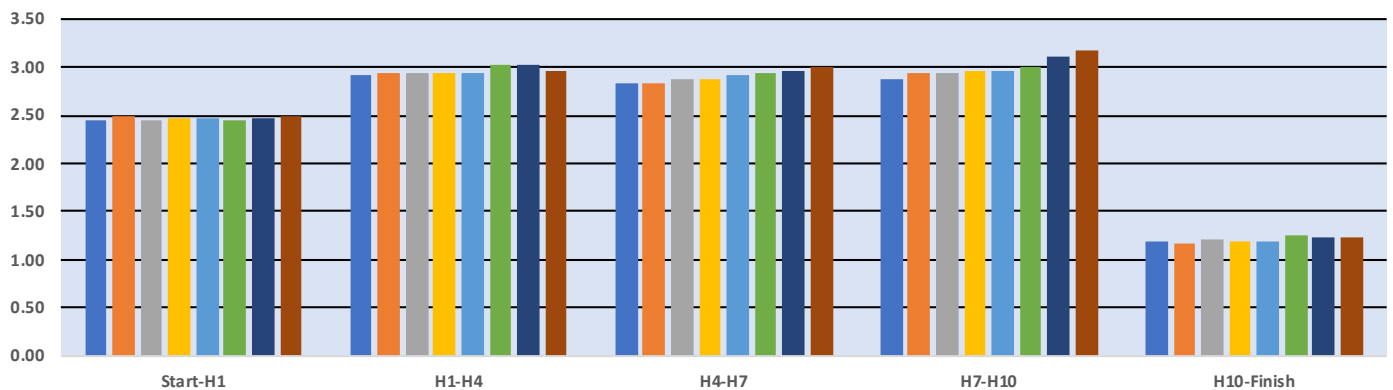
FINAL

			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	8.75	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	8.97	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	8.61	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	8.25	8.90	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	8.75	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	8.40	7.90				
Skrzysowska, 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	8.54	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	8.47	7.76				



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=6uolnNITBdI>

2022 Athletissima (Lausanne, SUI) (TV Analysis)

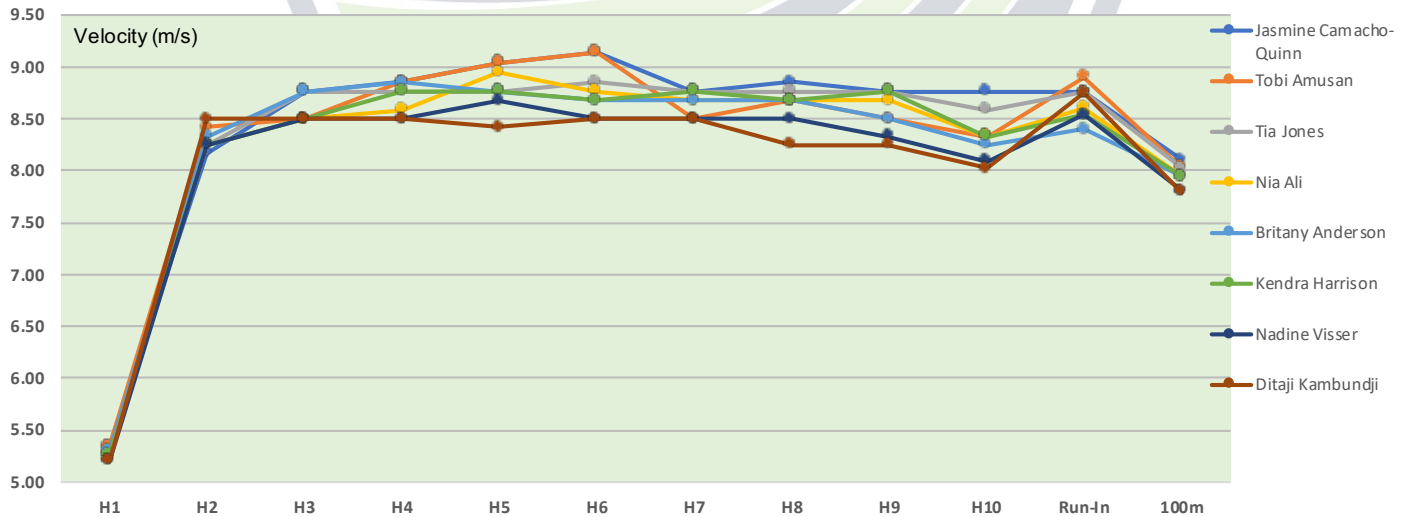
100m Hurdles

Date: 2022.08.26

Wind: -0.9 m/s

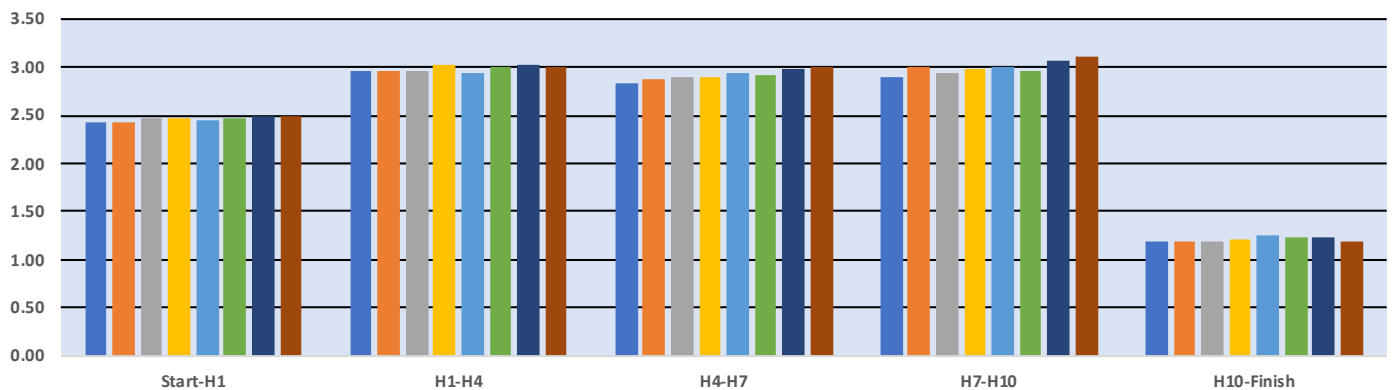
FINAL

			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	8.75	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	8.90	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	8.75	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	8.61	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	8.40	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	8.54	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	8.54	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	8.75	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=frnmR4Ecb0g&t=2s>

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

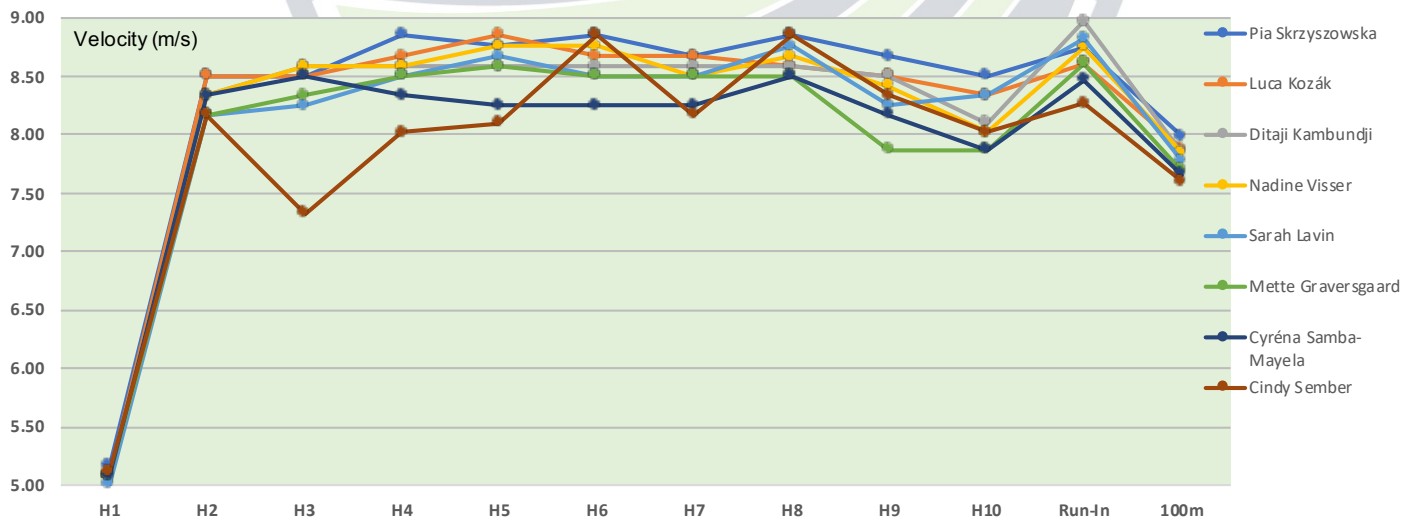
100m Hurdles

Date: 2022.08.21

Wind: -0.1 m/s

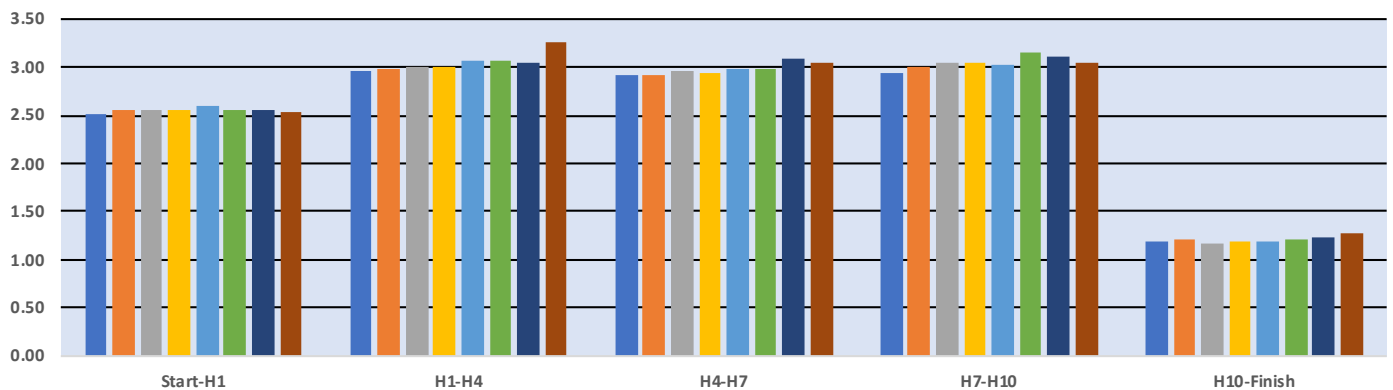
FINAL

		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 velocity		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
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 velocity		1.00	1.00	0.98	0.96	0.98	0.99	1.00	1.02	1.22				8.56	8.73	8.47
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 velocity		1.02	0.99	0.99	0.99	0.99	0.99	1.00	1.05	1.17				8.50	8.59	8.39
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 velocity		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
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 velocity		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
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 velocity		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
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 velocity		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
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 velocity		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



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=QJoXwqCk6JU>

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

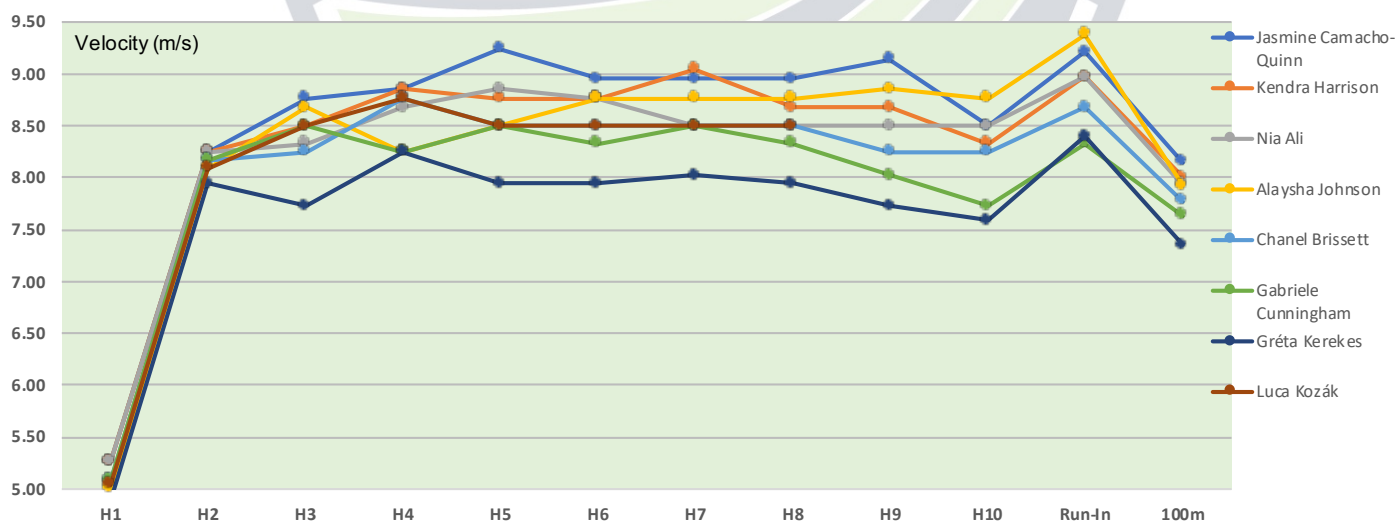
100m Hurdles

Date: 2022.08.08

Wind: 2.4 m/s

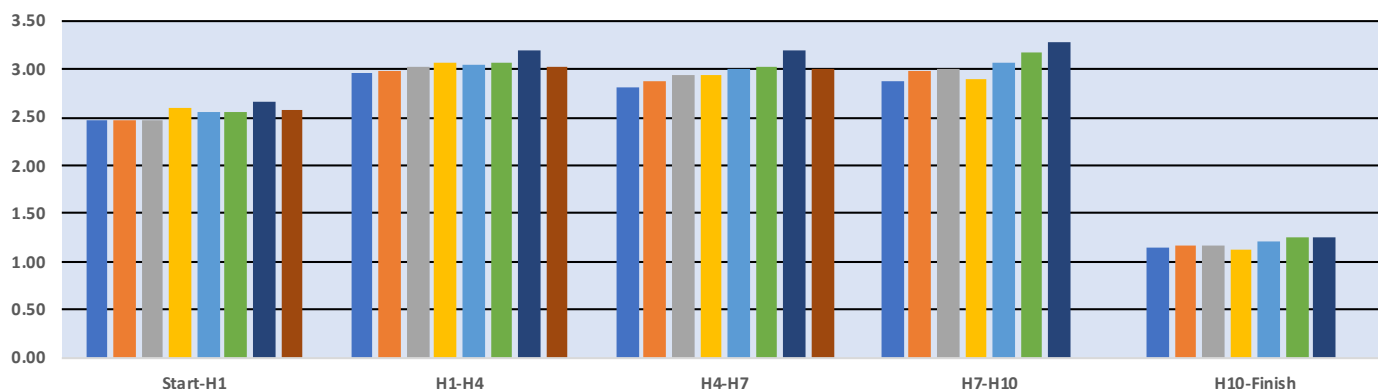
FINAL

			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)	reaction time	0.114													5 / 1	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	9.21	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	2.99	2.88	2.98
	reaction time	0.140														8.53	8.85	8.56
	interval			1.00	0.96	0.97	0.97	0.94	0.98	0.98	1.02	1.17						
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	3.03	2.93	3.00
	reaction time	0.138														8.42	8.70	8.50
	interval			1.03	1.02	0.98	0.96	0.97	1.00	1.00	1.00	1.00	1.17					
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	3.06	2.94	2.90
	reaction time	0.173														8.33	8.67	8.79
	interval			1.05	0.98	1.03	1.00	0.97	0.97	0.96	0.97	1.12						
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	3.04	3.00	3.06
	reaction time	0.148														8.39	8.50	8.33
	interval			1.04	1.03	0.97	1.00	1.00	1.00	1.03	1.03	1.21						
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	3.07	3.02	3.18
	reaction time	0.160														8.31	8.44	8.02
	interval			1.04	1.00	1.03	1.00	1.02	1.00	1.06	1.10	1.26						
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	3.20	3.20	3.29
	reaction time	0.140														7.97	7.97	7.75
	interval			1.07	1.10	1.03	1.07	1.06	1.07	1.10	1.12	1.25						
Kozák, Luca (HUN) (1996)	time	2.58	3.63	4.63	5.60	6.60	7.60	8.60	9.60					dnf	3 / --	3.02	3.00	
	reaction time	0.165												DQ		8.44	8.50	
	interval			1.05	1.00	0.97	1.00	1.00	1.00	1.00								
	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)

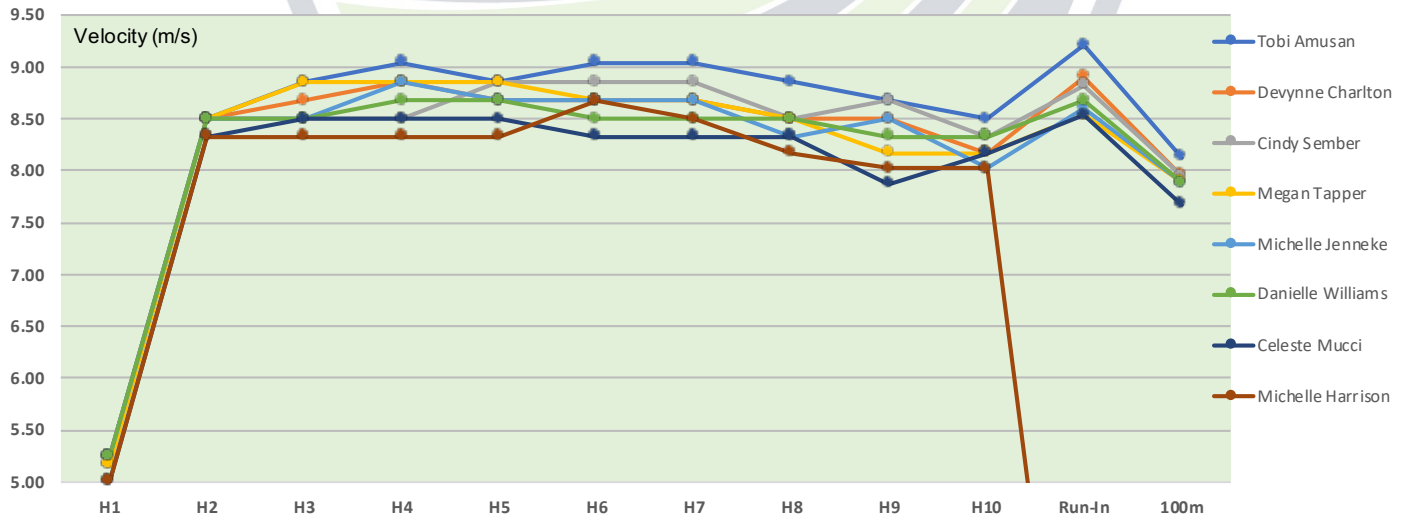
100m Hurdles

Date: 2022.08.07

Wind: -0.2 m/s

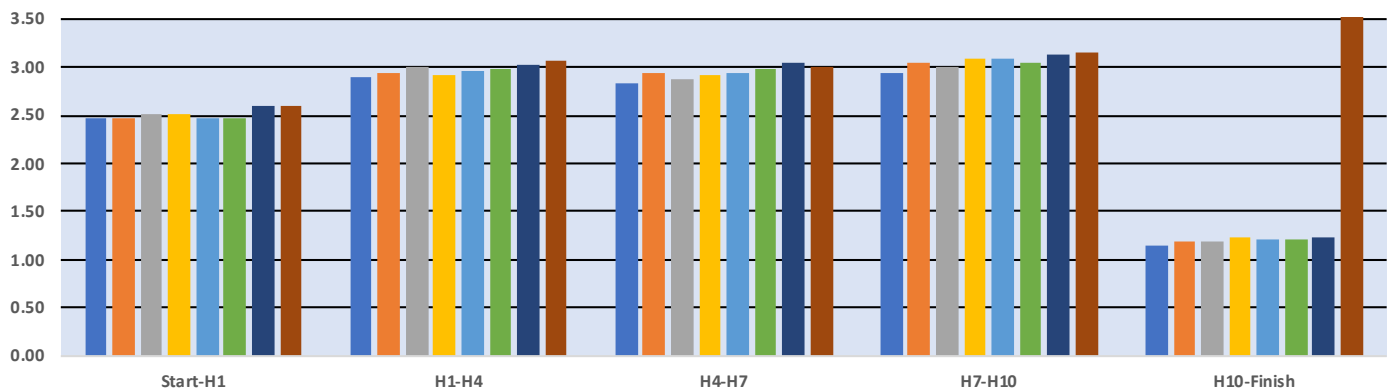
FINAL

			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											1.14			2.90	2.84	2.94
	interval velocity		5.24	8.50	8.85	9.04	8.85	9.04	9.04	8.85	8.67	8.50	9.21	8.13		8.79	8.98	8.67
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											1.18			2.94	2.94	3.04
	interval velocity		5.24	8.50	8.67	8.85	8.67	8.67	8.67	8.50	8.50	8.17	8.90	7.95		8.67	8.67	8.39
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											1.19			3.00	2.88	3.00
	interval velocity		5.16	8.50	8.50	8.50	8.85	8.85	8.85	8.50	8.67	8.33	8.82	7.94		8.50	8.85	8.50
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											1.23			2.92	2.92	3.08
	interval velocity		5.16	8.50	8.85	8.85	8.85	8.67	8.67	8.50	8.17	8.17	8.54	7.89		8.73	8.73	8.28
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											1.22			2.96	2.94	3.08
	interval velocity		5.24	8.50	8.50	8.85	8.67	8.67	8.67	8.33	8.50	8.02	8.61	7.89		8.61	8.67	8.28
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											1.21			2.98	2.98	3.04
	interval velocity		5.24	8.50	8.50	8.67	8.67	8.50	8.50	8.50	8.33	8.33	8.68	7.88		8.56	8.56	8.39
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											1.23			3.02	3.04	3.14
	interval velocity		5.00	8.33	8.50	8.50	8.50	8.33	8.33	8.33	7.87	8.17	8.54	7.67		8.44	8.39	8.12
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											13.31			3.06	3.00	3.16
	interval velocity		5.00	8.33	8.33	8.33	8.33	8.67	8.50	8.17	8.02	8.02	0.79	3.98		8.33	8.50	8.07



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=8d1wCqBKvY&t=7s>

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

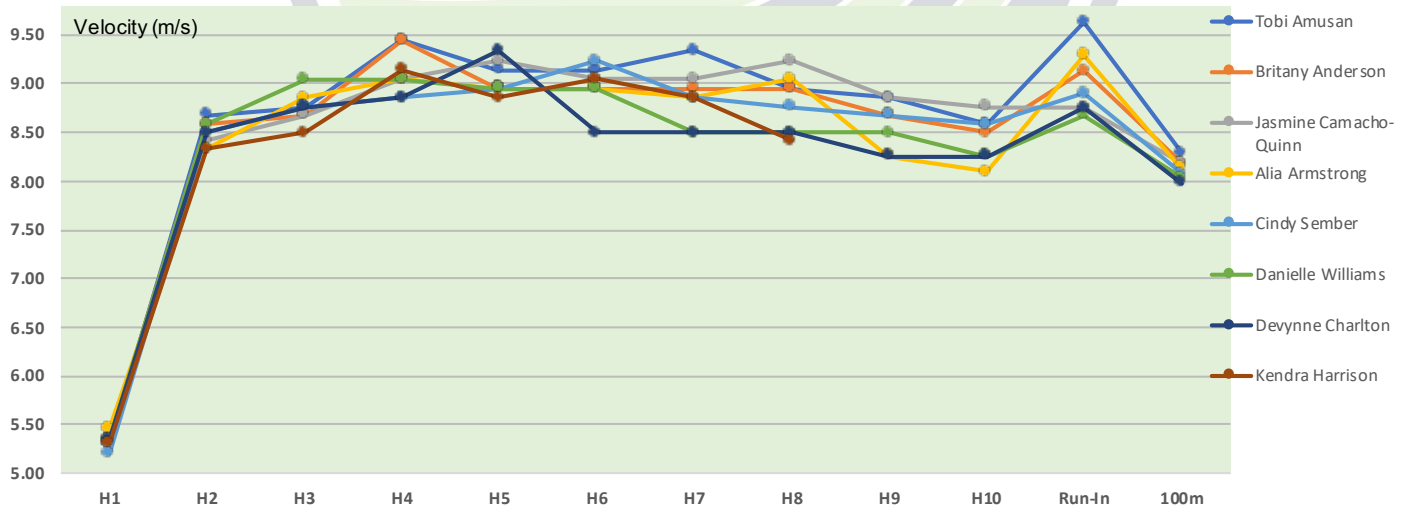
100m Hurdles

Date: 2022.07.24

Wind: 2.5 m/s

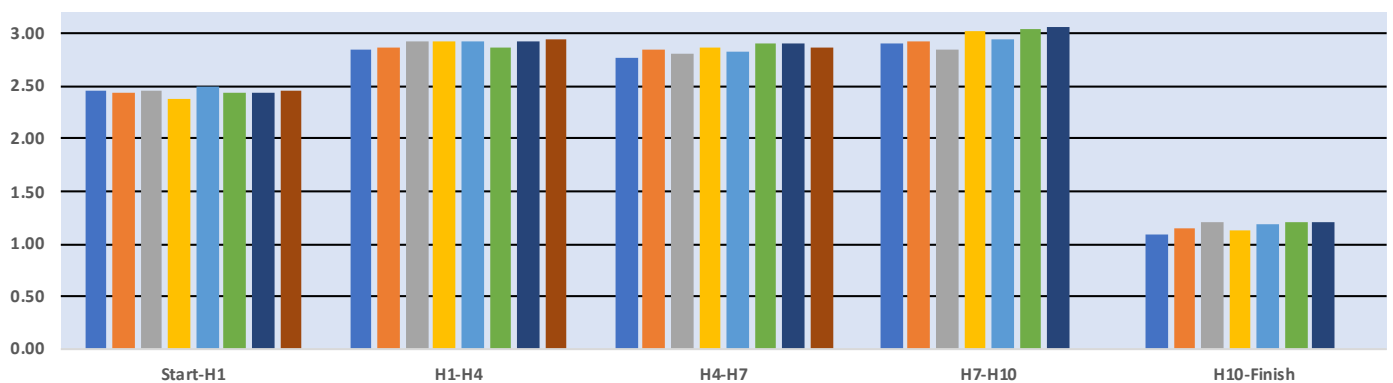
FINAL

			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) (1999)	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	1.03	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=ZNofS5lFdc&t=22s>

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

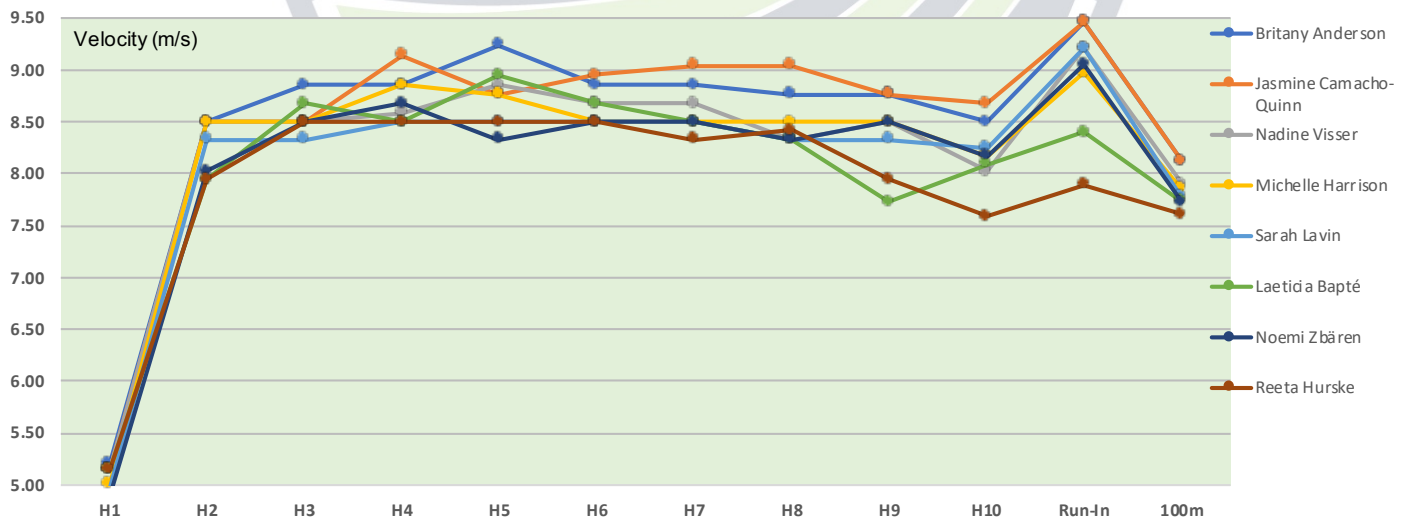
100m Hurdles

Date: 2022.07.24

Wind: 0.3 m/s

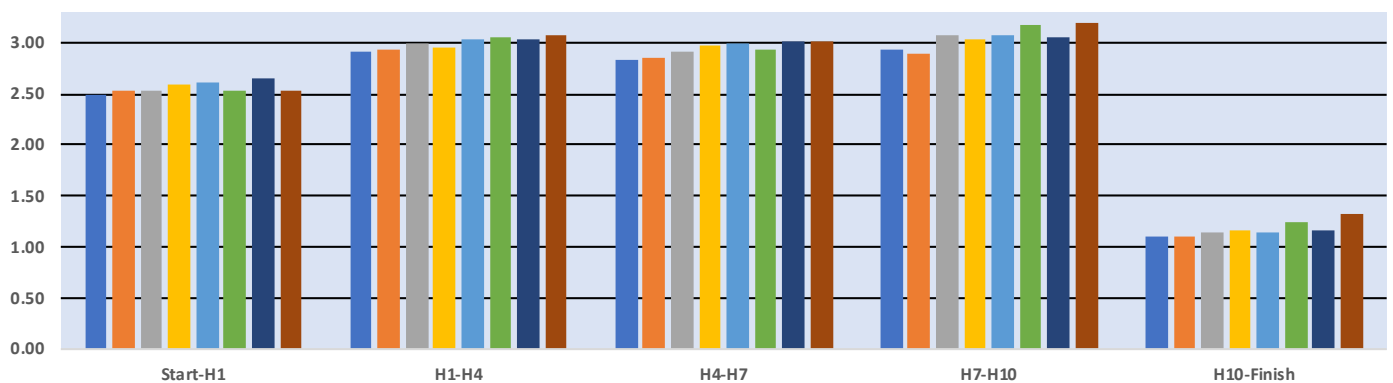
Semi-Final 3

			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	3 / 1			
	reaction time	0.143												NR PB		2.92	2.84	2.94
	interval velocity		5.20	8.50	8.85	8.85	9.24	8.85	8.85	8.76	8.76	8.50	9.46	8.12		8.73	8.98	8.67
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	5 / 2			
	reaction time	0.126														2.93	2.86	2.89
	interval velocity		5.14	8.50	8.50	9.14	8.76	8.95	9.04	9.04	8.76	8.67	9.46	8.12		8.70	8.92	8.82
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	6 / 3			
	reaction time	0.125														2.99	2.92	3.08
	interval velocity		5.14	8.50	8.50	8.59	8.85	8.67	8.67	8.33	8.50	8.02	9.21	7.90		8.53	8.73	8.28
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	4 / 4			
	reaction time	0.106												PB		2.96	2.97	3.04
	interval velocity		5.00	8.50	8.50	8.85	8.76	8.50	8.50	8.50	8.50	8.17	8.97	7.85		8.61	8.59	8.39
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	7 / 5			
	reaction time	0.117														3.04	3.00	3.07
	interval velocity		4.96	8.33	8.33	8.50	8.50	8.50	8.50	8.33	8.33	8.25	9.21	7.77		8.39	8.50	8.31
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	1 / 6			
	reaction time	0.157														3.05	2.93	3.17
	interval velocity		5.14	7.94	8.67	8.50	8.95	8.67	8.50	8.33	7.73	8.10	8.40	7.73		8.36	8.70	8.04
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	8 / 7			
	reaction time	0.164														3.04	3.02	3.06
	interval velocity		4.89	8.02	8.50	8.67	8.33	8.50	8.50	8.33	8.50	8.17	9.05	7.73		8.39	8.44	8.33
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	2 / 8			
	reaction time	0.113														3.07	3.02	3.20
	interval velocity		5.14	7.94	8.50	8.50	8.50	8.50	8.33	8.42	7.94	7.59	7.89	7.60		8.31	8.44	7.97



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=ZNootS5lFdc&t=22s>

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

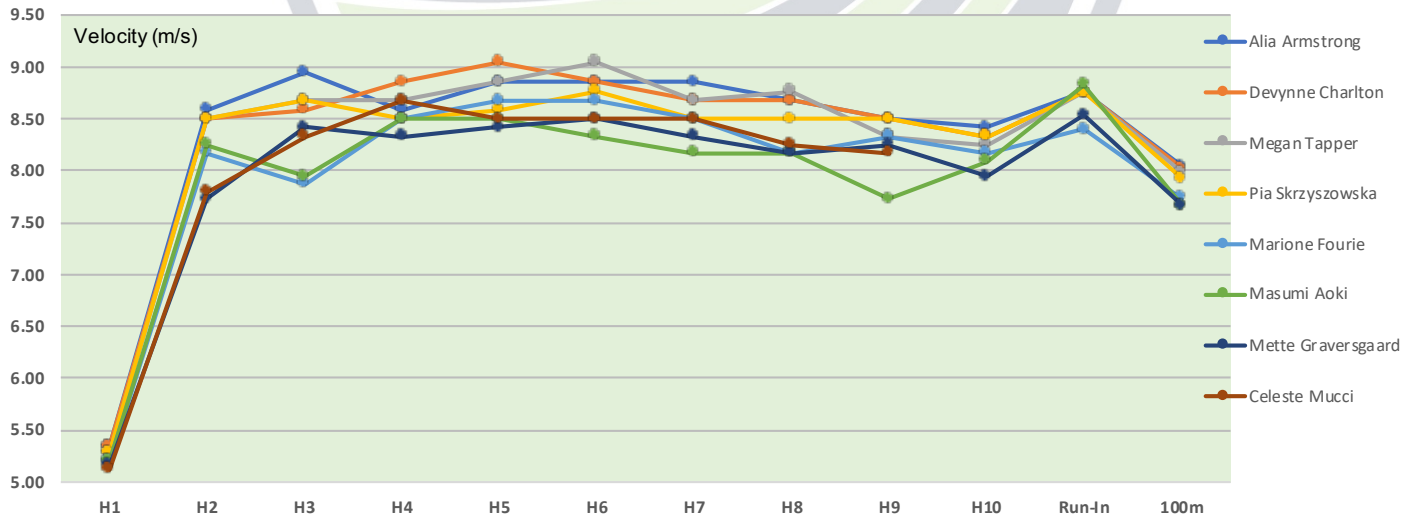
100m Hurdles

Date: 2022.07.24

Wind: -0.1 m/s

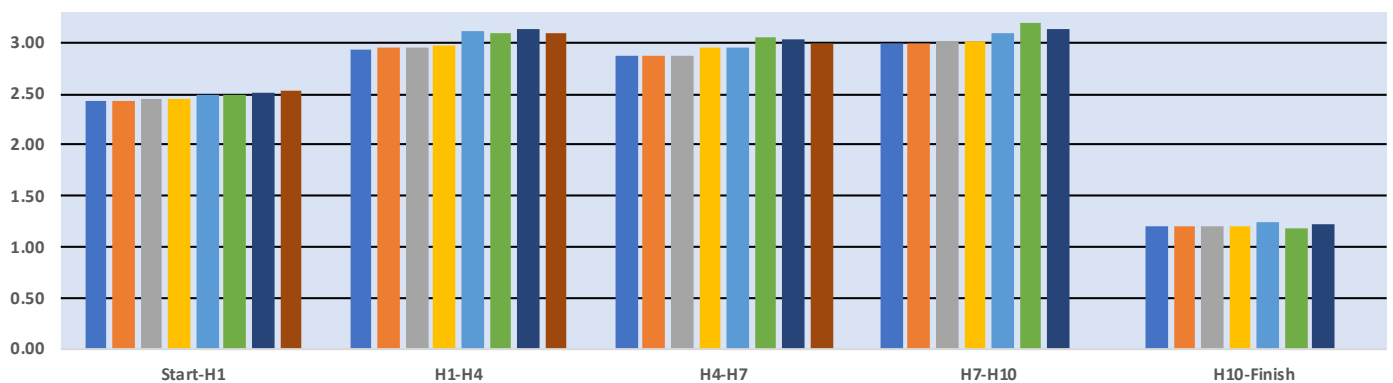
Semi-Final 2

			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
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
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
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
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
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
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
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	



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=ZNofS5lFdc&t=22s>

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

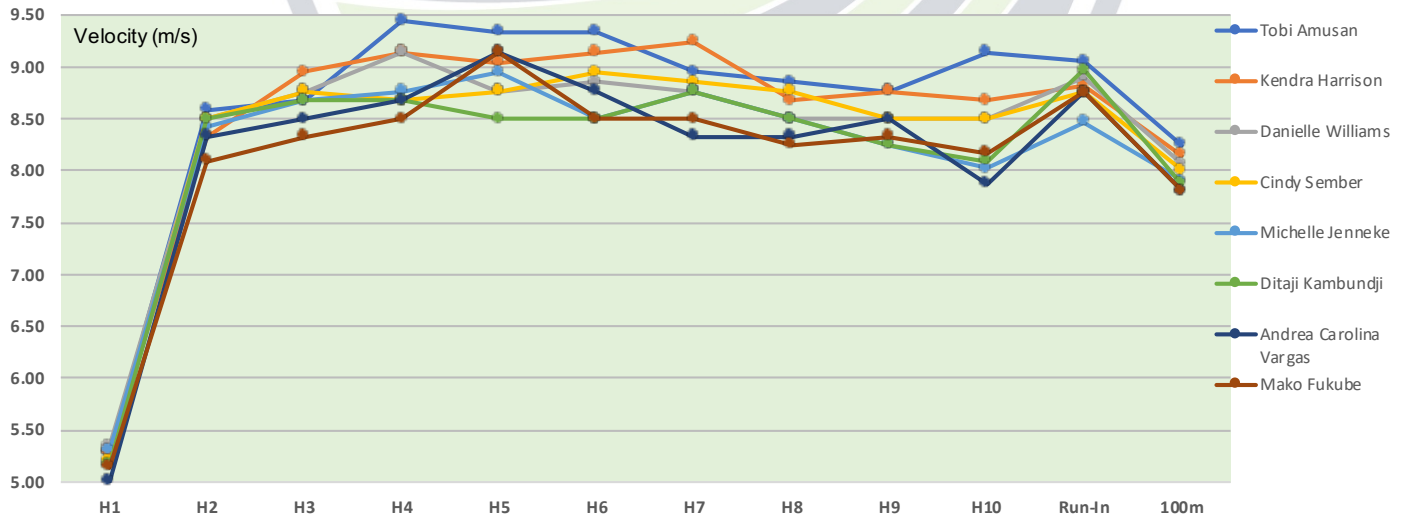
100m Hurdles

Date: 2022.07.24

Wind: 0.9 m/s

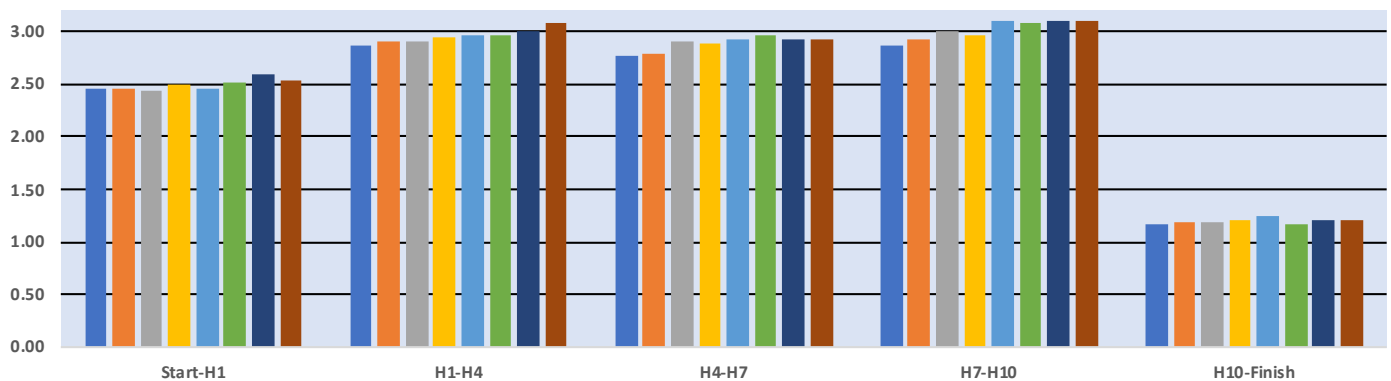
Semi-Final 1

			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											1.16	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				8.89	9.21	8.92
	velocity		5.28	8.59	8.67	9.44	9.34	9.34	8.95	8.85	8.76	9.14	9.05	8.25				
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											1.19			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				8.79	9.14	8.70
	velocity		5.28	8.33	8.95	9.14	9.04	9.14	9.24	8.67	8.76	8.67	8.82	8.15				
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											1.18			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				8.79	8.79	8.50
	velocity		5.35	8.50	8.76	9.14	8.76	8.85	8.76	8.50	8.50	8.50	8.90	8.06				
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											1.20	NR PB		2.95	2.88	2.97
	interval			1.00	0.97	0.98	0.97	0.95	0.96	0.97	1.00	1.00				8.64	8.85	8.59
	velocity		5.20	8.50	8.76	8.67	8.76	8.95	8.85	8.76	8.50	8.50	8.75	8.00				
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											1.24	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				8.61	8.73	8.25
	velocity		5.31	8.42	8.67	8.76	8.95	8.50	8.76	8.50	8.25	8.02	8.47	7.90				
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											1.17	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				8.61	8.59	8.28
	velocity		5.16	8.50	8.67	8.67	8.50	8.50	8.76	8.50	8.25	8.10	8.97	7.87				
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											1.20			3.00	2.92	3.10
	interval			1.02	1.00	0.98	0.93	0.97	1.02	1.02	1.00	1.08				8.50	8.73	8.23
	velocity		5.00	8.33	8.50	8.67	9.14	8.76	8.33	8.33	8.50	7.87	8.75	7.80				
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											1.20	NR PB		3.07	2.93	3.09
	interval			1.05	1.02	1.00	0.93	1.00	1.00	1.03	1.02	1.04				8.31	8.70	8.25
	velocity		5.14	8.10	8.33	8.50	9.14	8.50	8.50	8.25	8.33	8.17	8.75	7.80				



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=ZNootS5lFdc&t=22s>

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

100m Hurdles

Date: 2022.07.23

Wind: -0.4 m/s

Heat 6

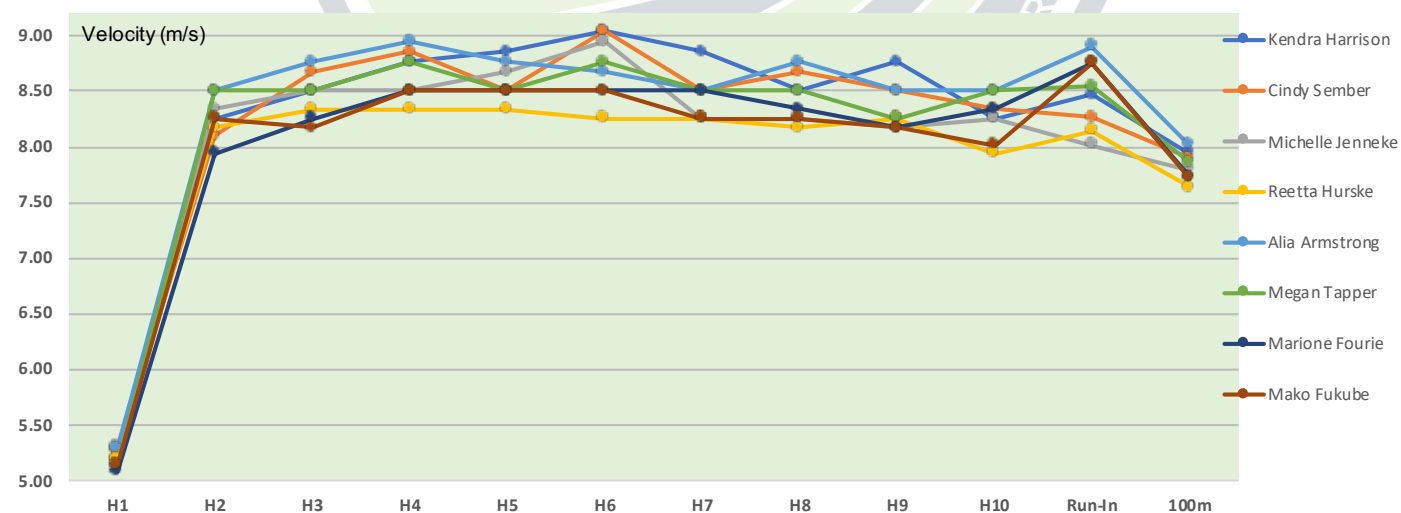
		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Harrison, Kendra (USA) (1992)	time	2.50	3.53	4.53	5.50	6.46	7.40	8.36	9.36	10.33	11.36		12.60	4 / 1			
	reaction time	0.182										1.24			3.00	2.86	3.00
	interval velocity		1.03	1.00	0.97	0.96	0.94	0.96	1.00	0.97	1.03	8.47	7.94		8.50	8.92	8.50
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										1.27			2.99	2.94	3.00
	interval velocity		1.05	0.98	0.96	1.00	0.94	1.00	0.98	1.00	1.02	8.27	7.89		8.53	8.67	8.50
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										1.31			3.02	2.96	3.10
	interval velocity		1.02	1.00	1.00	0.98	0.95	1.03	1.03	1.04	1.03	8.02	7.79		8.44	8.61	8.23
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										1.29			3.08	3.08	3.14
	interval velocity		1.04	1.02	1.02	1.02	1.03	1.03	1.04	1.03	1.07	8.14	7.64		8.28	8.28	8.12

Date: 2022.07.23

Wind: 0.5 m/s

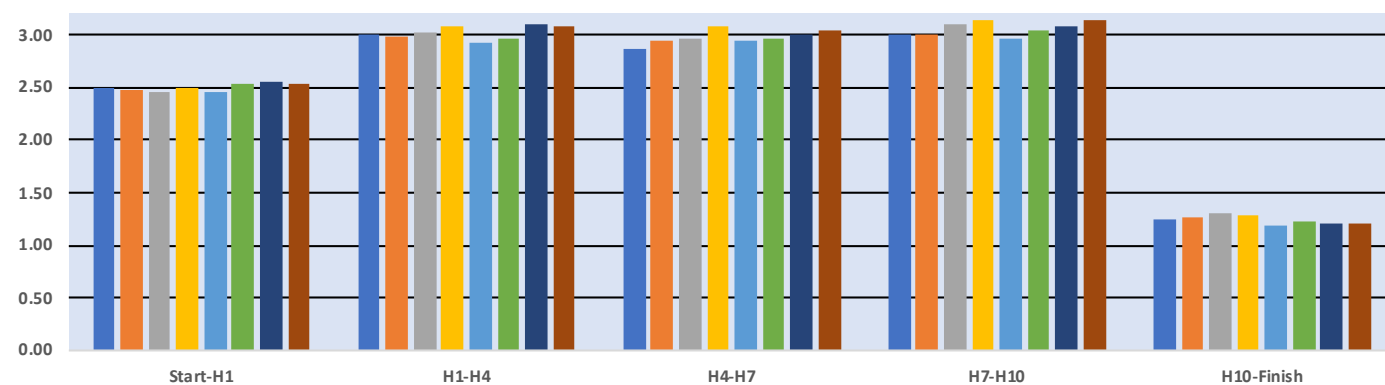
Heat 5

		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										1.18			2.92	2.95	2.97
	interval velocity		1.00	0.97	0.95	0.97	0.98	1.00	0.97	1.00	1.00	8.90	8.01		8.73	8.64	8.59
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										1.23			2.97	2.97	3.03
	interval velocity		1.00	1.00	0.97	1.00	0.97	1.00	1.00	1.03	1.00	8.54	7.86		8.59	8.59	8.42
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										1.20			3.10	3.00	3.08
	interval velocity		1.07	1.03	1.00	1.00	1.00	1.00	1.02	1.04	1.02	8.75	7.73		8.23	8.50	8.28
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										1.20			3.07	3.03	3.13
	interval velocity		1.03	1.04	1.00	1.00	1.00	1.03	1.03	1.04	1.06	8.75	7.72		8.31	8.42	8.15



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=ZyR47ms45Ag&t=19s>

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

100m Hurdles

Date: 2022.07.23

Wind: 0.7 m/s

Heat 4

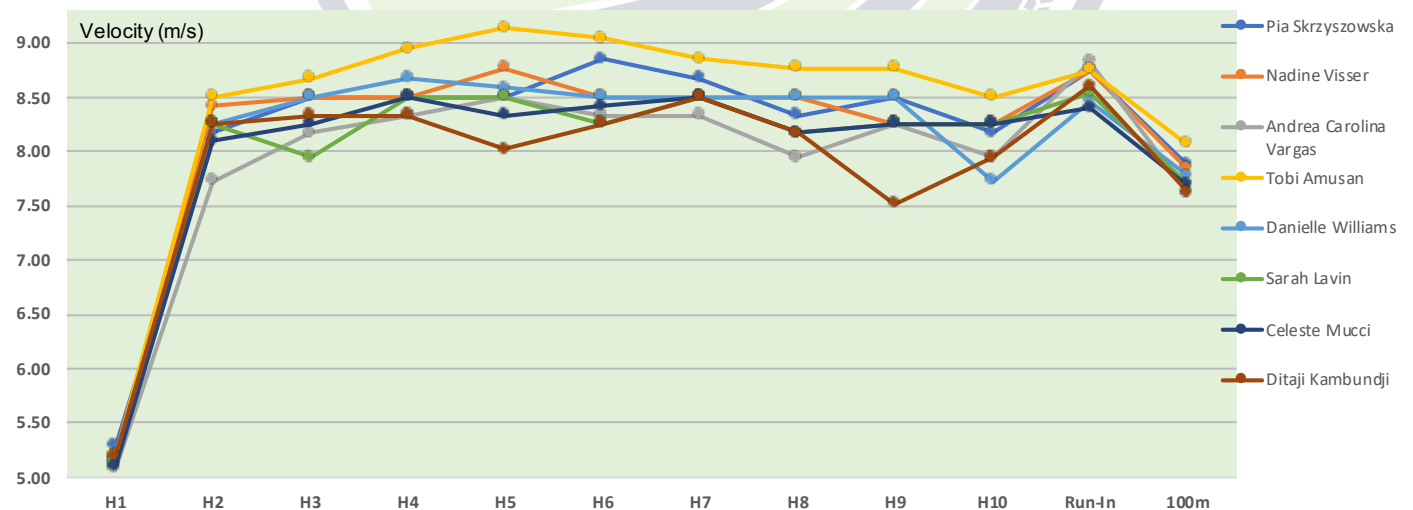
		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Skrzysowska, Pia (POL) (2001)	time	2.46	3.50	4.50	5.50	6.50	7.46	8.44	9.46	10.46	11.50		12.70	7 / 1			
	reaction time	0.131										1.20			3.04	2.94	3.06
	interval velocity		5.28	8.17	8.50	8.50	8.85	8.67	8.33	8.50	8.17	8.75	7.87		8.39	8.67	8.33
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										1.20			3.01	2.97	3.06
	interval velocity		5.16	8.42	8.50	8.50	8.76	8.50	8.50	8.25	8.25	8.75	7.84		8.47	8.59	8.33
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										1.19			3.16	3.04	3.17
	interval velocity		5.08	7.73	8.17	8.33	8.50	8.33	8.33	7.94	8.25	7.94	8.82		8.07	8.39	8.04

Date: 2022.07.23

Wind: 1.5 m/s

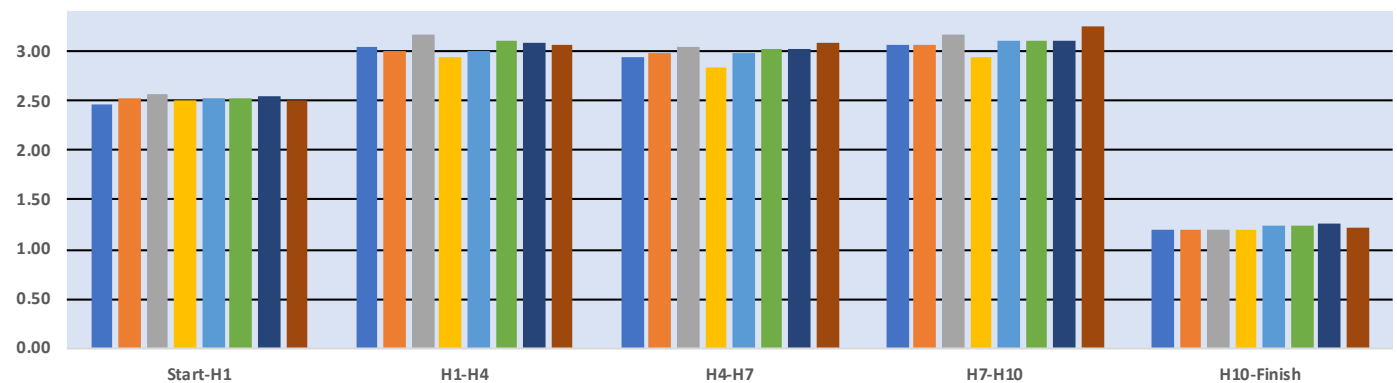
Heat 3

		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										1.20	AR PB		2.93	2.83	2.94
	interval velocity		5.20	8.50	8.67	8.95	9.14	9.04	8.85	8.76	8.76	8.50	8.06		8.70	9.01	8.67
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										1.24			3.01	2.99	3.10
	interval velocity		5.14	8.25	8.50	8.67	8.59	8.50	8.50	8.50	7.73	8.47	7.77		8.47	8.53	8.23
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										1.23			3.10	3.03	3.10
	interval velocity		5.14	8.25	7.94	8.50	8.50	8.25	8.50	8.17	8.25	8.54	7.70		8.23	8.42	8.23
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										1.25			3.08	3.03	3.10
	interval velocity		5.10	8.10	8.25	8.50	8.33	8.42	8.50	8.17	8.25	8.25	8.40		8.28	8.42	8.23
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										1.22			3.07	3.09	3.24
	interval velocity		5.20	8.25	8.33	8.33	8.02	8.25	8.50	8.17	7.52	7.94	8.61		8.31	8.25	7.87



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=ZyR47ms45Ag&t=19s>

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

100m Hurdles

Date: 2022.07.23

Wind: -0.4 m/s

Heat 2

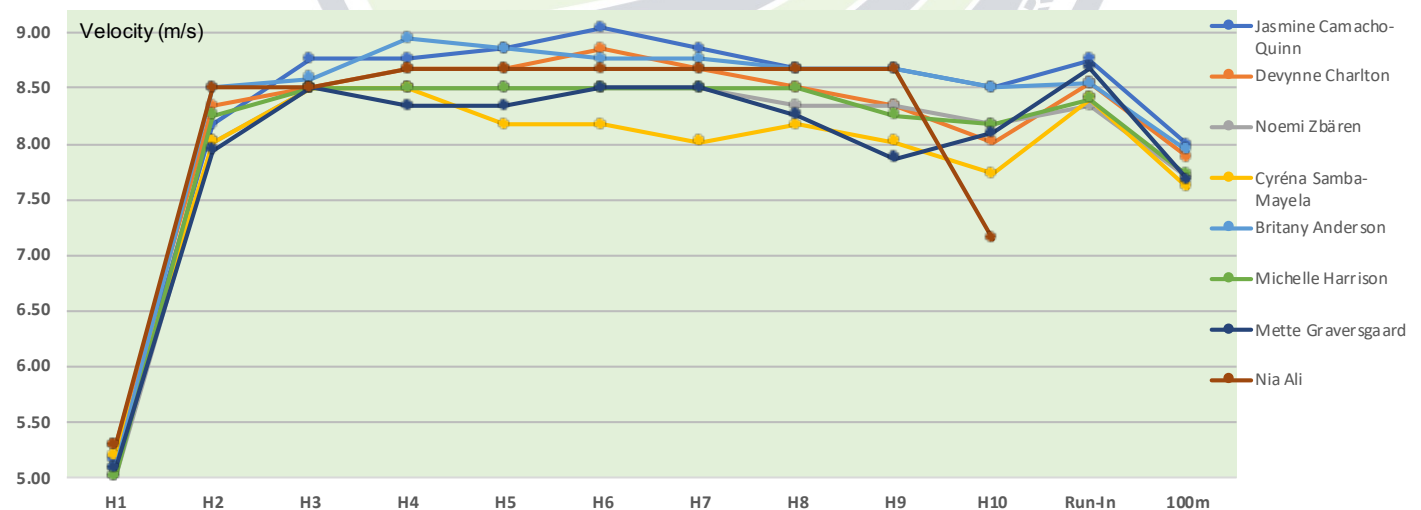
			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Camacho-Quinn, Jasmine (PUR) (199)	time		2.52	3.56	4.53	5.50	6.46	7.40	8.36	9.34	10.32	11.32		12.52	7 / 1			
	reaction time	0.185											1.20			2.98	2.86	2.96
	interval velocity		5.16	8.17	8.76	8.76	8.85	9.04	8.85	8.67	8.67	8.50	8.75	7.99		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											1.23			3.00	2.92	3.08
	interval velocity		5.28	8.33	8.50	8.67	8.67	8.85	8.67	8.50	8.33	8.02	8.54	7.88		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											1.26			3.06	3.00	3.08
	interval velocity		5.00	8.02	8.50	8.50	8.50	8.50	8.50	8.33	8.33	8.17	8.33	7.69		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											1.25			3.06	3.14	3.20
	interval velocity		5.20	8.02	8.50	8.50	8.17	8.17	8.02	8.17	8.02	7.73	8.40	7.60		8.33	8.12	7.97

Date: 2022.07.23

Wind: -0.3 m/s

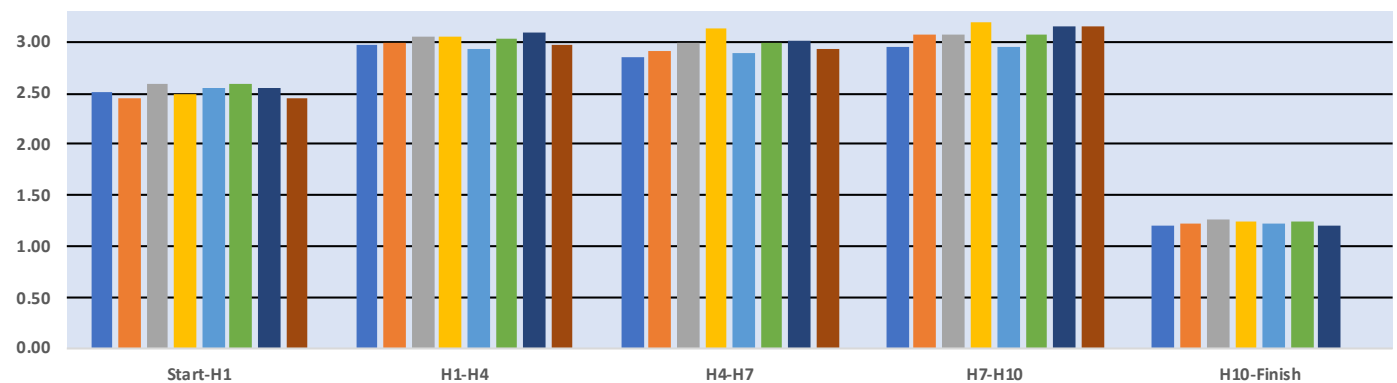
Heat 1

			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											1.23			2.94	2.90	2.96
	interval velocity		5.08	8.50	8.59	8.95	8.85	8.76	8.76	8.67	8.67	8.50	8.54	7.94		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											1.25			3.03	3.00	3.07
	interval velocity		5.00	8.25	8.50	8.50	8.50	8.50	8.50	8.50	8.25	8.17	8.40	7.72		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											1.21			3.09	3.02	3.16
	interval velocity		5.08	7.94	8.50	8.33	8.33	8.50	8.50	8.25	7.87	8.10	8.68	7.67		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											1.19			2.98	2.94	3.15
	interval velocity		5.28	8.50	8.50	8.67	8.67	8.67	8.67	8.67	8.67	7.14		DQ		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=ZyR4Zms45Ag&t=19s>

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

Heptathlon - 100m Hurdles

Date: 2022.07.17

Wind: 0.7 m/s

Heat 2

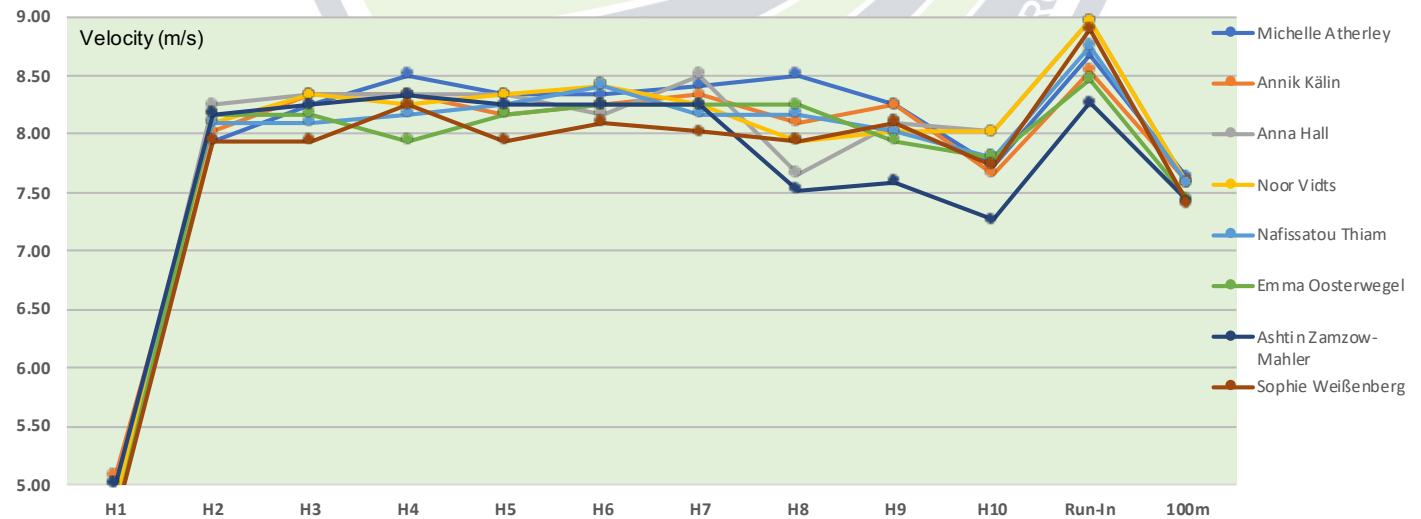
		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Atherley, Michelle (USA) (1995)	time	2.63	3.70	4.73	5.73	6.75	7.77	8.78	9.78	10.81	11.91		13.12	4 / 1			
	reaction time	0.111										1.21			3.10	3.05	3.13
	interval		1.07	1.03	1.00	1.02	1.02	1.01	1.00	1.03	1.10	8.68	7.62		8.23	8.36	8.15
Kälin, Annik (SUI) (2000)	time	2.56	3.62	4.64	5.66	6.70	7.73	8.75	9.80	10.83	11.94		13.17	1 / 2			
	reaction time	0.162										1.23	PB		3.10	3.09	3.19
	interval		1.06	1.02	1.02	1.04	1.03	1.02	1.05	1.03	1.11	8.54	7.59		8.23	8.25	7.99
Hall, Anna (USA) (2001)	time	2.68	3.71	4.73	5.75	6.77	7.81	8.81	9.92	10.97	12.03		13.20	8 / 3			
	reaction time	0.150										1.17			3.07	3.06	3.22
	interval		1.03	1.02	1.02	1.02	1.04	1.00	1.11	1.05	1.06	8.97	7.58		8.31	8.33	7.92
Vidts, Noor (BEL) (1996)	time	2.68	3.73	4.75	5.78	6.80	7.81	8.84	9.91	10.97	12.03		13.20	5 / 4			
	reaction time	0.143										1.17			3.10	3.06	3.19
	interval		1.05	1.02	1.03	1.02	1.01	1.03	1.07	1.06	1.06	8.97	7.58		8.23	8.33	7.99

Date: 2022.07.17

Wind: 1.4 m/s

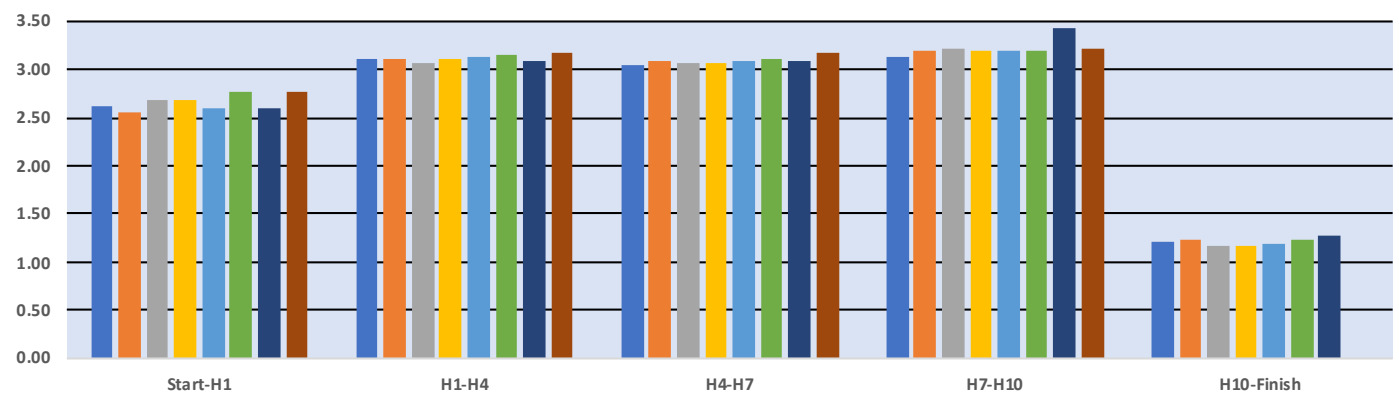
Heat 1

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
Thiam, Nafissatou (BEL) (1994)	time	2.60	3.65	4.70	5.74	6.77	7.78	8.82	9.86	10.92	12.01		13.21	4 / 1			
	reaction time	0.119										1.20	PB		3.14	3.08	3.19
	interval		7 steps	1.05	1.05	1.04	1.03	1.01	1.04	1.04	1.06	1.09	8.75		8.12	8.28	7.99
Oosterwegel, Emma (NED) (1998)	time	2.76	3.80	4.84	5.91	6.95	7.98	9.01	10.04	11.11	12.20		13.44	1 / 2			
	reaction time	0.172										1.24			3.15	3.10	3.19
	interval		1.04	1.04	1.07	1.04	1.03	1.03	1.03	1.07	1.09	8.47	7.44		8.10	8.23	7.99
Zamzow-Mahler, Ashtin (USA) (1996)	time	2.60	3.64	4.67	5.69	6.72	7.75	8.78	9.91	11.03	12.20		13.47	8 / 3			
	reaction time	0.141										1.27			3.09	3.09	3.42
	interval		1.04	1.03	1.02	1.03	1.03	1.03	1.13	1.12	1.17	8.27	7.42		8.25	8.25	7.46
Weißenberg, Sophie (GER) (1997)	time	2.76	3.83	4.90	5.93	7.00	8.05	9.11	10.18	11.23	12.33		13.51	6 / 4			
	reaction time	0.153										1.18	PB		3.17	3.18	3.22
	interval		7 steps	1.07	1.07	1.03	1.07	1.05	1.06	1.07	1.05	1.10	7.40		8.04	8.02	7.92



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=w3rXusDEstA&list=PLz-gfY4so9kYmaYY5iANqk0HOYKY-NbzB&index=32&pp=iAQB>

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

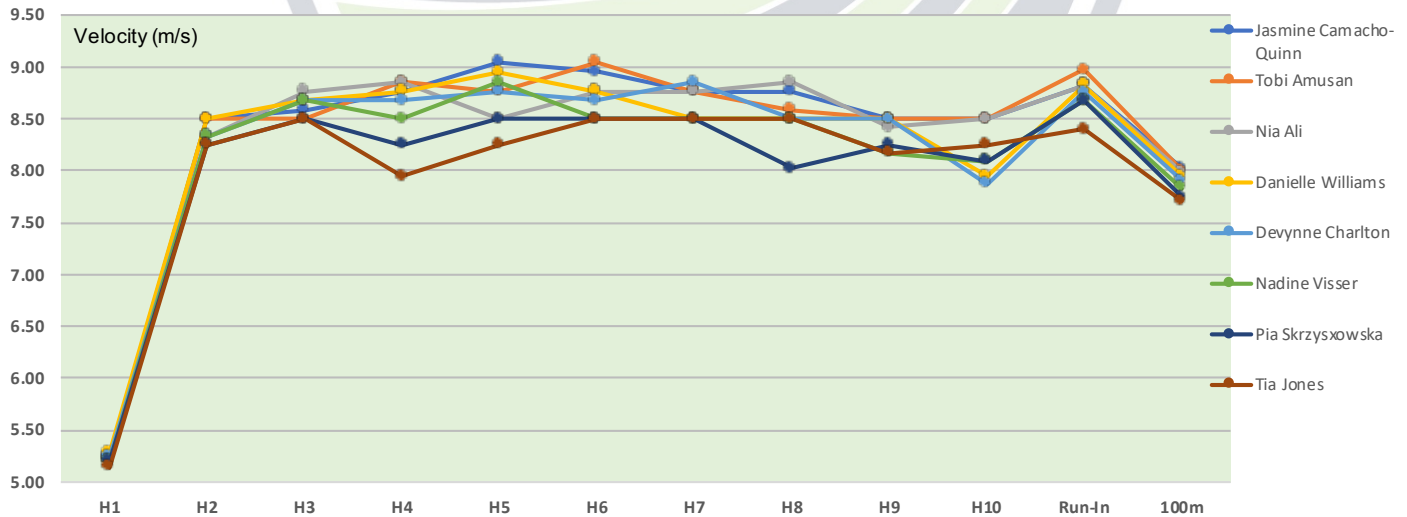
100m Hurdles

Date: 2022.06.30

Wind: -0.5 m/s

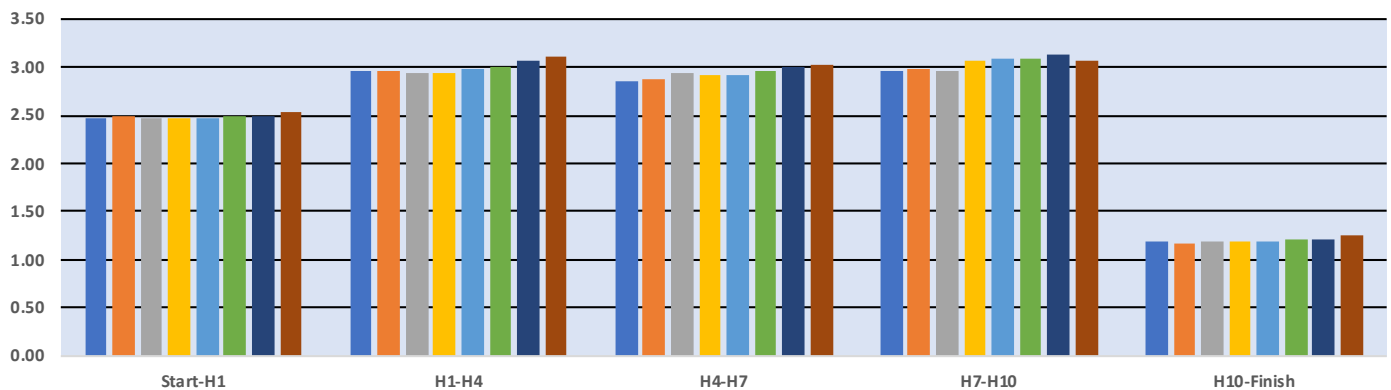
FINAL

			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	0.143	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			1.00	0.99	0.97	0.94	0.95	0.97	0.97	1.00	1.00	1.19			2.96	2.86	2.97
	interval															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	8.82	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		1.00	1.00	0.96	0.97	0.94	0.97	0.99	1.00	1.00	1.17			2.96	2.88	2.99
	interval															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	8.97	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		1.02	0.97	0.96	1.00	0.97	0.97	0.96	1.01	1.00	1.19			2.95	2.94	2.97
	interval															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	8.82	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		1.00	0.98	0.97	0.95	0.97	1.00	1.00	1.00	1.07	1.19			2.95	2.92	3.07
	interval															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	8.50	8.82	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		1.02	0.98	0.98	0.97	0.98	0.96	1.00	1.00	1.08	1.20			2.98	2.91	3.08
	interval															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	8.75	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		1.02	0.98	1.00	0.96	1.00	1.00	1.00	1.04	1.05	1.21			3.00	2.96	3.09
	interval															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	8.68	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		1.03	1.00	1.03	1.00	1.00	1.00	1.06	1.03	1.05	1.21			3.06	3.00	3.14
	interval															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	8.68	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		1.03	1.00	1.07	1.03	1.00	1.00	1.00	1.04	1.03	1.25			3.10	3.03	3.07
	interval															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	8.40	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=ga0M92wRqBM&t=19s>

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

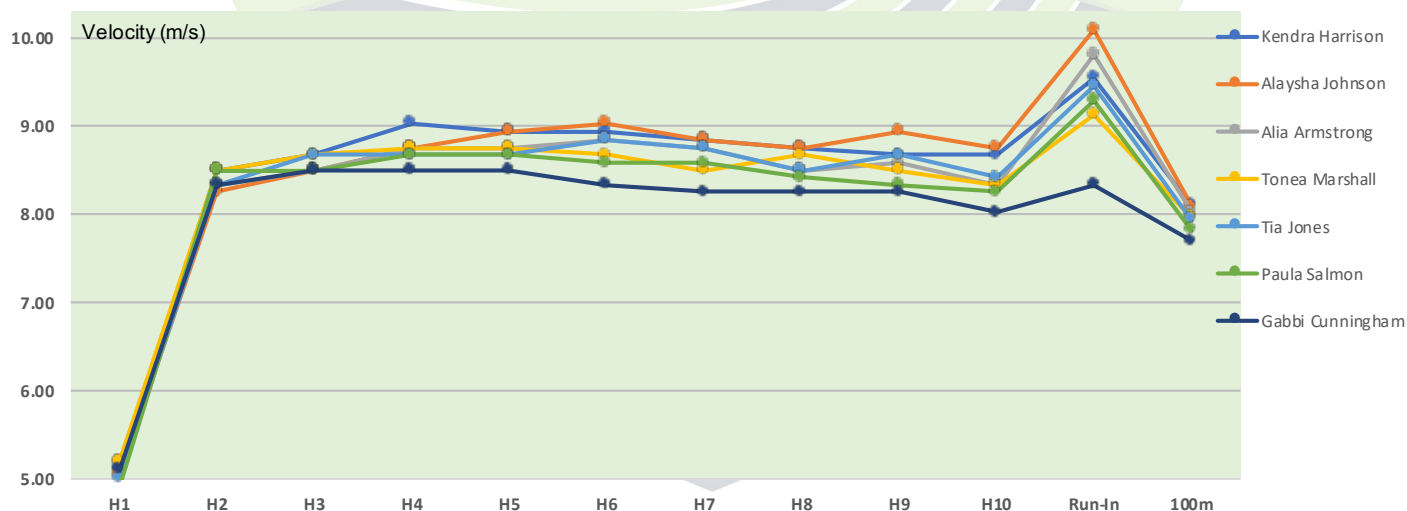
100m Hurdles

Date: 2022.06.25

Wind: -1.4 m/s

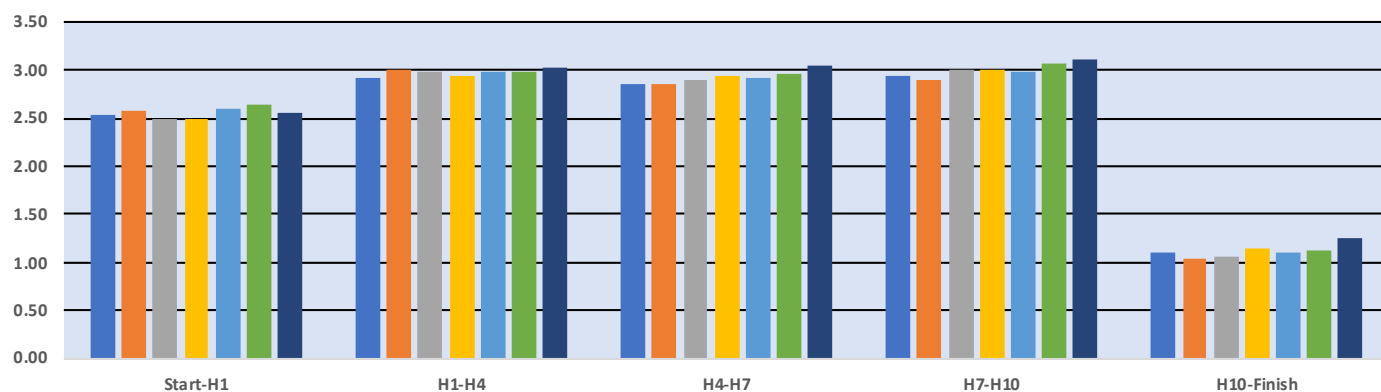
FINAL

		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
	time																
	interval																
	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=ga0M92wRoBM&t=19s>

2022 USATF National Championships (Eugene, OR)

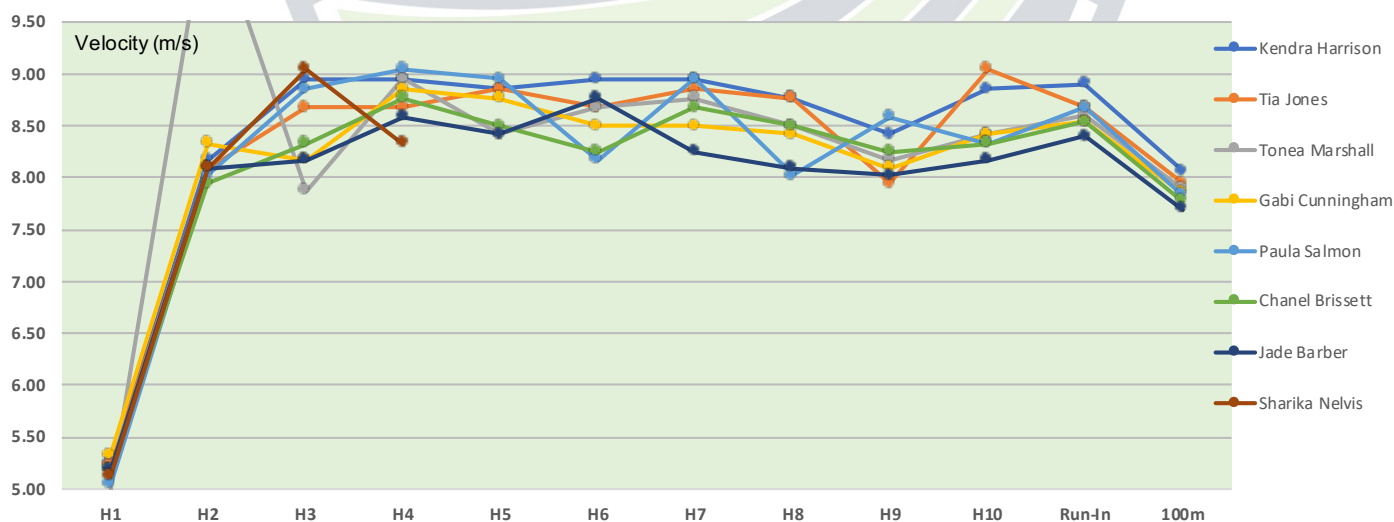
100m Hurdles

Date: 2022.06.25

Wind: -0.1 m/s

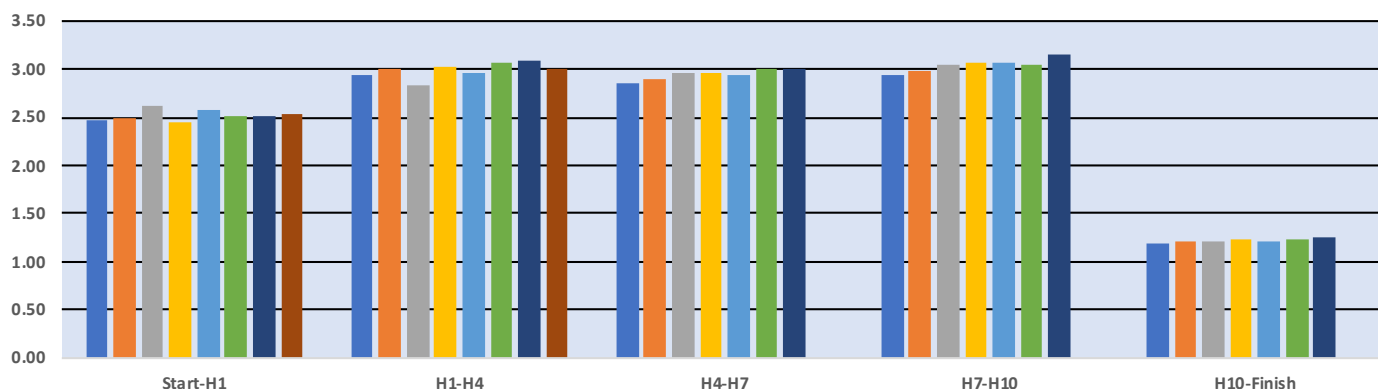
Semi-Final 2

		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	6 / 1			
	reaction time											1.18			2.94	2.86	2.94
	interval velocity	5.24	8.17	8.95	8.95	8.85	8.95	8.95	8.76	8.42	8.85	8.90	8.06		8.67	8.92	8.67
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	5 / 2			
	reaction time											1.21			3.01	2.90	2.98
	interval velocity	5.22	8.10	8.67	8.67	8.85	8.67	8.85	8.76	7.94	9.04	8.68	7.94		8.47	8.79	8.56
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	4 / 3			
	reaction time											1.22			2.83	2.96	3.05
	interval velocity	4.98	10.63	7.87	8.95	8.42	8.67	8.76	8.50	8.17	8.42	8.61	7.89		9.01	8.61	8.36
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	3 / 4			
	reaction time											1.23			3.02	2.97	3.07
	interval velocity	5.33	8.33	8.17	8.85	8.76	8.50	8.50	1.01	1.05	1.01	8.42	7.86		8.44	8.59	8.31
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	7 / 5			
	reaction time											1.21			2.96	2.94	3.07
	interval velocity	5.04	8.02	8.85	9.04	8.95	8.17	8.95	8.02	8.59	8.33	8.68	7.84		8.61	8.67	8.31
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	8 / 6			
	reaction time											1.23			3.06	3.01	3.05
	interval velocity	5.18	7.94	8.33	8.76	1.00	1.03	0.98	1.00	1.03	1.02	8.54	7.78		8.33	8.47	8.36
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	2 / 7			
	reaction time											1.25			3.08	3.01	3.15
	interval velocity	5.18	8.10	8.17	8.59	8.42	8.76	8.25	8.10	8.02	8.17	8.40	7.69		8.28	8.47	8.10
Nelvis, Sharika (USA) (1990)	time	2.54	3.59	4.53	5.55								dnf	9 / --			
	reaction time														3.01		
	interval velocity	5.12	8.10	9.04	8.33										8.47		



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)

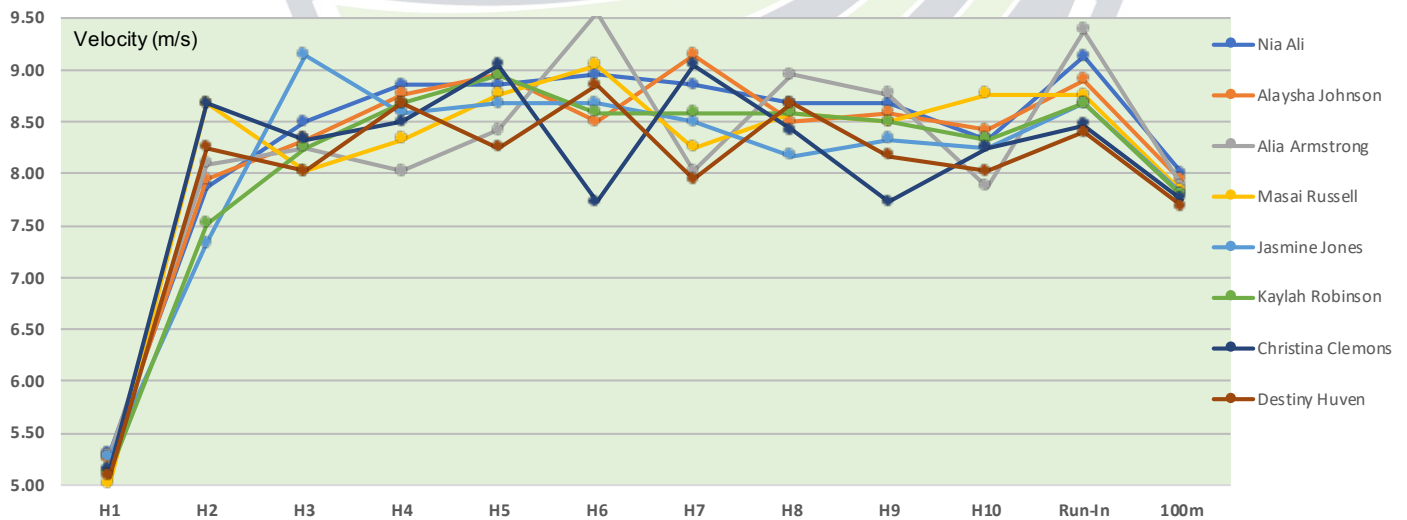
100m Hurdles

Date: 2022.06.25

Wind: 0.8 m/s

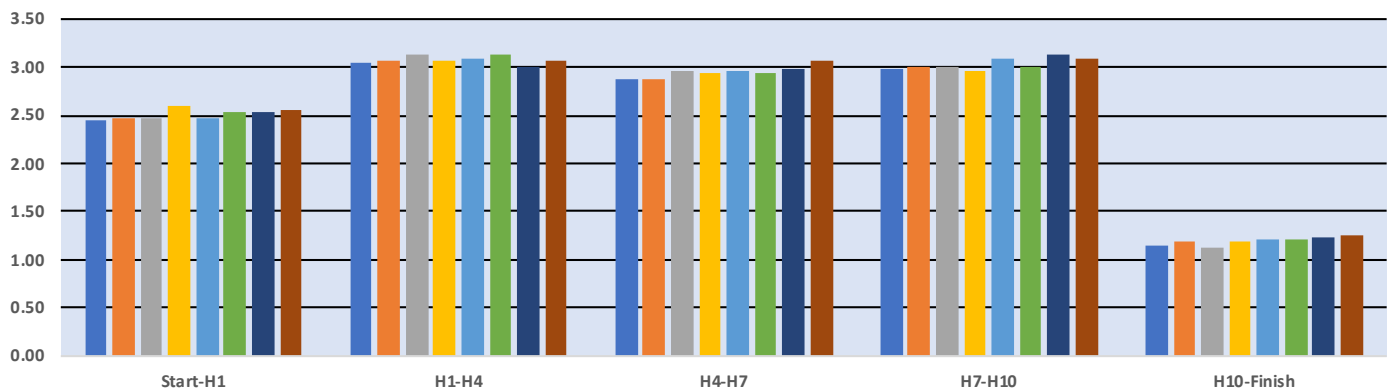
Semi-Final 1

		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	6 / 1			
	reaction time		1.08	1.00	0.96	0.96	0.95	0.96	0.98	0.98	1.02	1.15			3.04	2.87	2.98
	velocity	5.31	7.87	8.50	8.85	8.85	8.95	8.85	8.67	8.67	8.33	9.13	8.01		8.39	8.89	8.56
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	4 / 2			
	reaction time		1.07	1.02	0.97	0.95	1.00	0.93	1.00	0.99	1.01	1.18			3.06	2.88	3.00
	velocity	5.24	7.94	8.33	8.76	8.95	8.50	9.14	8.50	8.59	8.42	8.90	7.94		8.33	8.85	8.50
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	7 / 3			
	reaction time		1.05	1.03	1.06	1.01	0.89	1.06	0.95	0.97	1.08	1.12			3.14	2.96	3.00
	velocity	5.28	8.10	8.25	8.02	8.42	9.55	8.02	8.95	8.76	7.87	9.38	7.89		8.12	8.61	8.50
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	5 / 4			
	reaction time		0.98	1.06	1.02	0.97	0.94	1.03	0.99	1.00	0.97	1.20			3.06	2.94	2.96
	velocity	5.00	8.67	8.02	8.33	8.76	9.04	8.25	8.59	8.50	8.76	8.75	7.84		8.33	8.67	8.61
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	8 / 5			
	reaction time		1.16	0.93	0.99	0.98	0.98	1.00	1.04	1.02	1.03	1.21			3.08	2.96	3.09
	velocity	5.26	7.33	9.14	8.59	8.67	8.67	8.50	8.17	8.33	8.25	8.68	7.81		8.28	8.61	8.25
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	9 / 6			
	reaction time		1.13	1.03	0.98	0.95	0.99	0.99	0.99	1.00	1.02	1.21			3.14	2.93	3.01
	velocity	5.12	7.52	8.25	8.67	8.95	8.59	8.59	8.59	8.50	8.33	8.68	7.79		8.12	8.70	8.47
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	3 / 7			
	reaction time		0.98	1.02	1.00	0.94	1.10	0.94	1.01	1.10	1.03	1.24			3.00	2.98	3.14
	velocity	5.14	8.67	8.33	8.50	9.04	7.73	9.04	8.42	7.73	8.25	8.47	7.76		8.50	8.56	8.12
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	2 / 8			
	reaction time		1.03	1.06	0.98	1.03	0.96	1.07	0.98	1.04	1.06	1.25			3.07	3.06	3.08
	velocity	5.08	8.25	8.02	8.67	8.25	8.85	7.94	8.67	8.17	8.02	8.40	7.68		8.31	8.33	8.28



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)

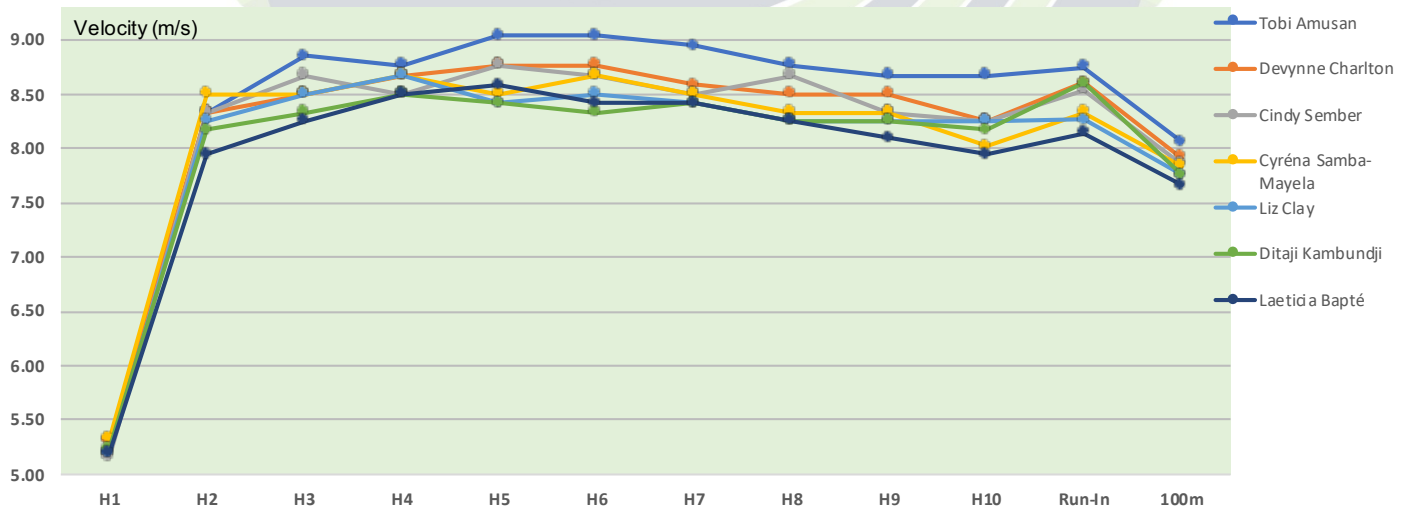
100m Hurdles

Date: 2022.06.18

Wind: -0.4 m/s

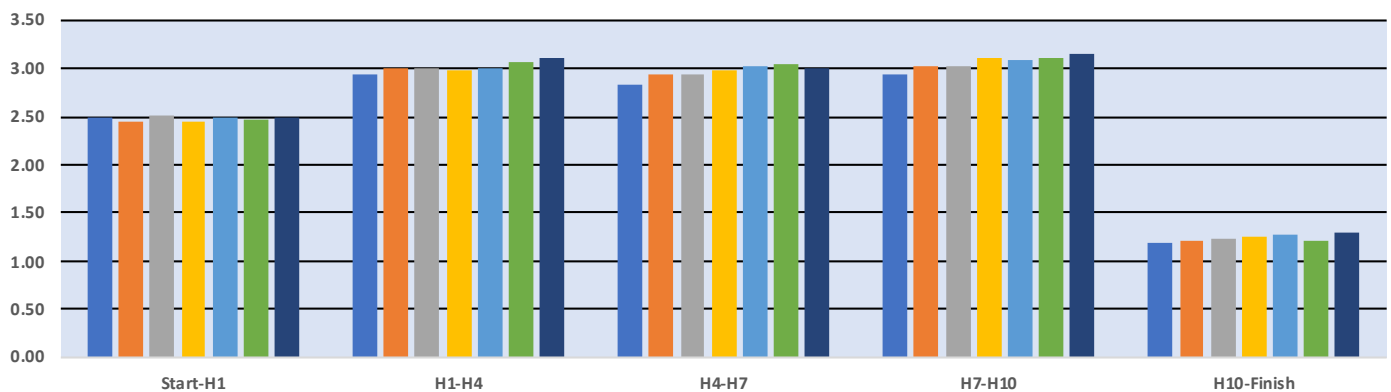
FINAL

			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	5 / 1	2.95	2.83	2.93
	reaction time	0.159		1.02	0.96	0.97	0.94	0.94	0.95	0.97	0.98	0.98	1.20	NR PB				
	interval velocity		5.20	8.33	8.85	8.76	9.04	9.04	8.95	8.76	8.67	8.67	8.75	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	3.00	2.93	3.03
	reaction time	0.153		1.02	1.00	0.98	0.97	0.97	0.99	1.00	1.00	1.03	1.22					
	interval velocity		5.31	8.33	8.50	8.67	8.76	8.76	8.59	8.50	8.50	8.25	8.61	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	3.00	2.95	3.03
	reaction time	0.161		1.02	0.98	1.00	0.97	0.98	1.00	0.98	1.02	1.03	1.23					
	interval velocity		5.16	8.33	8.67	8.50	8.76	8.67	8.50	8.67	8.33	8.25	8.54	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	2.98	2.98	3.10
	reaction time	0.123		1.00	1.00	0.98	1.00	0.98	1.00	1.02	1.02	1.06	1.26					
	interval velocity		5.33	8.50	8.50	8.67	8.50	8.67	8.50	8.33	8.33	8.02	8.33	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	3.01	3.02	3.09
	reaction time	0.149		1.03	1.00	0.98	1.01	1.00	1.01	1.03	1.03	1.03	1.27					
	interval velocity		5.20	8.25	8.50	8.67	8.42	8.50	8.42	8.25	8.25	8.25	8.27	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	3.06	3.04	3.10
	reaction time	0.145		1.04	1.02	1.00	1.01	1.02	1.01	1.03	1.03	1.04	1.22					
	interval velocity		5.24	8.17	8.33	8.50	8.42	8.33	8.42	8.25	8.25	8.17	8.61	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	3.10	3.01	3.15
	reaction time	0.157		7 steps	1.07	1.03	1.00	0.99	1.01	1.01	1.03	1.05	1.07	1.29				
	interval velocity		5.20	7.94	8.25	8.50	8.59	8.42	8.42	8.25	8.10	7.94	8.14	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=0Onvw33Czys>

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

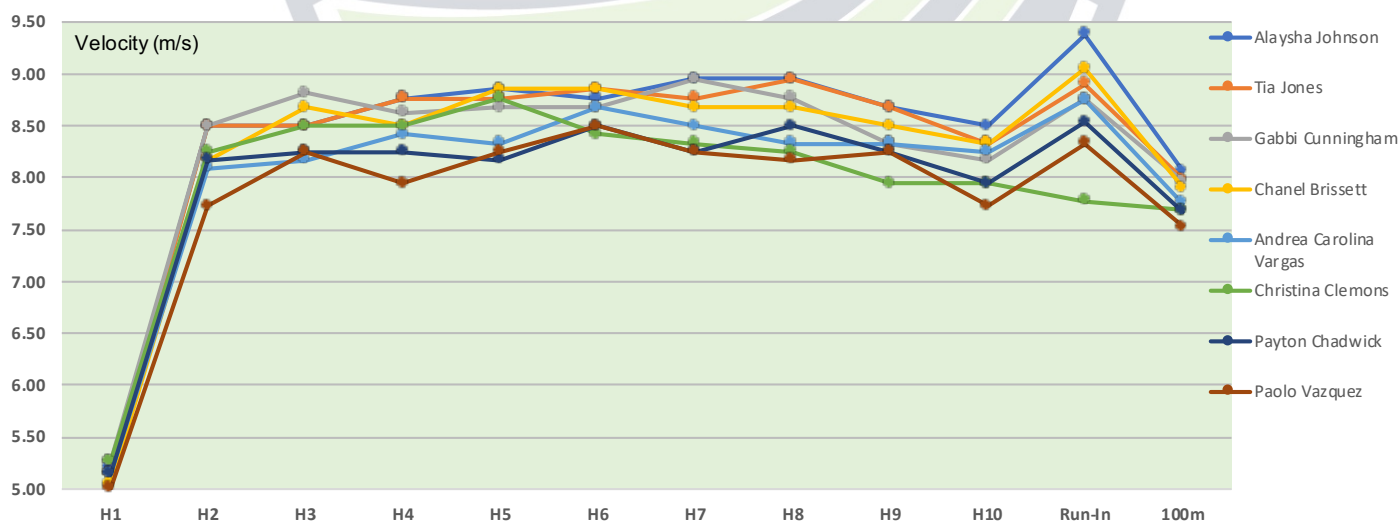
100m Hurdles

Date: 2022.06.12

Wind: 2.0 m/s

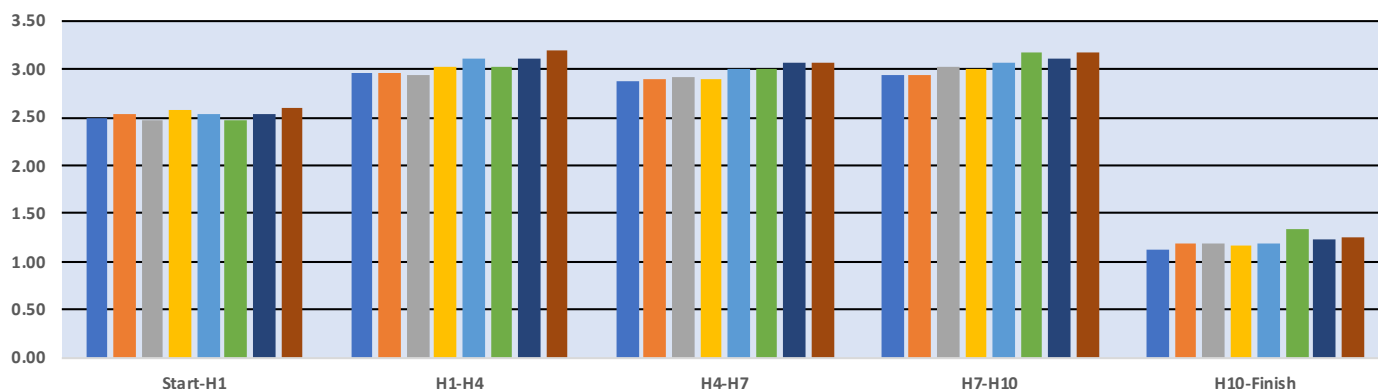
FINAL

			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	4 / 1			
	reaction time	0.153											1.12	PB		2.97	2.88	2.93
	interval velocity		5.20	8.50	8.50	8.76	8.85	8.76	8.95	8.95	8.67	8.50	9.37	8.06		8.59	8.85	8.70
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	6 / 2			
	reaction time	0.161											1.18			2.97	2.90	2.95
	interval velocity		5.14	8.50	8.50	8.76	8.76	8.85	8.76	8.95	8.67	8.33	8.90	7.98		8.59	8.79	8.64
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	5 / 3			
	reaction time	0.160											1.20			2.95	2.91	3.03
	interval velocity		5.26	8.50	8.82	8.62	8.67	8.67	8.95	8.76	8.33	8.17	8.75	7.96		8.64	8.76	8.42
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	8 / 4			
	reaction time	0.160											1.16			3.02	2.90	3.00
	interval velocity		5.04	8.17	8.67	8.50	8.85	8.85	8.67	8.67	8.50	8.33	9.05	7.90		8.44	8.79	8.50
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	7 / 5			
	reaction time	0.124											1.20			3.10	3.00	3.07
	interval velocity		5.14	8.10	8.17	8.42	8.33	8.67	8.50	8.33	8.33	8.25	8.75	7.75		8.23	8.50	8.31
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	3 / 6			
	reaction time	0.127											1.35			3.03	3.00	3.17
	interval velocity		5.26	8.25	8.50	8.50	8.76	8.42	8.33	8.25	7.94	7.94	7.78	7.68		8.42	8.50	8.04
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	2 / 7			
	reaction time	0.159											1.23			3.10	3.07	3.10
	interval velocity		5.14	8.17	8.25	8.25	8.17	8.50	8.25	8.50	8.25	7.94	8.54	7.67		8.23	8.31	8.23
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	1 / 8			
	reaction time	0.179											1.26			3.20	3.06	3.17
	interval velocity		5.00	7.73	8.25	7.94	8.25	8.50	8.25	8.17	8.25	7.73	8.33	7.52		7.97	8.33	8.04



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)

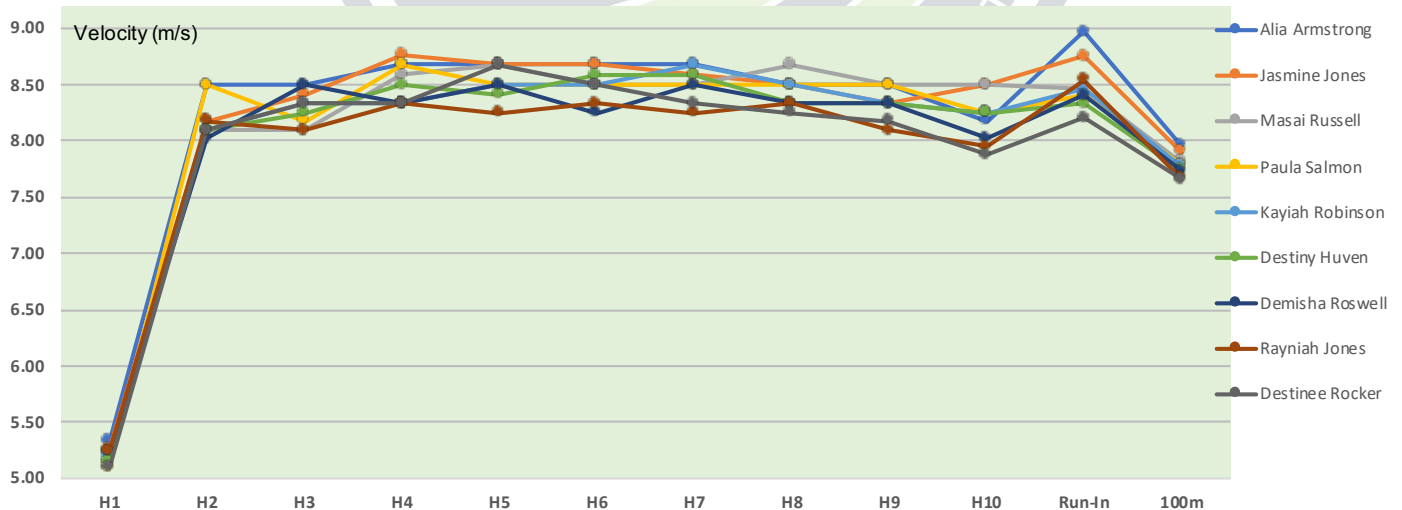
100m Hurdles

Date: 2022.06.11

Wind: -0.2 m/s

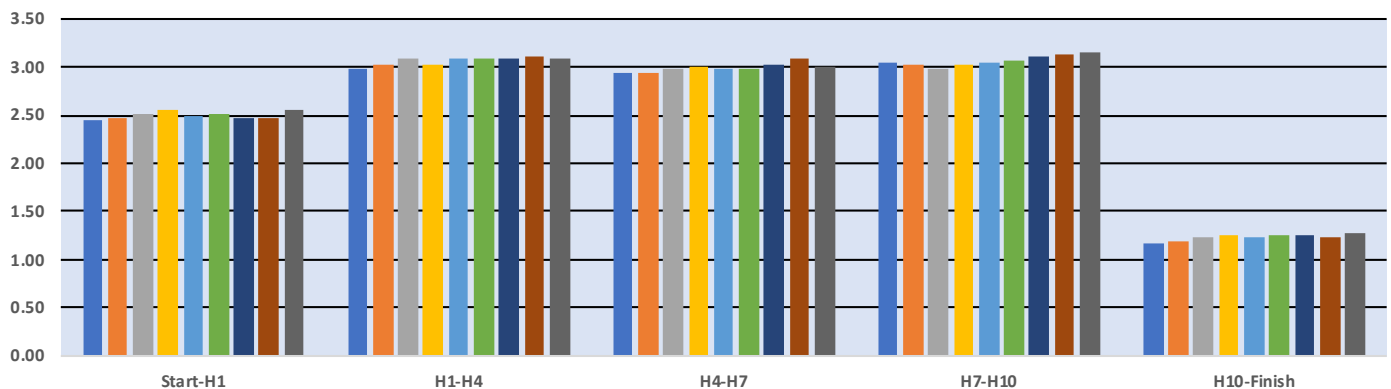
FINAL

		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
	velocity	5.33	8.50	8.50	8.67	8.67	8.67	8.67	8.50	8.50	8.17	8.97	7.96				
	velocity	5.26	8.17	8.42	8.76	8.67	8.67	8.59	8.50	8.33	8.50	8.75	7.90				
	velocity	5.16	8.10	8.10	8.59	8.67	8.50	8.50	8.67	8.50	8.50	8.47	7.81				
	velocity	5.10	8.50	8.17	8.67	8.50	8.50	8.50	8.50	8.50	8.25	8.40	7.78				
	velocity	5.20	8.10	8.33	8.33	8.50	8.50	8.67	8.50	8.33	8.25	8.47	7.78				
	velocity	5.16	8.10	8.25	8.50	8.42	8.59	8.59	8.33	8.33	8.25	8.33	7.74				
	velocity	5.24	8.02	8.50	8.33	8.50	8.25	8.50	8.33	8.33	8.02	8.40	7.73				
	velocity	5.24	8.17	8.10	8.33	8.25	8.33	8.25	8.33	8.10	7.94	8.54	7.67				
	velocity	5.10	8.10	8.33	8.33	8.67	8.50	8.33	8.25	8.17	7.87	8.20	7.65				



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=WxulnYqrN4&t=2s>

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

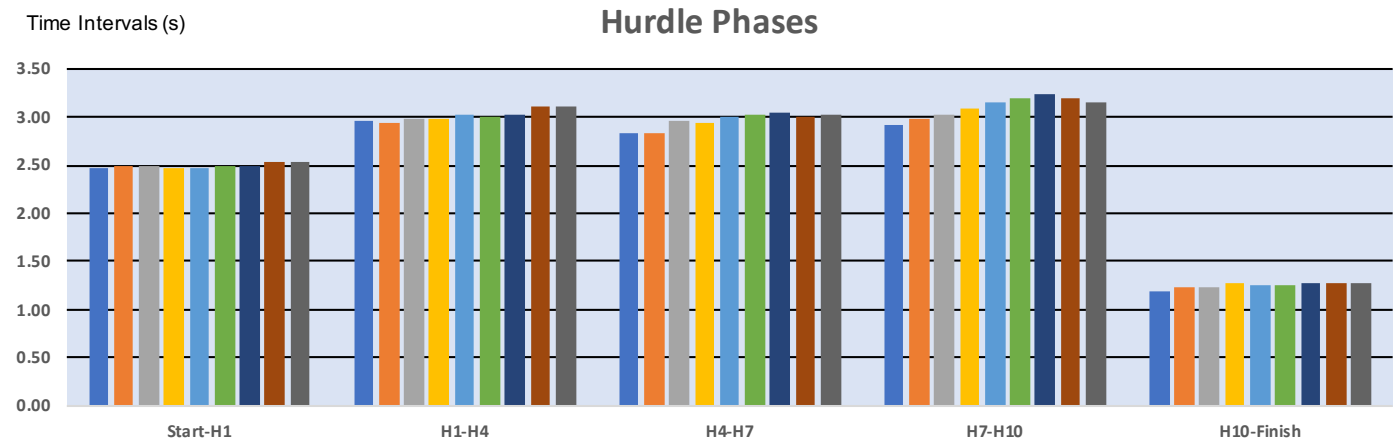
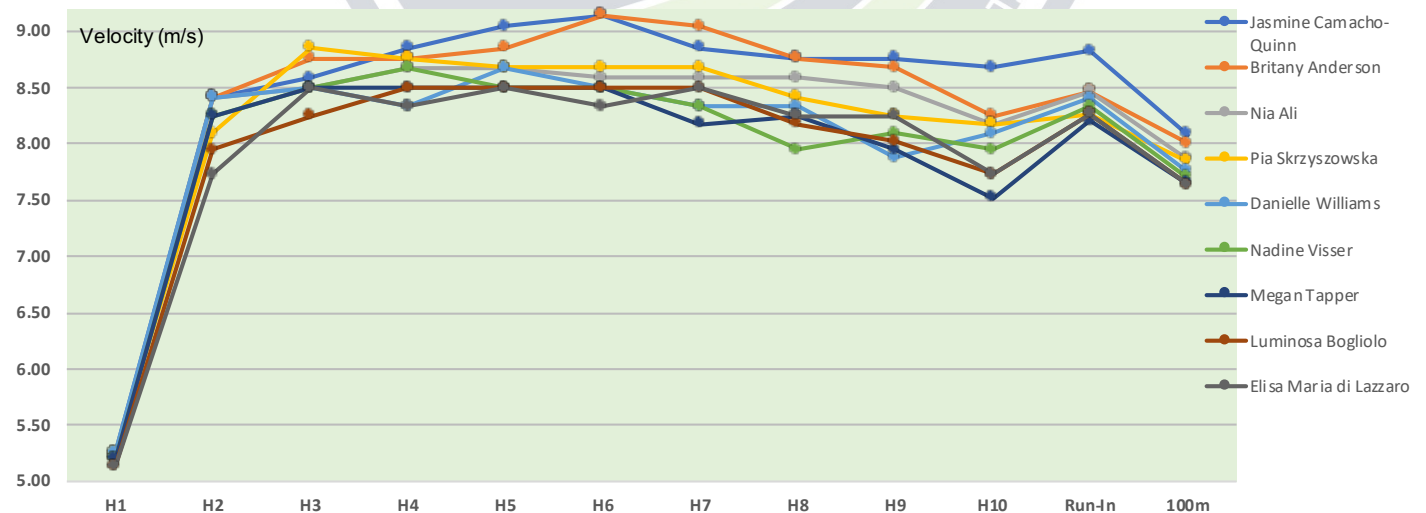
100m Hurdles

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)	reaction time	0.149																
	interval		2.47	3.48	4.47	5.43	6.37	7.30	8.26	9.23	10.20	11.18		12.37	5 / 1	2.96	2.83	2.92
	velocity		5.26	8.42	8.59	8.85	9.04	9.14	8.85	8.76	8.76	8.67	8.82	8.08		8.61	9.01	8.73
Anderson, Britany (JAM) (2001 time)	reaction time	0.182																
	interval		2.50	3.51	4.48	5.45	6.41	7.34	8.28	9.25	10.23	11.26		12.50	4 / 2	2.95	2.83	2.98
	velocity		5.20	8.42	8.76	8.76	8.85	9.14	9.04	8.76	8.67	8.25	8.47	8.00		8.64	9.01	8.56
Ali, Nia (USA) (1988 time)	reaction time	0.153																
	interval		2.49	3.50	4.50	5.48	6.46	7.45	8.44	9.43	10.43	11.47		12.71	6 / 3	2.99	2.96	3.03
	velocity		5.22	8.42	8.50	8.67	8.67	8.59	8.59	8.59	8.50	8.17	8.47	7.87		8.53	8.61	8.42
Skrzysowska, Pia (POL) (2001 time)	reaction time	0.132																
	interval		2.47	3.52	4.48	5.45	6.43	7.41	8.39	9.40	10.43	11.47		12.74	1 / 4	2.98	2.94	3.08
	velocity		5.26	8.10	8.85	8.76	8.67	8.67	8.67	8.42	8.25	8.17	8.27	7.85		8.56	8.67	8.28
Williams, Danielle (JAM) (1992 time)	reaction time	0.131																
	interval		2.47	3.48	4.48	5.50	6.48	7.48	8.50	9.52	10.60	11.65		12.90	7 / 5	3.03	3.00	3.15
	velocity		5.26	8.42	8.50	8.33	8.67	8.50	8.33	8.33	7.87	8.10	8.40	7.75		8.42	8.50	8.10
Visser, Nadine (NED) (1995 time)	reaction time	0.146																
	interval		2.50	3.53	4.53	5.51	6.51	7.51	8.53	9.60	10.65	11.72		12.98	8 / 6	3.01	3.02	3.19
	velocity		5.20	8.25	8.50	8.67	8.50	8.50	8.33	7.94	8.10	7.94	8.33	7.70		8.47	8.44	7.99
Tapper, Megan (JAM) (1994 time)	reaction time	0.155																
	interval		2.50	3.53	4.53	5.53	6.53	7.53	8.57	9.60	10.67	11.80		13.08	3 / 7	3.03	3.04	3.23
	velocity		5.20	8.25	8.50	8.50	8.50	8.50	8.17	8.25	7.94	7.52	8.20	7.65		8.42	8.39	7.89
Bogliolo, Luminosa (ITA) (1995 time)	reaction time	0.163																
	interval		2.53	3.60	4.63	5.63	6.63	7.63	8.63	9.67	10.73	11.83		13.10	2 / 8	3.10	3.00	3.20
	velocity		5.14	7.94	8.25	8.50	8.50	8.50	8.50	8.17	8.02	7.73	8.27	7.63		8.23	8.50	7.97
di Lazzaro, Elisa Maria (ITA) (1998 time)	reaction time	0.143																
	interval		2.53	3.63	4.63	5.65	6.65	7.67	8.67	9.70	10.73	11.83		13.10	9 / 9	3.12	3.02	3.16
	velocity		5.14	7.73	8.50	8.33	8.50	8.33	8.50	8.25	8.25	7.73	8.27	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=yYFVace8BPc>

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

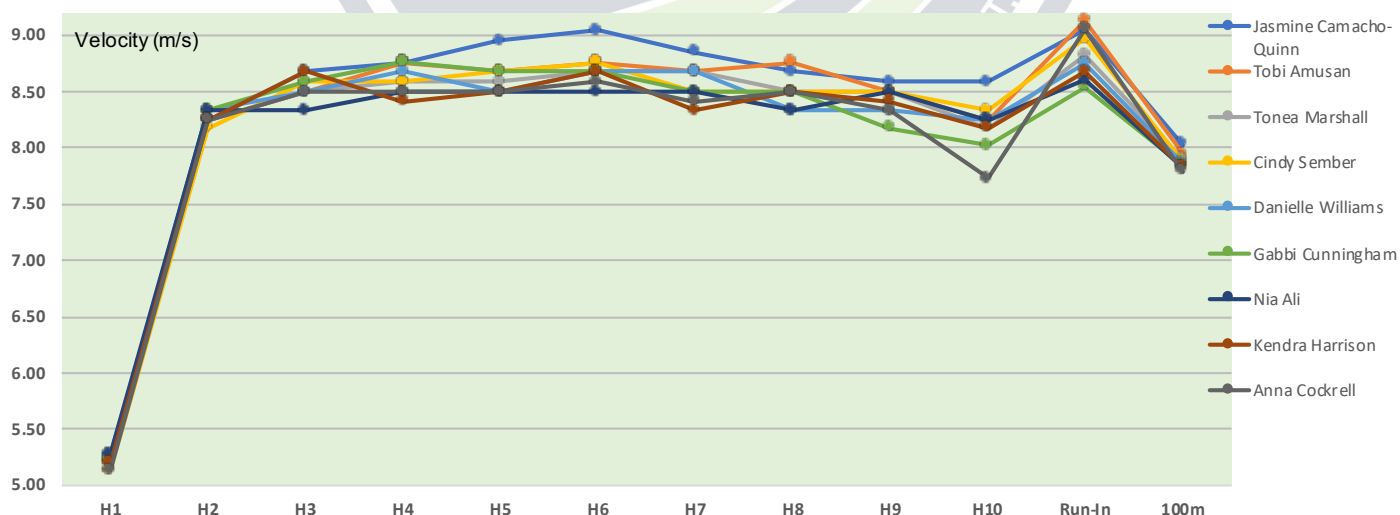
100m Hurdles

Date: 2022.05.28

Wind: -0.7 m/s

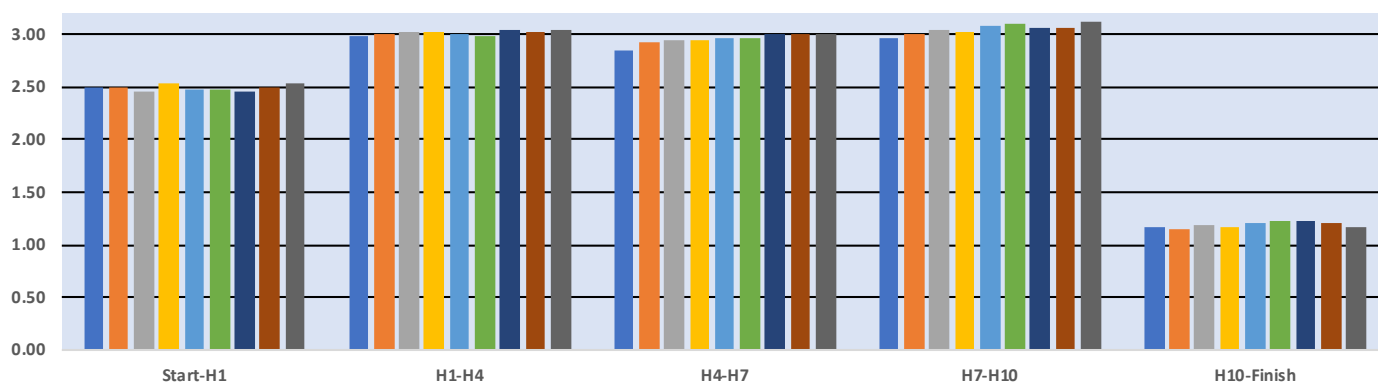
FINAL

			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	9.05	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	9.13	7.95				
Marshall, Tanea (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	8.82	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	8.97	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	8.75	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	8.54	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	8.61	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	8.68	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	9.05	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)

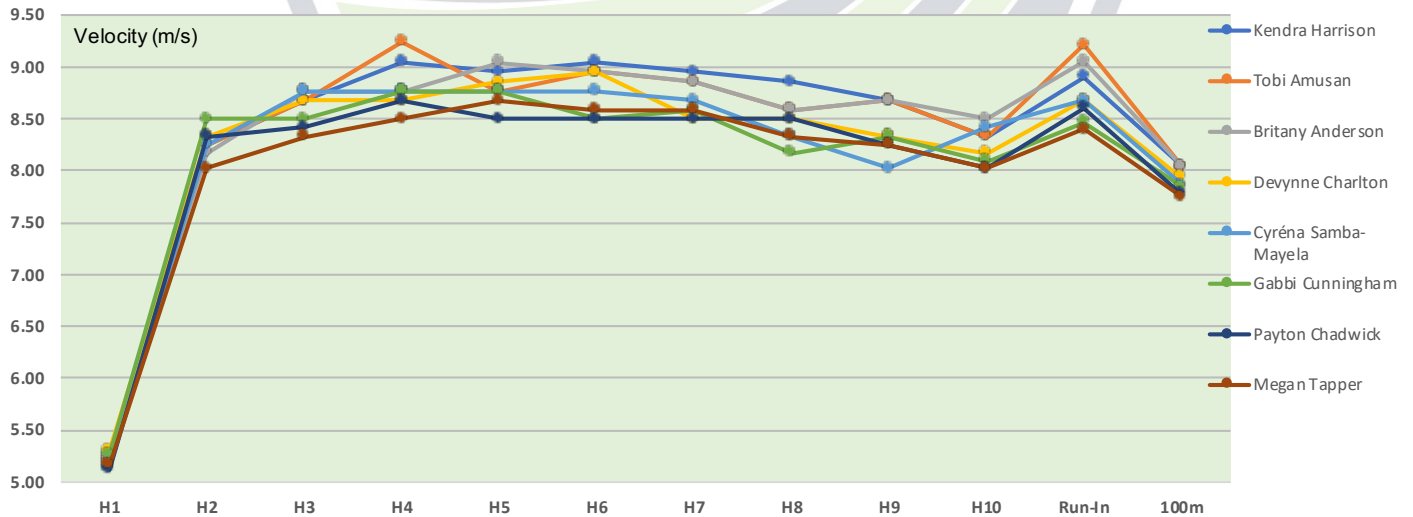
100m Hurdles

Date: 2022.05.13

Wind: 3.8 m/s

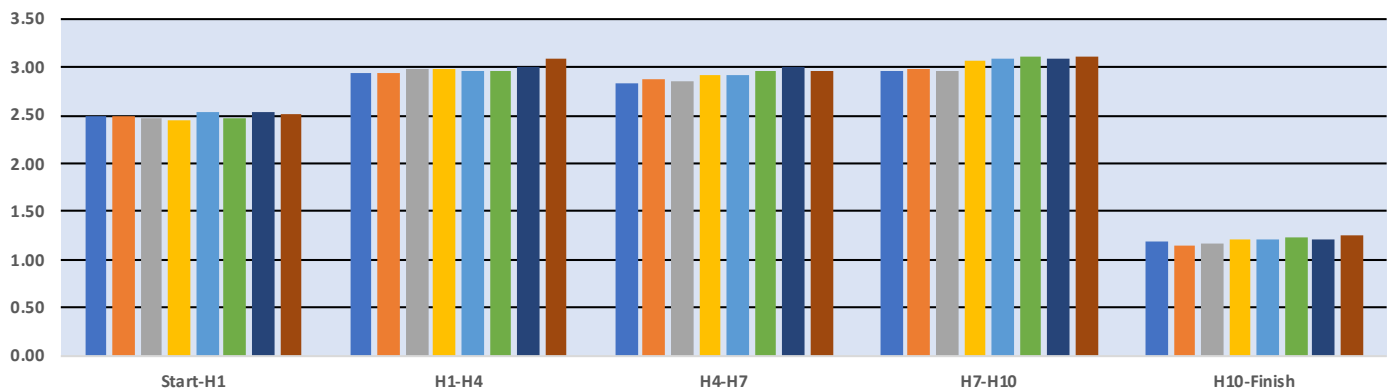
FINAL

		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										1.18			2.95	2.84	2.96
	interval velocity		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
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										1.14			2.93	2.88	2.99
	interval velocity		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
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										1.16			2.98	2.85	2.97
	interval velocity		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
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										1.21			2.98	2.91	3.06
	interval velocity		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
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										1.21			2.97	2.92	3.09
	interval velocity		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
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										1.24			2.97	2.96	3.11
	interval velocity		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
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										1.22			3.01	3.00	3.09
	interval velocity		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
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										1.25			3.08	2.96	3.11
	interval velocity		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



Time Intervals (s)

Hurdle Phases



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)

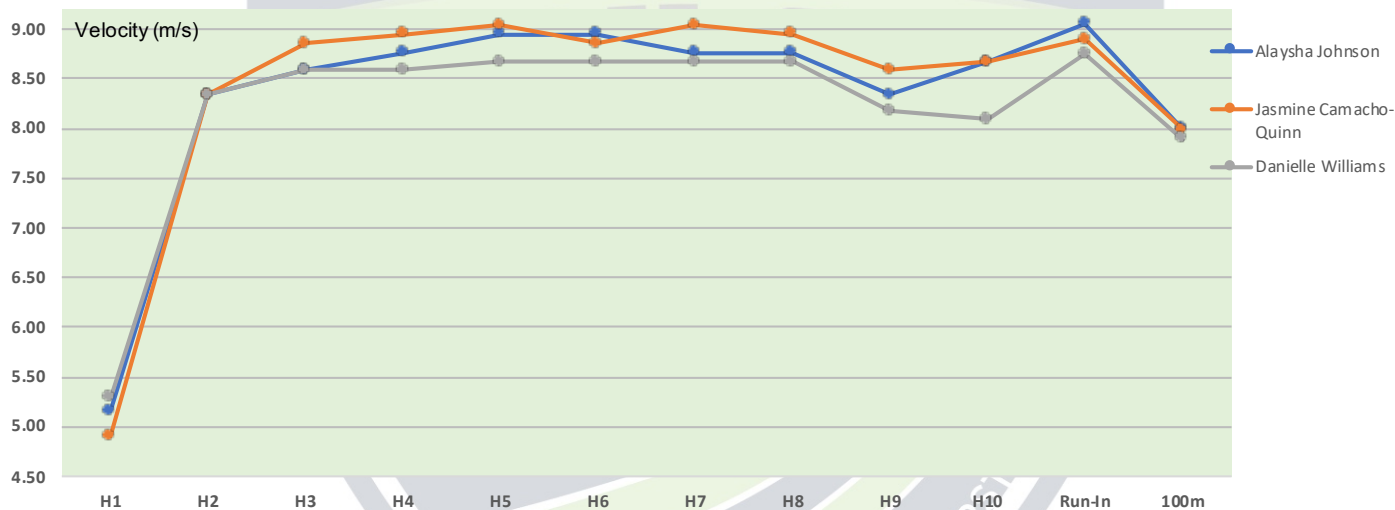
100m Hurdles

Date: 2022.05.12

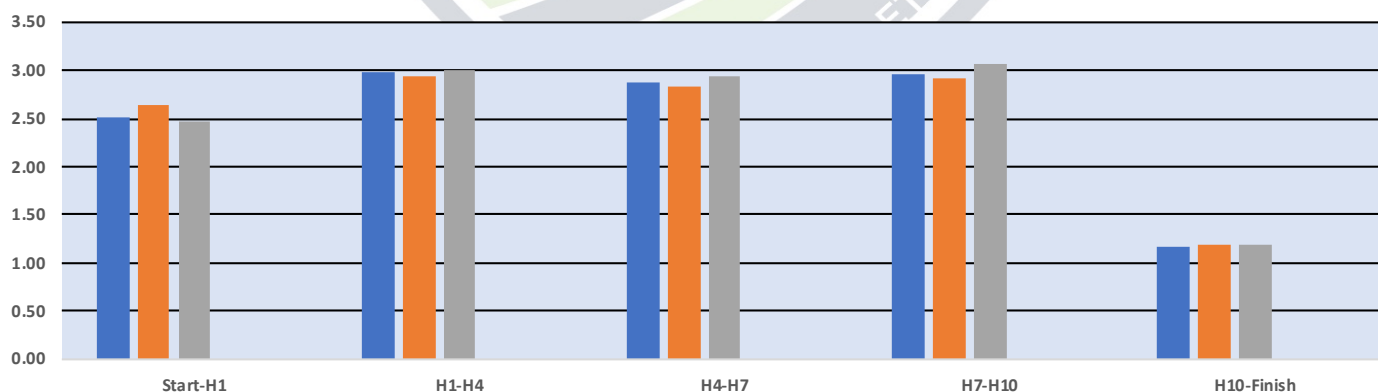
Wind: 0.3 m/s

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	2 / 1			
	reaction time	0.155											PB		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			8.56	8.89	8.59
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	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
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	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		5.16	8.33	8.59	8.76	8.95	8.95	8.76	8.33	8.67	9.05	8.00				



Time Intervals (s)



Evaluated with: ObjectusVideo

Quality & Frame Rate: 1920 x 1080 @ 30fps

Timing From: First Movement

Source: <https://www.youtube.com/watch?v=5iFiWqg8Xt0>

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

100m Hurdles

Date: 2022.03.26

Wind: 3.9 m/s

Invitational 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	2.54	3.52	4.45	5.40	6.34	7.27	8.24	9.21	10.18	11.18		12.32	5 / 1			
	reaction time											1.14			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
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											1.16			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
Marshall, Toneya (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											1.16			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

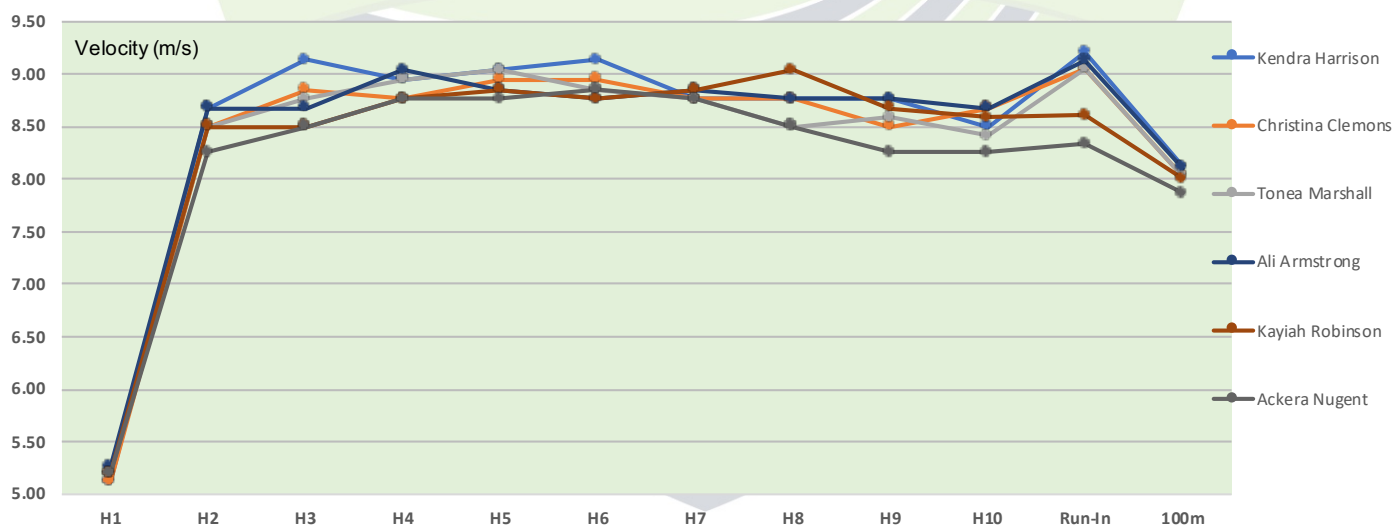
100m Hurdles

Date: 2022.03.26

Wind: 2.5 m/s

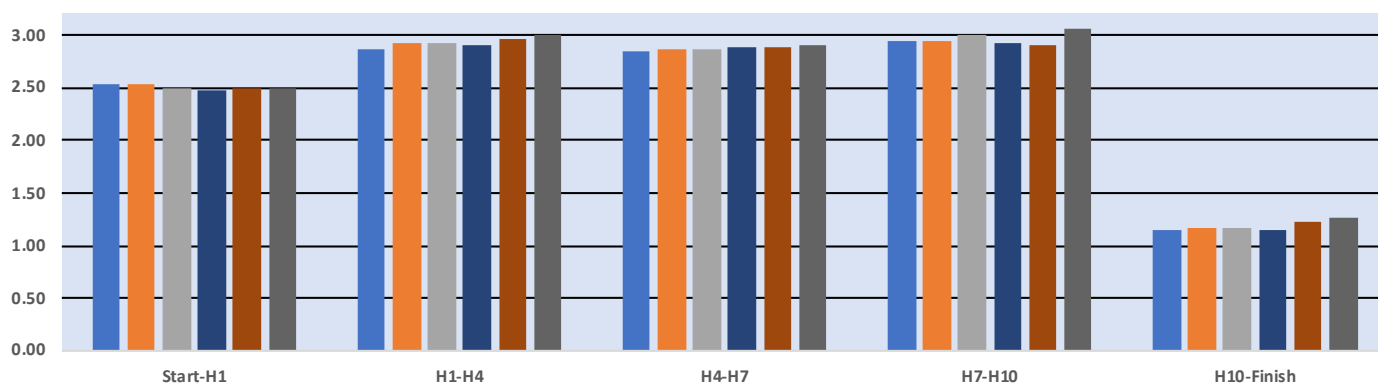
University FINAL

		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	2.47	3.45	4.43	5.37	6.33	7.30	8.26	9.23	10.20	11.18		12.33	4 / 1			
	reaction time											1.15			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
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											1.22			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
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											1.26			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



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=xikuuTrq0rk>

University Final

Evaluated with: ObjectusVideo

Quality & Frame Rate: 1280 x 720 @ 30fps

Timing From: First Movement

Source: <https://www.youtube.com/watch?v=a-tlGyuM654>

Biomechanical Analysis

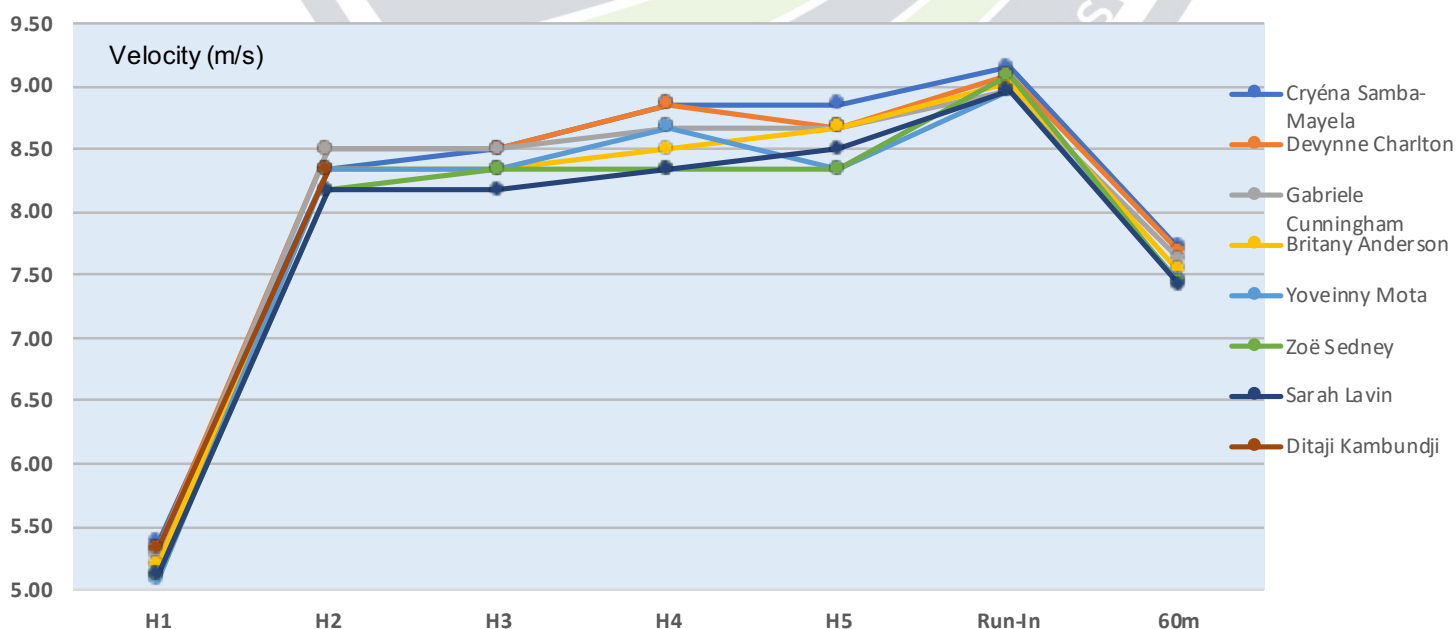
World Athletics Indoor Championships (Belgrade, SRB) (TV Analysis)

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	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		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		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	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		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	24.08	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	3.93	4.24	4.33	4.50	5.56	6.41		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	6.53		9.52	9.05	8.03
H1 lead leg	R	strides	20	13	13	13	12	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	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		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	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		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	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		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		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	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		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	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		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	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		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	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		9.39	8.55	8.10
H1 lead leg	L	strides	20	13	12	12	12	12	13	13	13	13	16	149			
McMaster, Kyron (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	41.96	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		9.32	8.76	
H1 lead leg	L	strides	13	13	13	13	13	13	13	13	14		105				
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	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		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		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	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		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		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	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		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		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	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		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			

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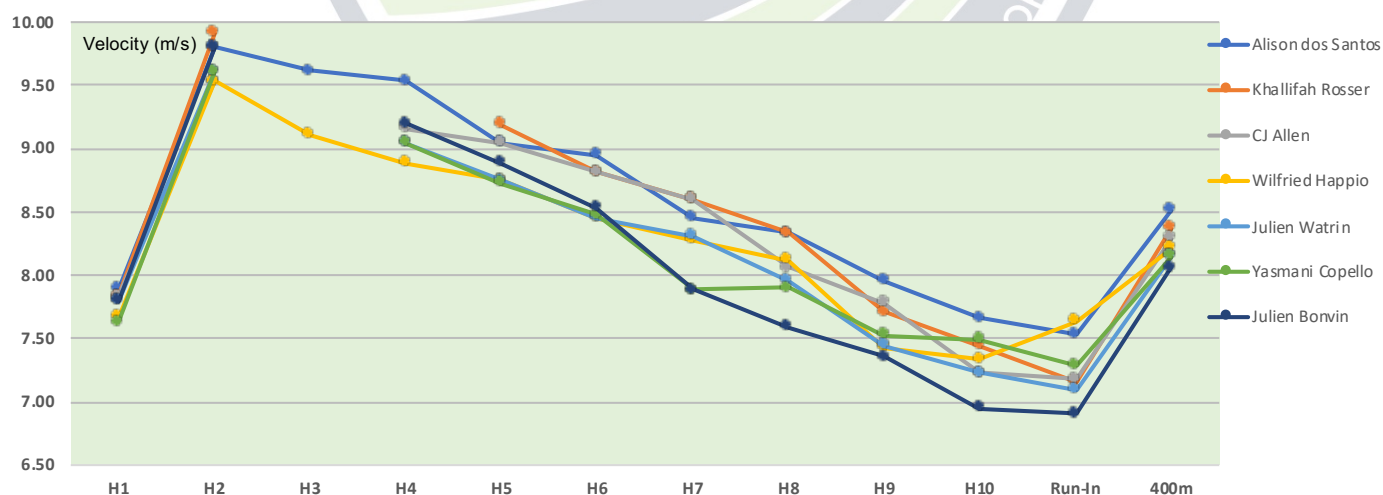
2022 Weltklasse (Zürich, SUI) (TV Analysis)

Men's 400m Hurdles

Date: 2022.09.08

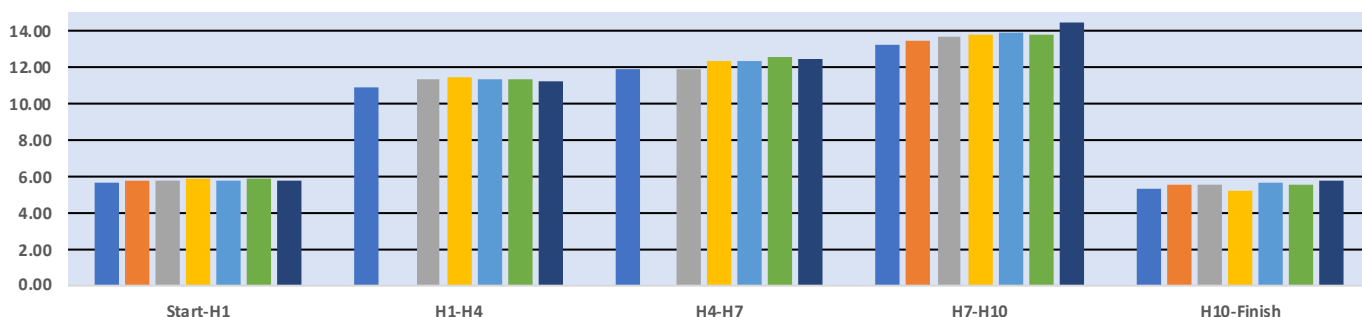
FINAL

			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	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														11.31	11.91	13.68
	interval			3.67		7.64	3.87	3.97	4.07	4.34	4.50	4.84	5.57			9.28	8.82	7.68
	velocity		7.84	9.54		9.16	9.04	8.82	8.60	8.06	7.78	7.23	7.18	8.30				
	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														11.45	12.37	13.79
	interval			3.67	3.84	3.94	4.00	4.14	4.23	4.31	4.71	4.77	5.24			9.17	8.49	7.61
	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				
	H1 lead leg	L	20	13	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														11.38	12.35	13.94
	interval			3.64		7.74	4.00	4.13	4.21	4.40	4.70	4.84	5.64			9.23	8.50	7.53
	velocity		7.80	9.62		9.04	8.75	8.45	8.31	7.95	7.45	7.23	7.09	8.15				
	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														11.38	12.58	13.75
	interval			3.64		7.74	4.01	4.13	4.44	4.43	4.65	4.67	5.49			9.23	8.35	7.64
	velocity		7.63	9.62		9.04	8.73	8.47	7.88	7.90	7.53	7.49	7.29	8.15				
	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														11.18	12.48	14.41
	interval			3.57		7.61	3.94	4.10	4.44	4.61	4.76	5.04	5.79			9.39	8.41	7.29
	velocity		7.80	9.80		9.20	8.88	8.54	7.88	7.59	7.35	6.94	6.91	8.06				
	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

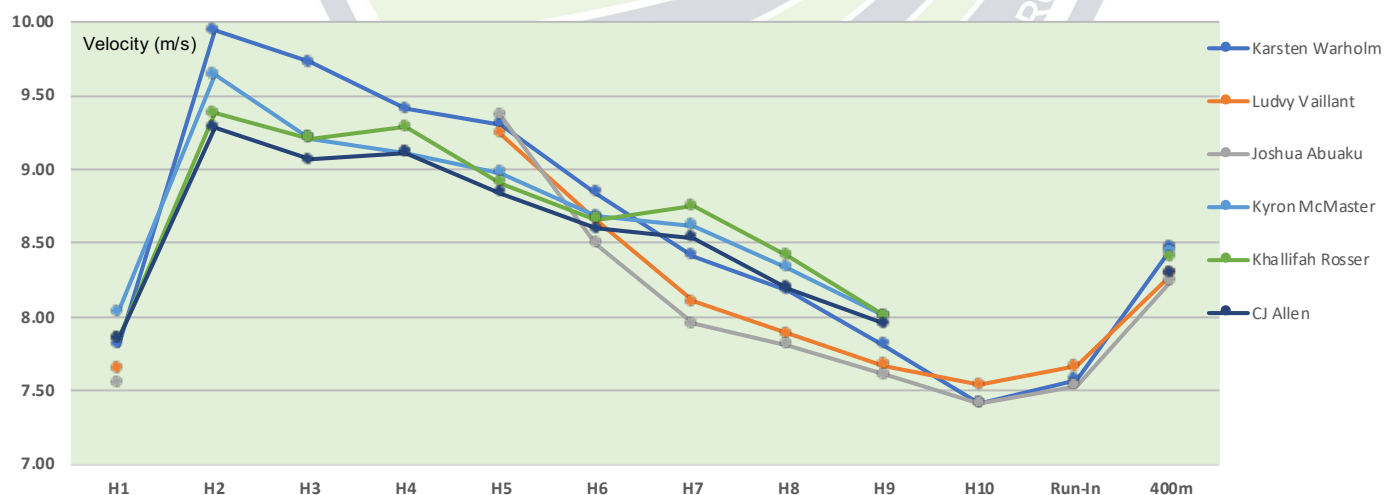
			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
Warholm, Karsten (NOR) (1996)	time		5.76	9.28	12.88	16.60	20.36	24.32	28.48	32.76	37.24	41.96		47.24	7 / 1			
	reaction time	0.139																
	interval			3.52	3.60	3.72	3.76	3.96	4.16	4.28	4.48	4.72	5.28			10.84	11.88	13.48
	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
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	4.64	5.22	PB				13.64
	interval						9.23	8.66	8.10	7.88	7.68	7.54	7.66	8.29				7.70
	velocity		7.65				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	4.72	5.31	PB				13.80
	interval						9.36	8.50	7.95	7.81	7.61	7.42	7.53	8.24				7.61
	velocity		7.55				13	13	14	14	15	15	18	109				

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

Date: 2022.08.21

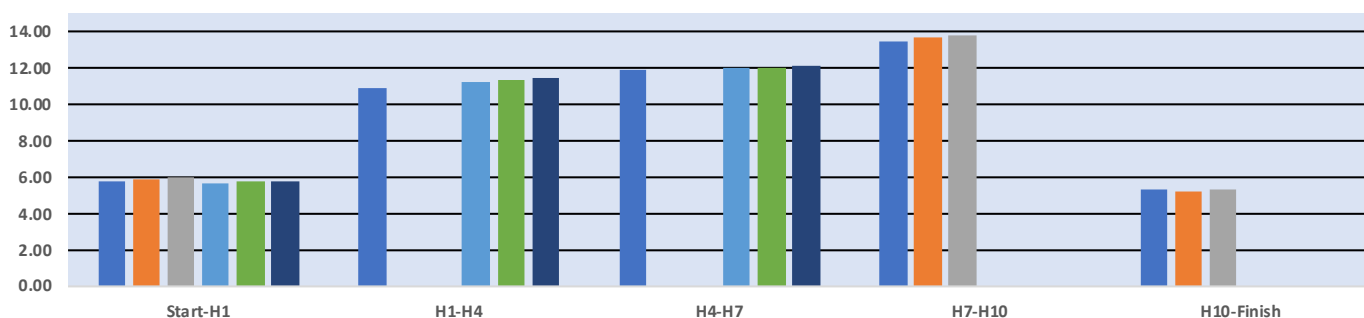
FINAL

			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				11.27	11.99	
	interval				8.04	9.64	9.21	8.97	8.68	8.62	8.33	8.01		8.45		9.32	8.76	
	velocity				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	4.16	4.37					11.30	11.97	
	interval				7.85	9.38	9.21	9.28	8.91	8.66	8.75	8.41		8.41		9.29	8.77	
	velocity		7.85		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				11.47	12.13	
	interval				7.85	9.28	9.07	9.11	8.84	8.60	8.54	8.20		8.29		9.15	8.66	
	velocity				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=ws8YCQZTI6Q&t=33s>

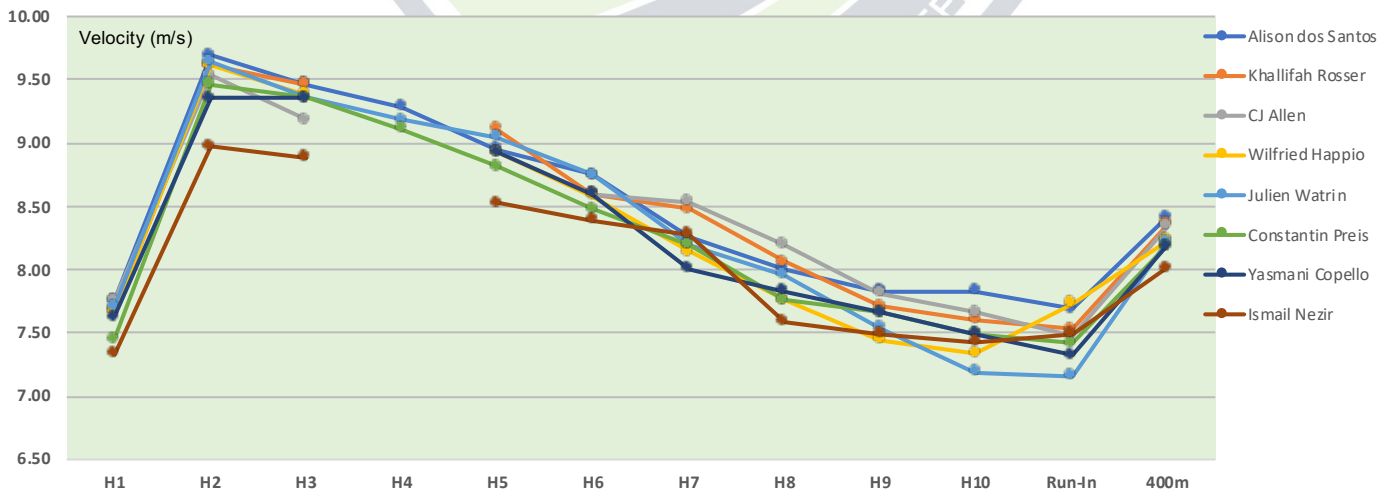
2022 Memorial van Damme (Brussels, BEL) (TV Analysis)

Men's 400m Hurdles

Date: 2022.09.02

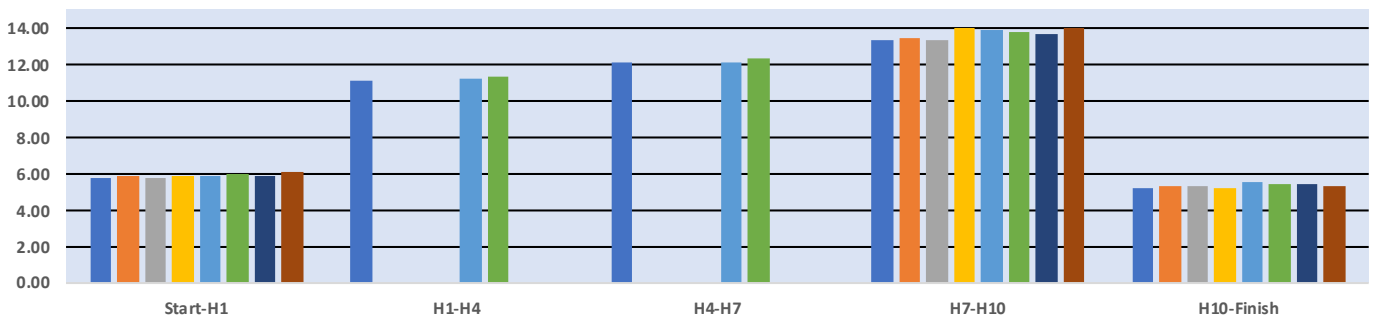
FINAL

			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											5.20			11.08	12.15	13.31
	interval			3.61	3.70	3.77	3.91	4.00	4.24	4.37	4.47	4.47				9.48	8.64	7.89
	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				
	H1 lead leg	L																
	strides		20	13	12	12	12	12	13	13	13	13	16	149				
Rosser, Khallifah (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											5.31					13.48
	interval			3.64	3.70		7.68	4.07	4.13	4.34	4.54	4.60						7.79
	velocity		7.67	9.62	9.46		9.11	8.60	8.47	8.06	7.71	7.61	7.53	8.35				
	H1 lead leg	R																
	strides		21	13	13			13	13	14	14	14	17	132.7				
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											5.35	DQ				13.32
	interval			3.67	3.81		7.84	4.07	4.10	4.27	4.48	4.57						7.88
	velocity		7.76	9.54	9.19		8.93	8.60	8.54	8.20	7.81	7.66	7.48	8.34				
	H1 lead leg	L																
	strides		20	13	13			13	13	13	14	14	17	130				
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											5.17					13.98
	interval			3.64	3.73		7.84	4.08	4.30	4.51	4.70	4.77						7.51
	velocity		7.67	9.62	9.38		8.93	8.58	8.14	7.76	7.45	7.34	7.74	8.23				
	H1 lead leg	L																
	strides		20	13	13			13	13	13	15	15	17.2	132.2				
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 / 4	11.18	12.14	13.91
	reaction time	0.224											5.59	NR PB		9.39	8.65	7.55
	interval			3.63	3.74	3.81	3.87	4.13	4.27	4.40	4.64	4.87						
	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				
	H1 lead leg	R																
	strides		21	13	13	13	13	13	14	14	14	15	18	161				
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 / 5	11.28	12.37	13.75
	reaction time	0.253											5.39			9.31	8.49	7.64
	interval			3.70	3.74	3.84	3.97	4.13	4.27	4.51	4.57	4.67						
	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				
	H1 lead leg	L																
	strides		22	14	14	14	14	15	15	15	15	15		153				
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 / 6			
	reaction time	0.190											5.46					13.71
	interval			3.74	3.74		7.84	4.07	4.37	4.47	4.57	4.67						7.66
	velocity		7.63	9.36	9.36		8.93	8.60	8.01	7.83	7.66	7.49	7.33	8.19				
	H1 lead leg	R																
	strides		20	13	13			13	14	14	14	14	17.2	132.2				
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 / 7			
	reaction time	0.170											5.34					13.99
	interval			3.90	3.94		8.21	4.17	4.23	4.61	4.67	4.71						7.51
	velocity		7.33	8.97	8.88		8.53	8.39	8.27	7.59	7.49	7.43	7.49	8.01				
	H1 lead leg	L																
	strides		20	13	13			13	13	14	14	14		114				



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=oDSvzeUJcXI>

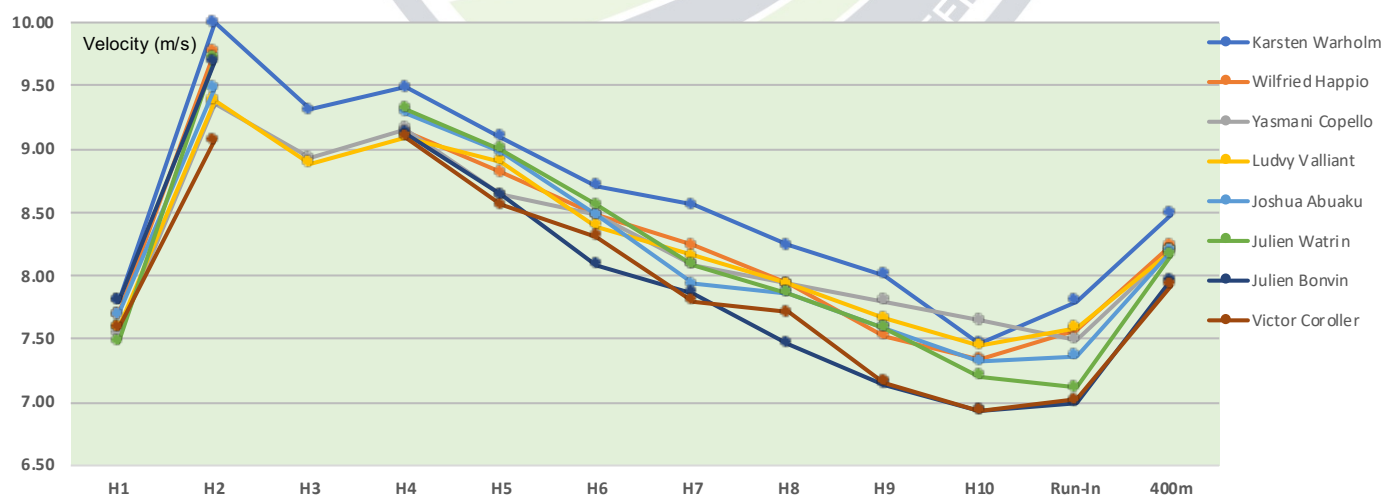
2022 European Athletics Championships (Munich, GER) (TV Analysis)

Men's 400m Hurdles

Date: 2022.08.19

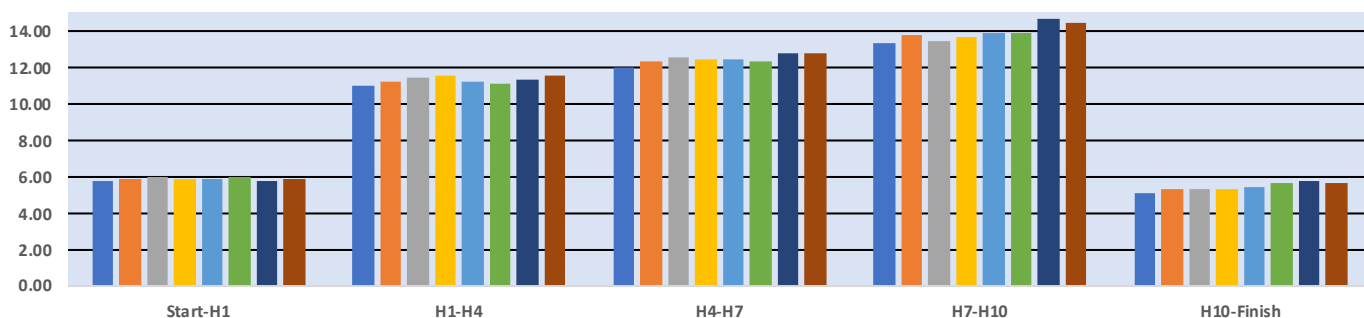
FINAL

			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
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
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
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
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			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
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
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
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



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

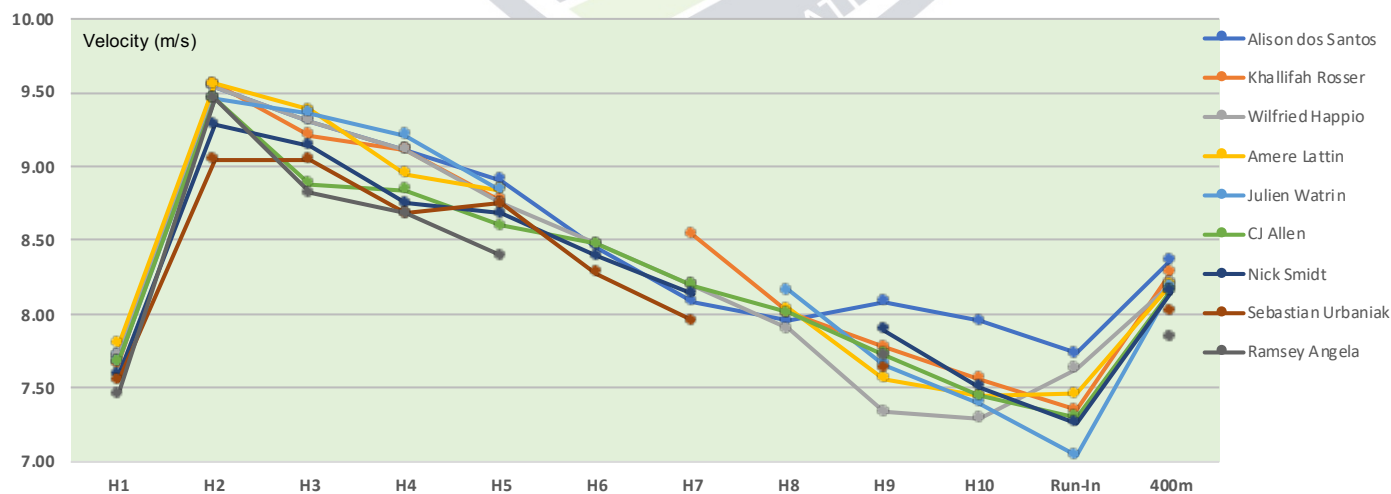
2022 Silesia Kamila Skolimowska Memorial (Chorzów, POL) (TV Analysis)

Men's 400m Hurdles

Date: 2022.08.06

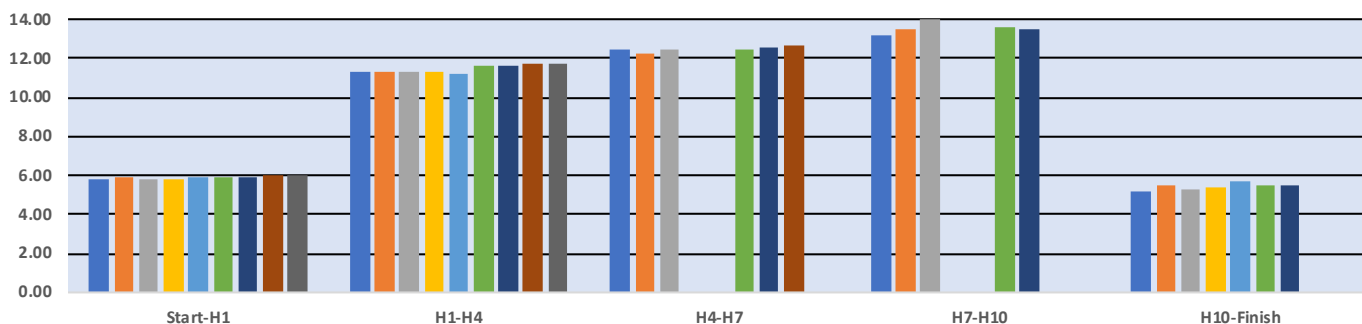
FINAL

			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																
	strides		20	13	12	12	12	12	13	13	13	13	16	149				
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																
	strides		21	13	13		13			14	14	14	18	120				
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																
	strides		20	13	13		13	13	13	13	15	15	17.7	145.7				
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																
	strides		20	13	13		13				14	14	17	104				
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																
	strides		21	13	13		13				14	15	18	107				
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																
	strides		20	13	13	13	13	13	14	14		15	18	146				
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																
	strides		20	13	13		13	14	14			14		101				
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					11.77	12.63	
	velocity		7.55	9.04	9.04	8.68	8.75	8.27	7.95		7.63					8.92	8.31	
	H1 lead leg	L																
	strides		21	14	14	14	14	14	14					105				
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					11.70		
	velocity		7.46	9.46	8.82	8.68	8.39				7.72					8.97		
	H1 lead leg	R																
	strides		22	15	15		14							66				



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=IwIm2TjauOU>

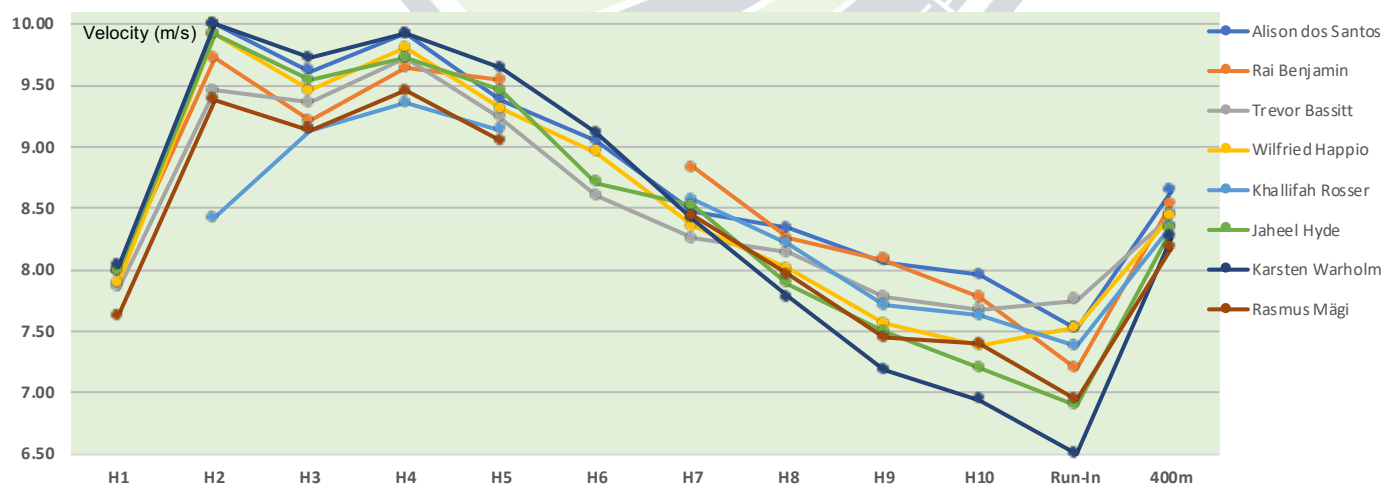
2022 World Athletics Championships (Eugene, OR) (TV Analysis)

Men's 400m Hurdles

Date: 2022.07.19

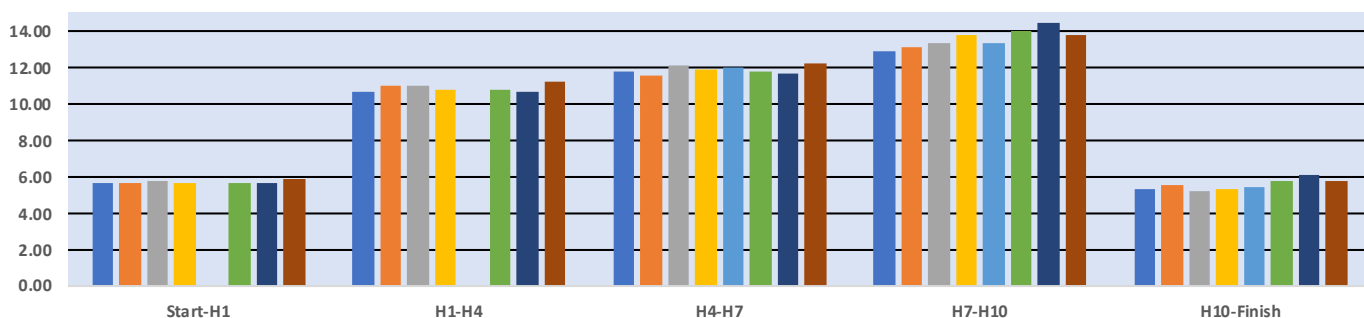
FINAL

			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																
	strides		20	13	12	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	8.53			9.52	9.05	8.03
	H1 lead leg	R																
	strides		20	13	13	13	12			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																
	strides		20	13	13	12	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																
	strides		20	13	13	13	13	13	13	13	15	15	18	159				
Rosser, Khallifah (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		8.17	4.26	4.54	4.59	5.42			12.00	13.39	
	velocity				8.42	9.14	9.36	9.14		8.57	8.22	7.71	7.63	8.35		8.75	7.84	
	H1 lead leg																	
	strides																	
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																
	strides		22	13	13	13	13	14	14	15	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																
	strides		20	13	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																
	strides																	



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=FRLzKKt6RA>

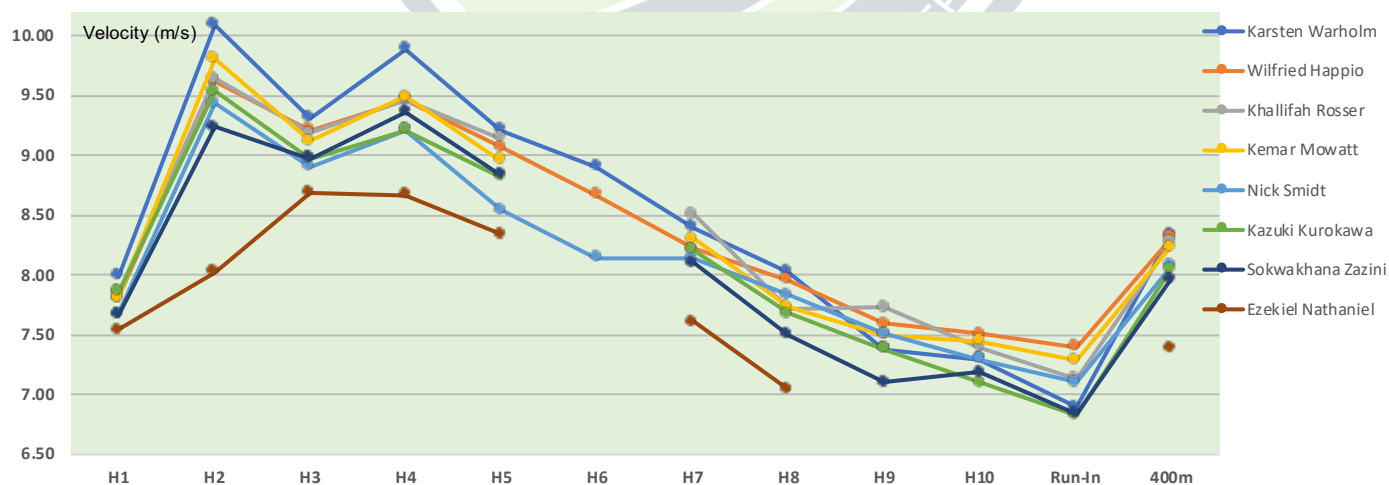
2022 World Athletics Championships (Eugene, OR) (TV Analysis)

Men's 400m Hurdles

Date: 2022.07.17

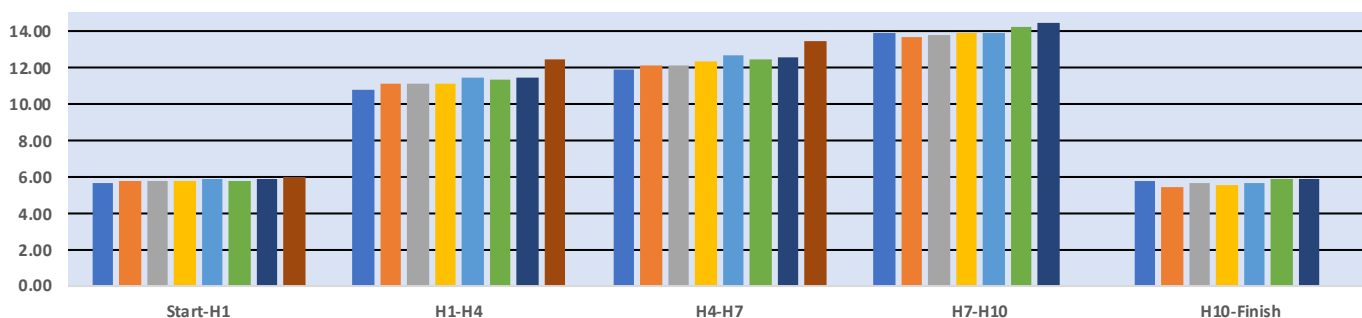
Semi-Final 3

			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		3.47	3.76	3.54	3.80	3.93	4.17	4.36	4.74	4.80	5.80				10.77	11.90	13.90
	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		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		3.64	3.80	3.70	3.86	4.04	4.26	4.40	4.61	4.66	5.41	PB			11.14	12.16	13.67
	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		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		3.63	3.81	3.70	3.83			8.23	4.54	4.53	4.73	5.61			11.14	12.06	13.80
	velocity		7.85	9.64	9.19	9.46	9.14		8.51	7.71	7.73	7.40	7.13	8.27		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		3.57	3.84	3.69	3.91			8.43	4.53	4.67	4.70	5.49			11.10	12.34	13.90
	velocity		7.81	9.80	9.11	9.49	8.95		8.30	7.73	7.49	7.45	7.29	8.23		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		3.71	3.93	3.80	4.10	4.30	4.30	4.47	4.66	4.80	5.63				11.44	12.70	13.93
	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		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		3.67	3.90	3.80	3.97			8.53	4.56	4.74	4.93	5.86			11.37	12.50	14.23
	velocity		7.85	9.54	8.97	9.21	8.82		8.21	7.68	7.38	7.10	6.83	8.05		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		3.79	3.90	3.74	3.96			8.64	4.67	4.93	4.87	5.85			11.43	12.60	14.47
	velocity		7.67	9.23	8.97	9.36	8.84		8.10	7.49	7.10	7.19	6.84	7.96		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		4.36	4.03	4.04	4.20			9.20	4.97						12.43	13.40	
	velocity		7.54	8.03	8.68	8.66	8.33		7.61	7.04				7.38		8.45	7.84	
	H1 lead leg	R	21	15	14	13	13		14	14				104				



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>

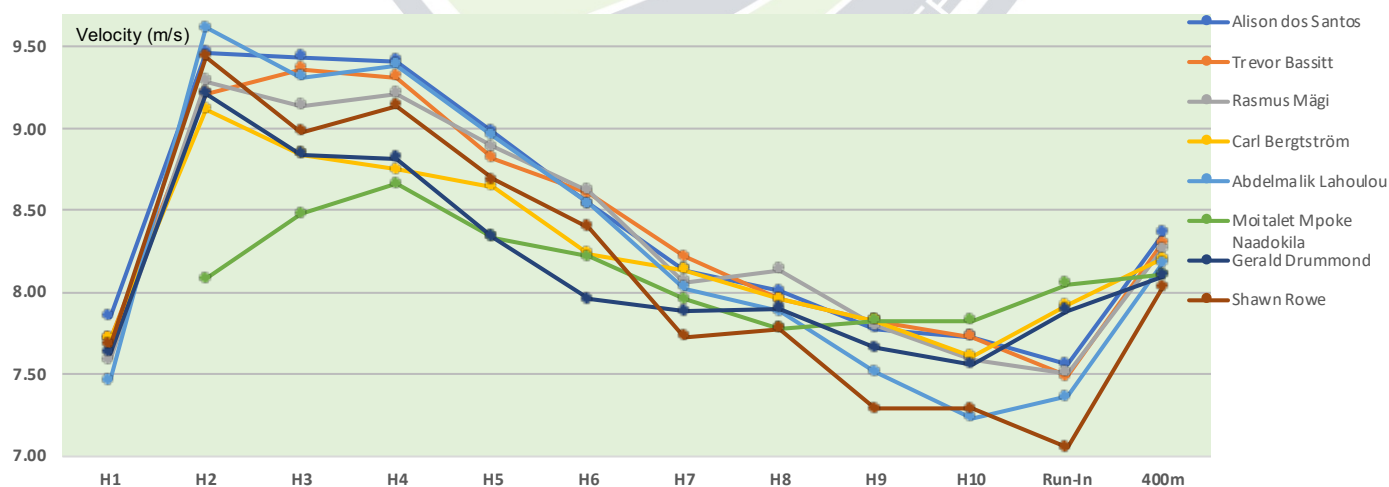
2022 World Athletics Championships (Eugene, OR) (TV Analysis)

Men's 400m Hurdles

Date: 2022.07.17

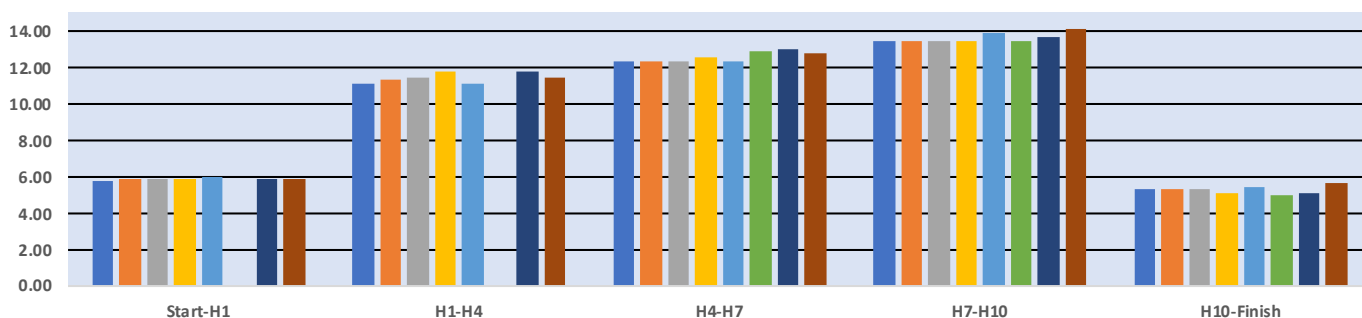
Semi-Final 2

			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		7.85	3.70	3.71	3.72	3.90	4.10	4.30	4.37	4.50	4.53	5.29			11.13	12.30	13.40
	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		9.43	8.54	7.84
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		7.72	3.80	3.74	3.76	3.97	4.07	4.26	4.40	4.47	4.53	5.34			11.30	12.30	13.40
	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		9.29	8.54	7.84
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		7.59	3.77	3.83	3.80	3.94	4.06	4.34	4.30	4.49	4.61	5.33			11.40	12.34	13.40
	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		9.21	8.51	7.84
Bergtström, 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		7.72	3.84	3.96	4.00	4.05	4.25	4.30	4.40	4.47	4.60	5.05			11.80	12.60	13.47
	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		8.90	8.33	7.80
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	0.152																
	interval		7.46	3.64	3.76	3.73	3.91	4.10	4.36	4.44	4.66	4.84	5.43			11.13	12.37	13.94
	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		9.43	8.49	7.53
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			4.13	4.04	4.20	4.26	4.40	4.50	4.47	4.47	4.47	4.97					
	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
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		7.63	3.80	3.96	3.97	4.20	4.40	4.44	4.43	4.57	4.63	5.07			11.73	13.04	13.63
	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		8.95	8.05	7.70
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		7.68	3.71	3.90	3.83	4.03	4.17	4.53	4.50	4.80	4.80	5.67			11.44	12.73	14.10
	velocity		7.68	9.43	8.97	9.14	8.68	8.39	7.73	7.78	7.29	7.05	8.03			9.18	8.25	7.45



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>

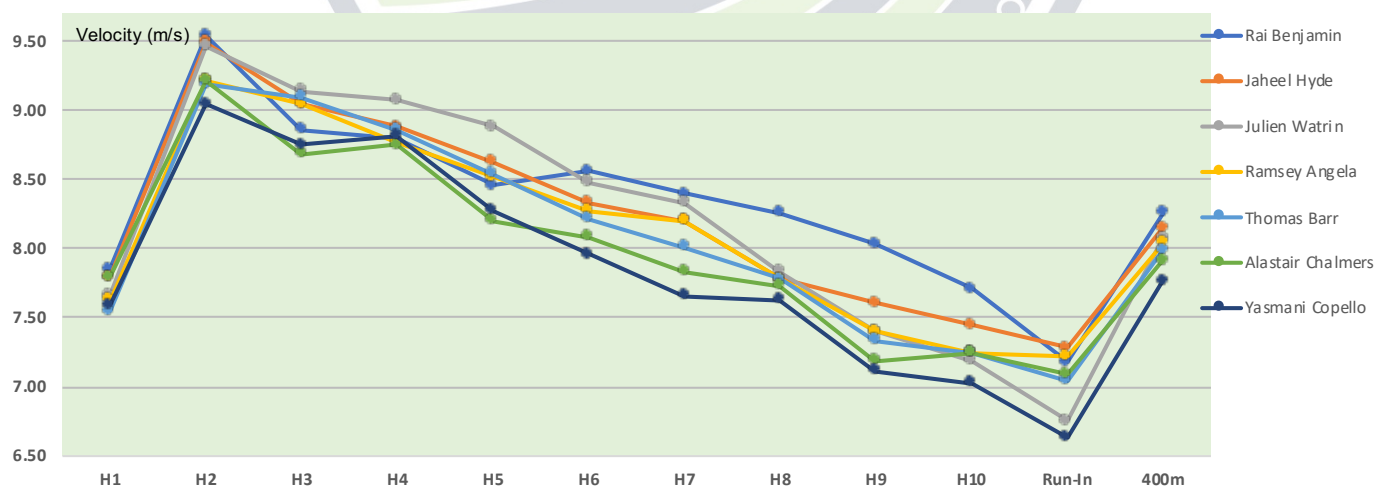
2022 World Athletics Championships (Eugene, OR) (TV Analysis)

Men's 400m Hurdles

Date: 2022.07.17

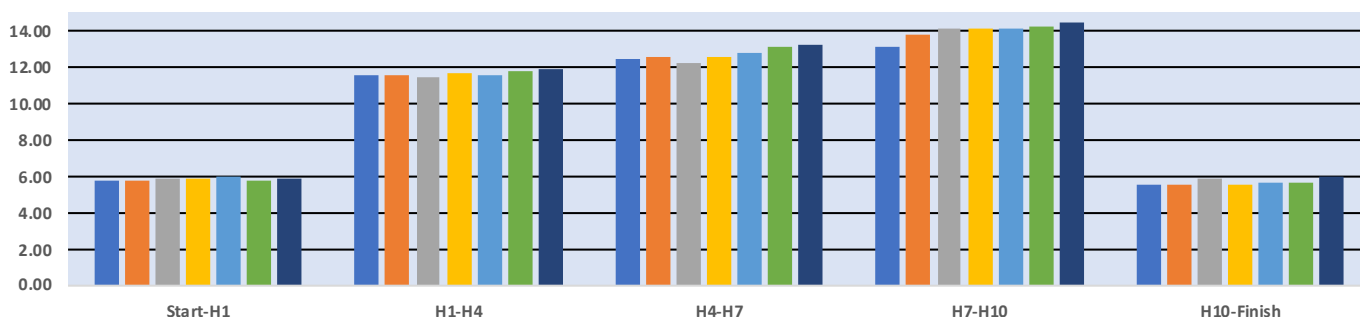
Semi-Final 1

			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		7.85	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
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		7.80	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
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		7.67	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
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		7.63	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
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		7.55	3.81	3.85	3.95	4.10	4.26	4.37	4.50	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
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		7.80	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
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		7.59	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



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: 2022.07.16

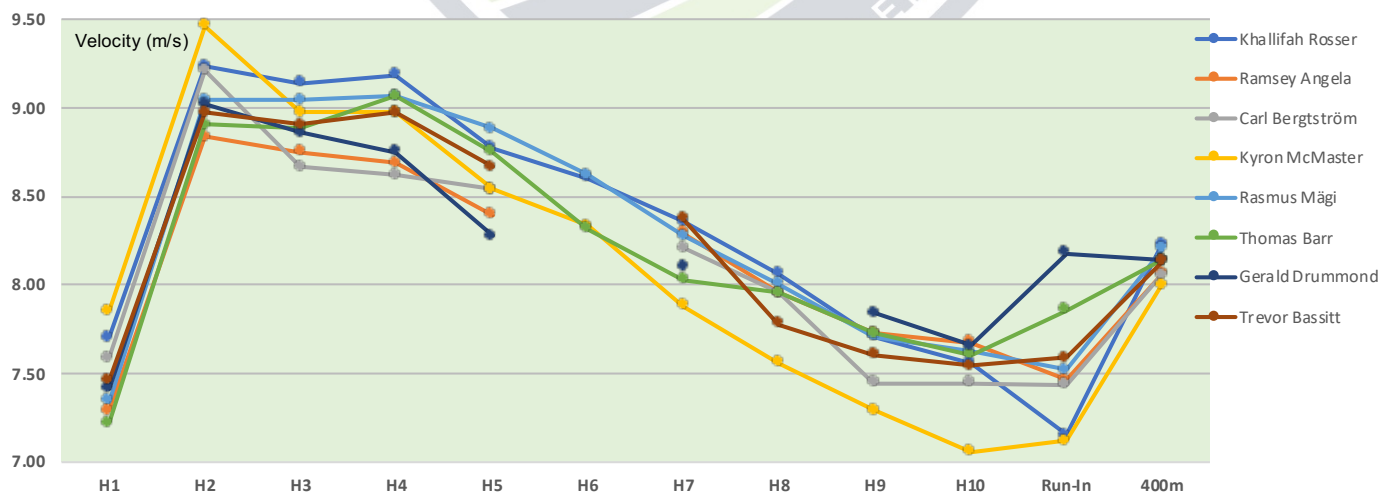
Heat 5

			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
Rosser, Khalifah (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		7.71	3.79	3.83	3.81	3.99	4.07	4.19	4.34	4.54	4.63	5.59			11.43	12.25	13.51
	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		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		7.29	3.96	4.00	4.03	4.17		8.44	4.40	4.53	4.56	5.36			11.99	12.61	13.49
	velocity		7.29	8.84	8.75	8.68	8.39		8.29	7.95	7.73	7.68	7.46	8.06		8.76	8.33	7.78
Bergström, 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		7.59	3.80	4.04	4.06	4.10		8.53	4.40	4.70	4.70	5.38			11.90	12.63	13.80
	velocity		7.59	9.21	8.66	8.62	8.54		8.21	7.95	7.45	7.45	7.43	8.06		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		7.85	3.70	3.90	3.90	4.10	4.20	4.44	4.63	4.80	4.96	5.62			11.50	12.74	14.39
	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		9.13	8.24	7.30

Date: 2022.07.16

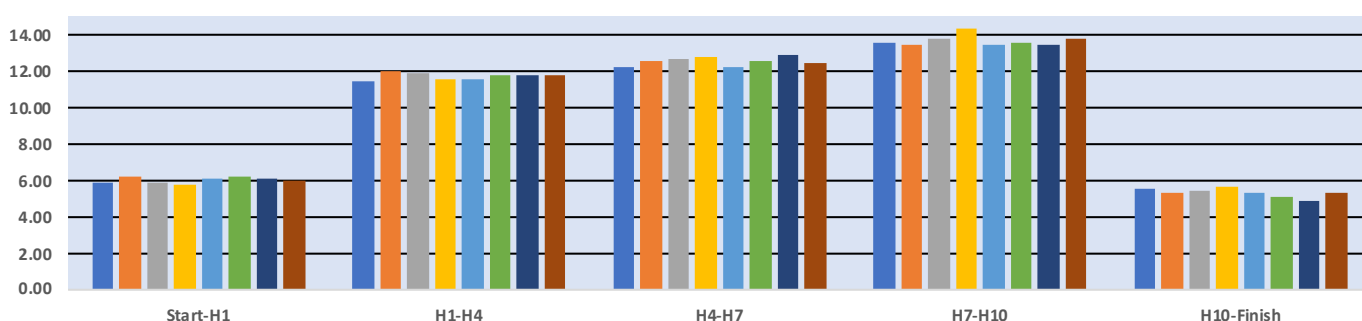
Heat 4

			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		7.34	3.87	3.87	3.86	3.94	4.06	4.23	4.37	4.54	4.59	5.32			11.60	12.23	13.50
	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		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		7.22	3.93	3.94	3.86	4.00	4.21	4.36	4.40	4.53	4.60	5.09			11.73	12.57	13.53
	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		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		7.41	3.88	3.95	4.00	4.23		8.64		8.93	4.57	4.89	NR		11.83	12.87	13.50
	velocity		7.41	9.02	8.86	8.75	8.27		8.10		7.84	7.66	8.18	8.14		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		7.46	3.90	3.93	3.90	4.04		8.36	4.50	4.60	4.64	5.27			11.73	12.40	13.74
	velocity		7.46	8.97	8.91	8.97	8.66		8.37	7.78	7.61	7.54	7.59	8.14		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

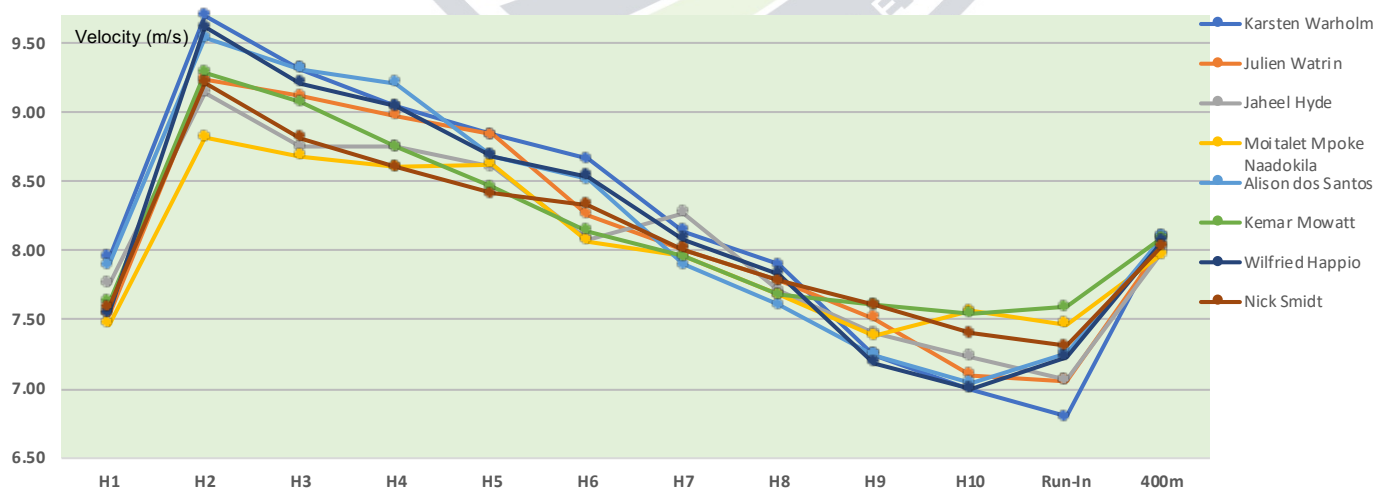
Heat 3

			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											5.88			11.24	12.30	14.26
	interval		7.95	9.70	9.31	9.04	8.84	8.66	8.14	7.90	7.25	7.00	6.80	8.11		9.34	8.54	7.36
	H1 lead leg	L	20	13	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											5.67			11.53	12.57	14.09
	interval		7.54	9.23	9.11	8.97	8.84	8.25	8.01	7.78	7.51	7.10	7.05	8.03		9.11	8.35	7.45
	H1 lead leg	R	21	13	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											5.66			11.83	12.63	14.11
	interval		7.76	9.14	8.75	8.75	8.60	8.08	8.27	7.71	7.40	7.23	7.07	8.00		8.88	8.31	7.44
	H1 lead leg	L	22	14	14	14	14	14	14	15	15	15	18	169				
Naadokila, Moitale 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											5.36			12.07	12.80	13.93
	interval		7.46	8.82	8.68	8.60	8.62	8.06	7.95	7.68	7.38	7.56	7.46	7.97		8.70	8.20	7.54
	H1 lead leg	L	21	14	14	14	14	14	14	14	14	14	17	164				

Date: 2022.07.16

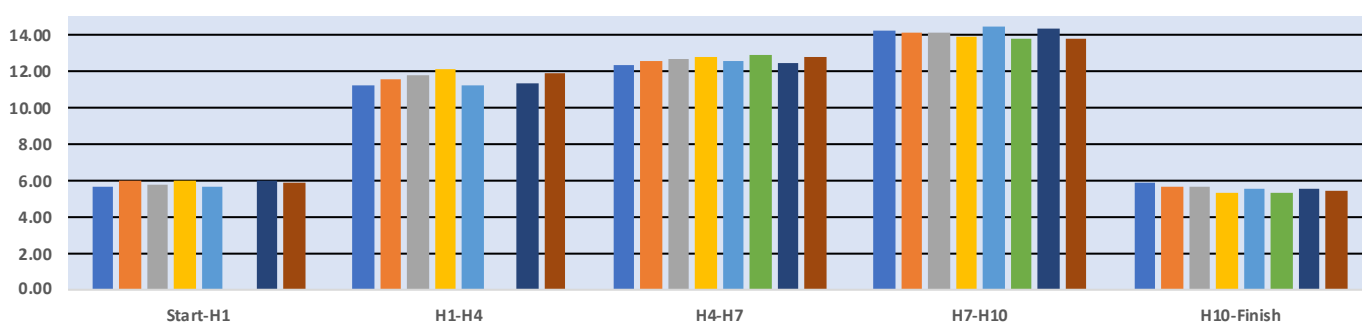
Heat 2

			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											5.51			11.23	12.57	14.40
	interval		7.89	9.54	9.31	9.21	8.68	8.52	7.90	7.61	7.25	7.04	7.26	8.10		9.35	8.35	7.29
	H1 lead leg	L	20	13	12	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											5.27			12.84	13.80	
	interval		7.63	9.28	9.07	8.75	8.45	8.14	7.95	7.68	7.61	7.54	7.59	8.09		8.18	7.61	
	H1 lead leg	L	21	13	13	13	13	14	14	14	14	15	17.2	161.2				
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											5.53			11.31	12.46	14.34
	interval		7.55	9.62	9.21	9.04	8.68	8.54	8.08	7.83	7.19	7.00	7.23	8.06		9.28	8.43	7.32
	H1 lead leg	L	20	13	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											5.47			11.84	12.73	13.83
	interval		7.59	9.21	8.82	8.60	8.41	8.33	8.01	7.78	7.61	7.40	7.31	8.03		8.87	8.25	7.59
	H1 lead leg	L	20	13	13	13	13	14	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

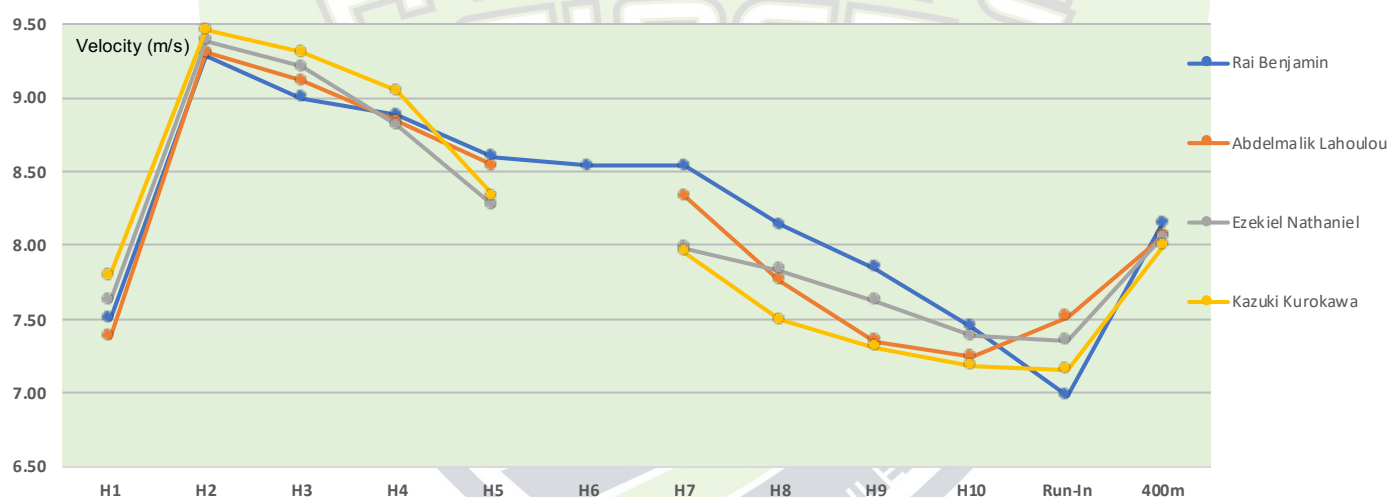
2022 World Athletics Championships (Eugene, OR) (TV Analysis)

Men's 400m Hurdles

Date: 2022.07.16

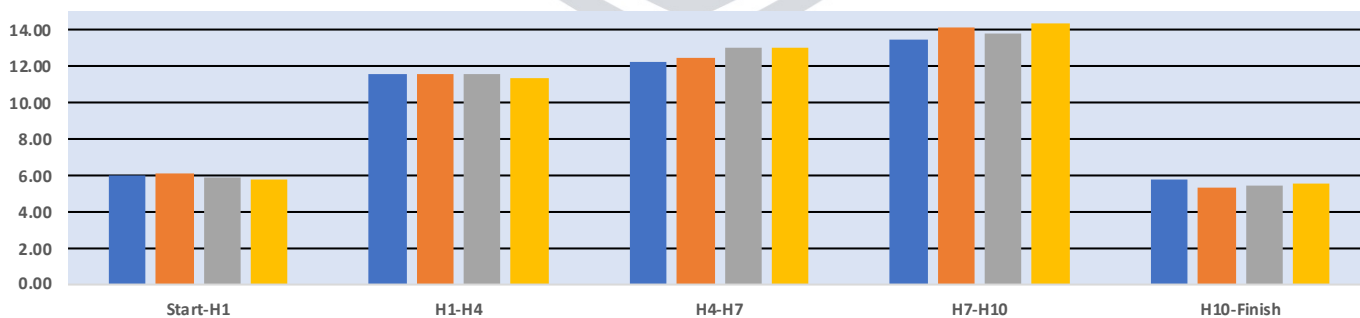
Heat 1

			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																
	interval		7.50	9.28	9.00	8.88	8.60	8.54	8.54	8.14	7.85	7.45	6.98	8.15		11.60	12.27	13.46
	velocity															9.05	8.56	7.80
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																
	interval		7.38	9.31	9.11	8.84	8.54		8.33	7.76	7.35	7.25	7.52	8.07		11.56	12.50	14.10
	velocity															9.08	8.40	7.45
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																
	interval		7.63	9.38	9.21	8.82	8.27		7.98	7.83	7.63	7.38	7.35	8.06		11.50	13.00	13.80
	velocity															9.13	8.08	7.61
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																
	interval		7.80	9.46	9.31	9.04	8.33		7.95	7.49	7.31	7.19	7.16	8.00		11.33	13.00	14.33
	velocity															9.27	8.08	7.33
	H1 lead leg	R	20	13	13	13	13	13	13	13	13	13	16.5	153.5				
	H1 lead leg	L	22	13	13	13	13		8.33	14	14	15	17	120				
	H1 lead leg	R	21	13	13	14	14		7.98	14	14	15	17.2	121.2				
	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&list=PL

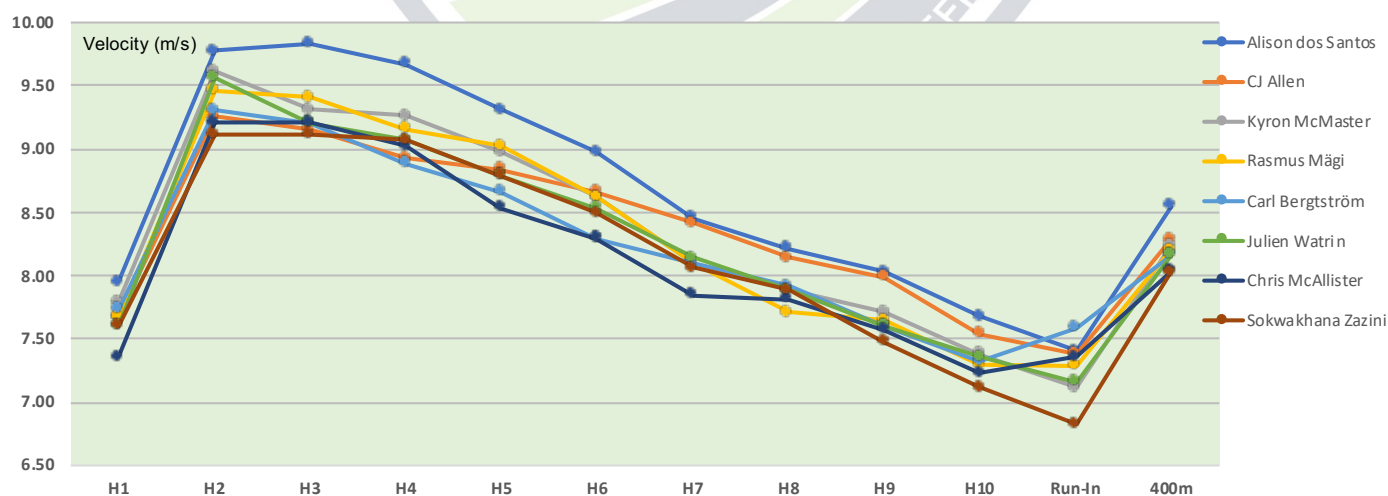
2022 Bauhaus Galan (Stockholm, SWE) (TV Analysis)

Men's 400m Hurdles

Date: 2022.06.30

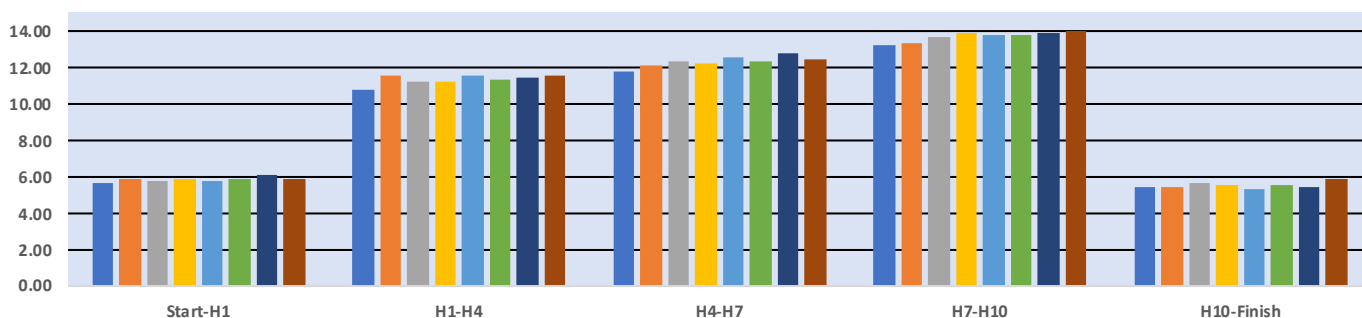
FINAL

			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	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, Kyrone (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	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=FFN5bHQ500c>

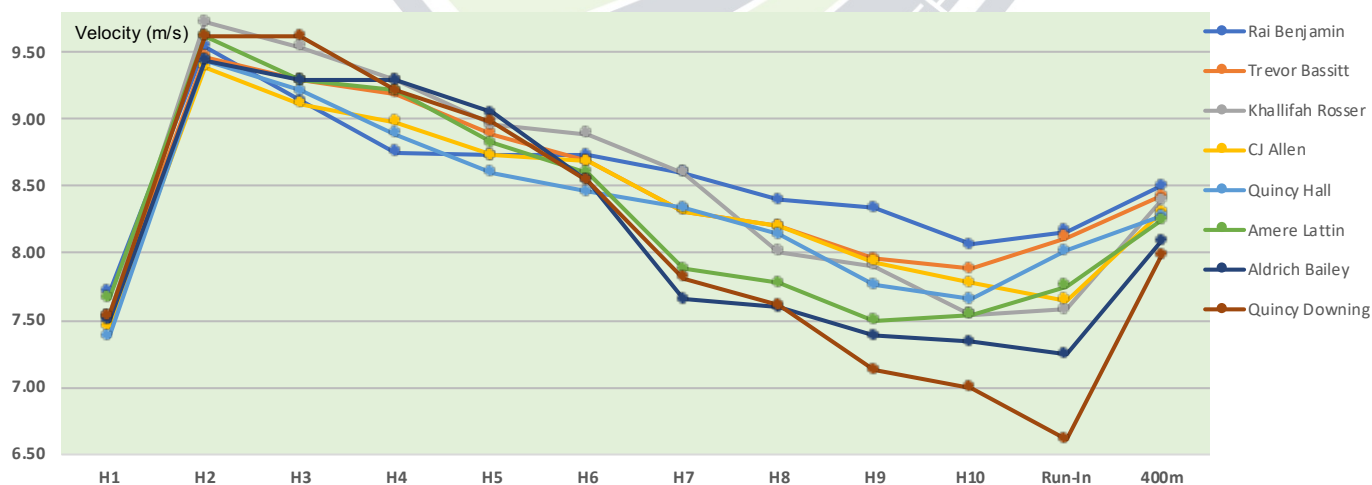
2022 USATF National Championships (Eugene, OR) (TV Analysis)

Men's 400m Hurdles

Date: 2022.06.26

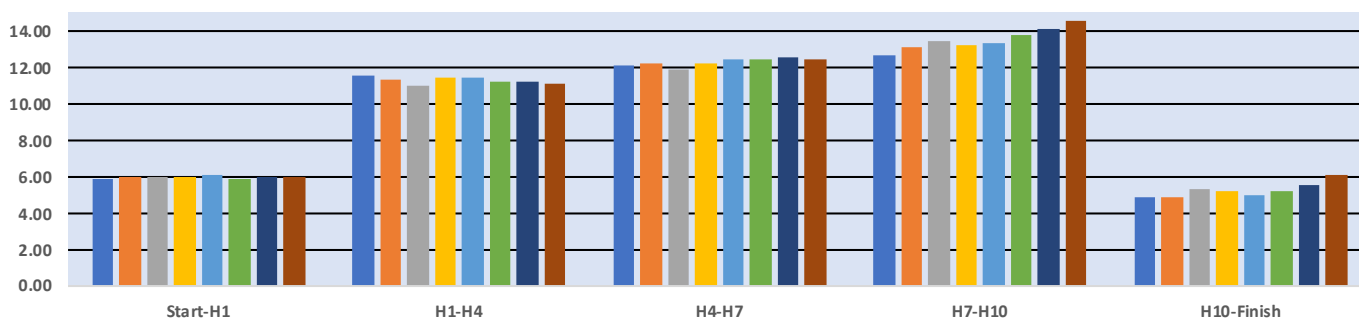
FINAL

			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
Bassitt, Trevor (USA) (1998)	H1 lead leg	R	20	13	13	13	13	13	13	13	13	13	16	153				
	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
Rosser, Khallifah (USA) (1995)	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	20	13	13	13	13	13	13	13	13	13	16	153				
	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																	
Allen, CJ (USA) (1995)	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	21	13	13	13	13	13	14	14	14	14	17.7	159.7				
	strides																	
Hall, Quincy (USA) (1998)	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
Lattin, Amere (USA) (1997)	H1 lead leg	L	20	13	13	13	13	13	14	14	14	14	17.5	158.5				
	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	4.07	4.14	4.20	4.30	4.51	4.57	4.99			11.45	12.41	13.38
Bailey, Aldrich (USA) (1994)	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	21	13	13	13	13	13	13	13	14	14	16	156				
	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																	
Downing, Quincy (USA) (1993)	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	20	13	13	13	13	13	14	14	14	14	17	158				
	strides																	
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
Downing, Quincy (USA) (1993)	H1 lead leg	L	21	13	13	12	12	13	14	13	14	14	14	139				
	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
Downing, Quincy (USA) (1993)	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	21	13	13	13	13	13	14	14	15	15	15	144				
	strides																	
	strides																	



Time Intervals (s)

Hurdle Phases



Evaluated with: ObjectusVideo

Quality & Frame Rate: 1920 x 1080 @ 50fps

Timing From: First Movement

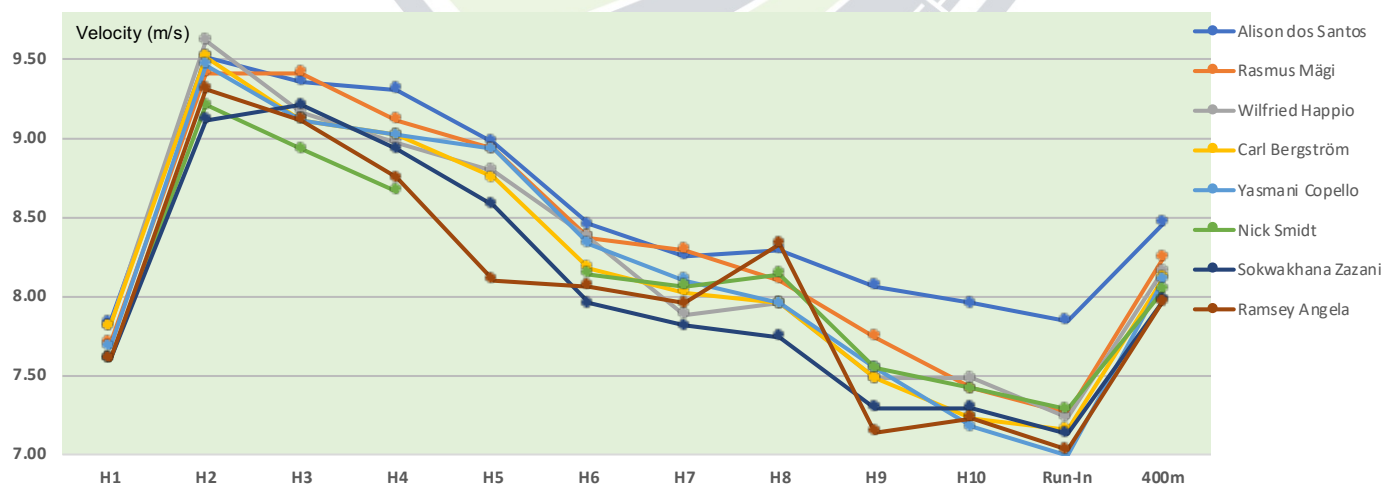
Source: <https://www.youtube.com/watch?v=gKH1vHVbolw>

Men's 400m Hurdles

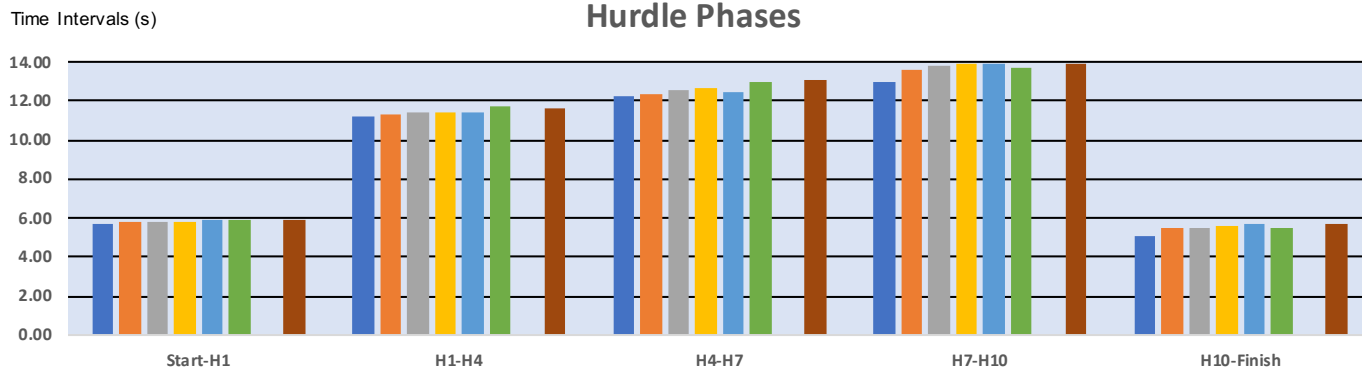
Date: 2022.06.16

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	11.18	12.28	12.96		
				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							
				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		20	13	12	12	12	12	13	13	13	13	16	149				
				strides																		
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	11.28	12.32	13.56		
				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							
				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		21	13	13	13	13	13	13	14	14	14	18	159				
				strides																		
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	11.36	12.60	13.76		
				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							
				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		20	13	13	13	13	13	14	14	15	15	18	161				
				strides																		
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	11.40	12.64	13.92		
				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							
				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		22	14	14	14	14	15	15	15	15	15	19.2	172.2				
				strides																		
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	11.42	12.44	13.92		
				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							
				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		20	13	13	13	13	13	13	14	14	15	18	159				
				strides																		
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	11.76	12.94	13.66		
				reaction time	0.172																	
				interval		3.80	3.92	4.04		8.60	4.34	4.30	4.64	4.72	5.49							
				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		21	13	13	14	14			14	15	15	18	137				
				strides																		
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	11.56	12.96	14.12		
				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							
				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		23	15	15	15	15	16	16	17	17	17	20	186				
				strides																		
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	11.60	13.06	13.94		
				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							
				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		22	14	14	14	16	15		15	15	15	18.5	158.5				
				strides																		



Hurdle Phases



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

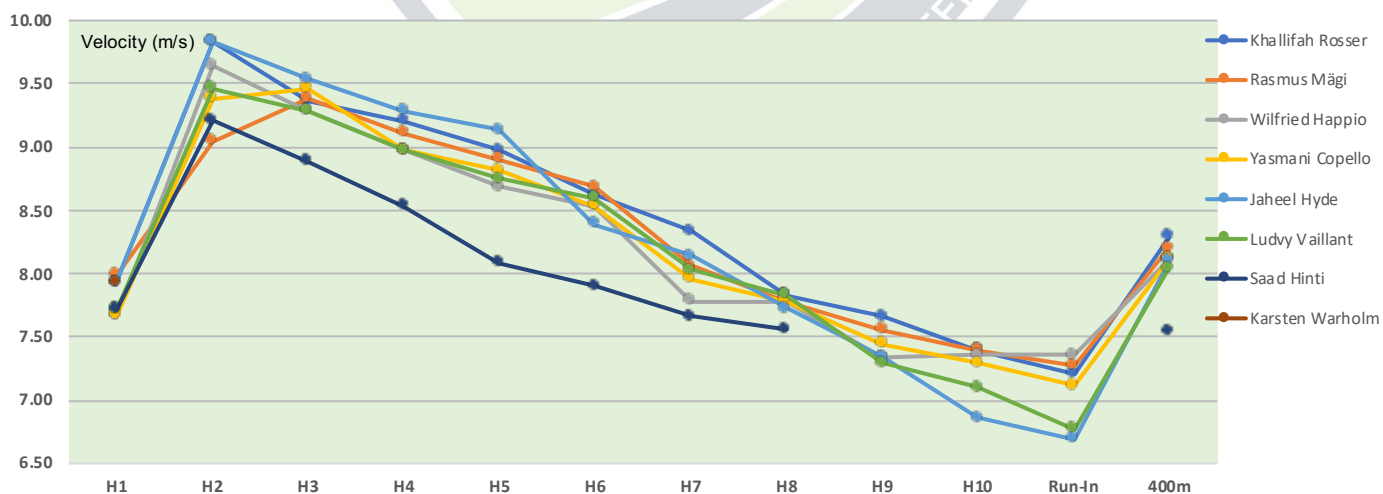
2022 Meeting International Mohammed VI d'Athlétisme (Rabat, MAR) (TV Analysis)

Men's 400m Hurdles

Date: 2022.06.05

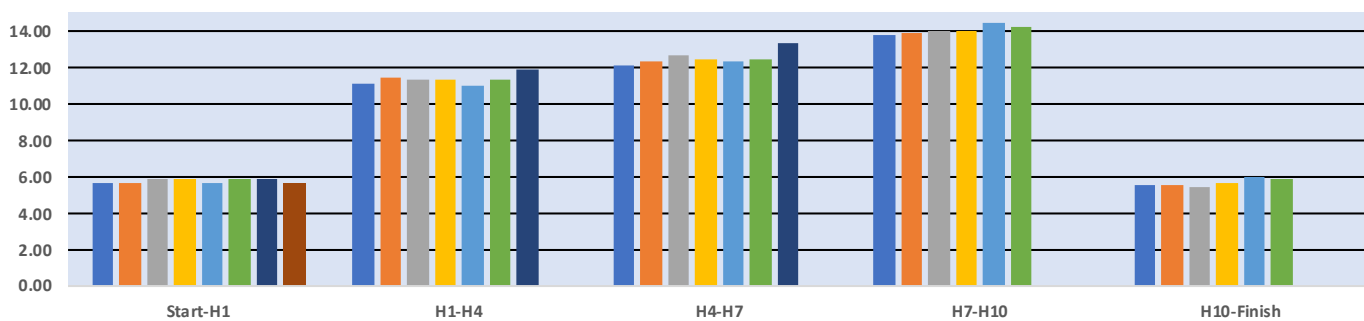
FINAL

			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	7.27	8.29		9.46	8.63	7.63
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
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
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
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
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
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						11.84	13.33	
	velocity		7.72	9.21	8.88	8.54	8.08	7.90	7.66	7.56				7.55		8.87	7.88	
Warholm, Karsten (NOR) (1996)	time		5.67												dnf	7 / --		
	reaction time	0.163																
	interval																	
	velocity		7.94															
Warholm, Karsten (NOR) (1996)	time		5.67												dnf	7 / --		
	reaction time	0.163																
	interval																	
	velocity		7.94															



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=uxJ3fVJiGzc&t=18s>

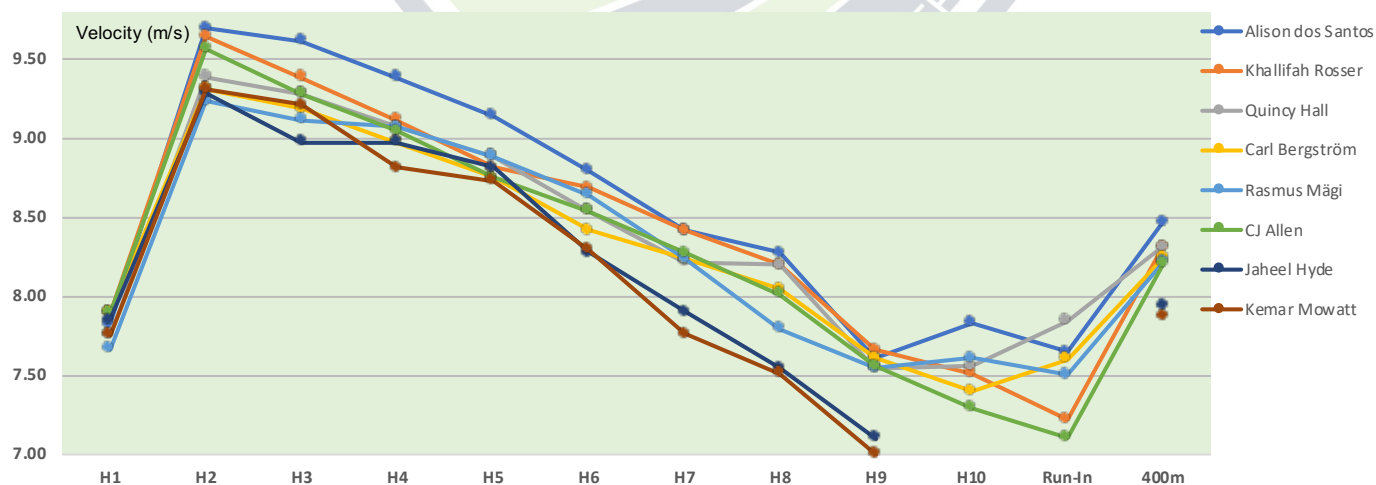
2022 Prefontaine Classic (Eugene, OR) (TV Analysis)

Men's 400m Hurdles

Date: 2022.05.28

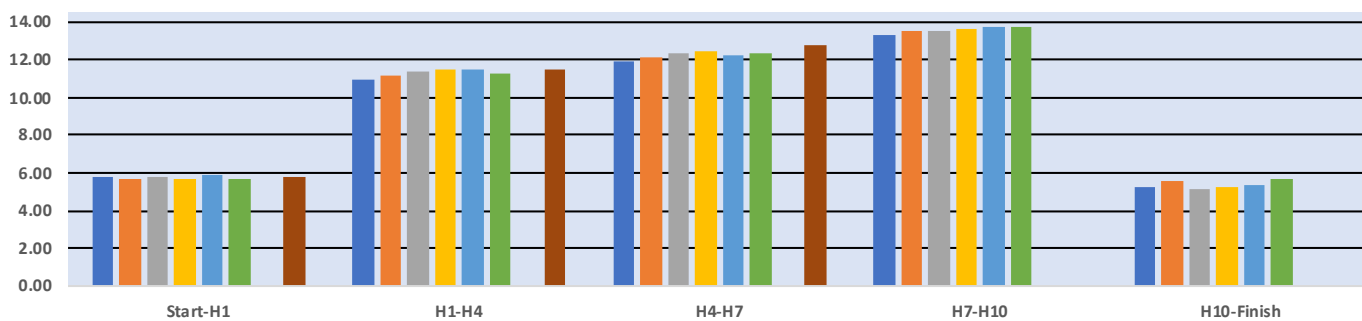
FINAL

			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											5.23			10.98	11.97	13.30
	interval		7.83	3.61	3.64	3.73	3.83	3.98	4.16	4.23	4.60	4.47	7.65	8.47		9.56	8.77	7.89
	velocity																	
Rosser, Khallifah (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											5.54	PB		11.20	12.16	13.50
	interval		7.89	3.63	3.73	3.84	3.97	4.03	4.16	4.27	4.57	4.66	7.22	8.32		9.38	8.63	7.78
	velocity																	
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											5.10	PB		11.36	12.30	13.54
	interval		7.76	3.73	3.77	3.86	3.94	4.10	4.26	4.27	4.64	4.63	7.84	8.32		9.24	8.54	7.75
	velocity																	
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											5.26	PB		11.47	12.41	13.68
	interval		7.89	3.76	3.81	3.90	4.00	4.16	4.25	4.35	4.60	4.73	7.60	8.24		9.15	8.46	7.68
	velocity																	
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											5.33			11.49	12.24	13.73
	interval		7.67	3.79	3.84	3.86	3.94	4.05	4.25	4.49	4.64	4.60	7.50	8.22		9.14	8.58	7.65
	velocity																	
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											5.63			11.30	12.33	13.80
	interval		7.89	3.66	3.77	3.87	4.00	4.10	4.23	4.37	4.63	4.80	7.10	8.20		9.29	8.52	7.61
	velocity																	
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														11.57	12.63	
	interval		7.85	3.77	3.90	3.90	3.97	4.23	4.43	4.64	4.93		7.94	132		9.08	8.31	
	velocity																	
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														11.53	12.74	
	interval		7.76	3.76	3.80	3.97	4.01	4.22	4.51	4.66	5.00		7.87	130		9.11	8.24	
	velocity																	



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>

Men's 400m Hurdles

Date 2022.05.13

FINAL

Velocity (m/s)

Sprinter	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m
Alison dos Santos	7.65	9.55	9.40	8.75	8.60	8.40	8.60	8.35	8.35	8.15	7.85	8.50
Rai Benjamin	8.05	9.80	9.20	8.85	8.50	8.55	8.65	8.25	8.15	7.95	7.65	8.45
Thomas Barr	7.55	9.55	8.95	8.60	8.35	8.15	8.60	7.90	7.65	7.75	7.65	8.05
Kyron McMaster	7.90	9.55	9.20	8.60	8.30	8.00	7.90	7.75	7.55	7.45	7.10	8.00
Jaheel Hyde	7.65	9.20	8.70	8.55	8.30	7.85	7.90	7.90	7.80	7.55	7.15	8.45
Yasmani Copello	7.55	9.05	8.60	8.30	8.35	8.00	7.90	7.65	7.55	7.25	7.15	8.00
Jabir Madari Palliyalil	7.65	9.30	8.75	8.45	8.30	8.20	8.60	7.70	7.45	7.25	7.15	8.00

Time Intervals (s)

Hurdle Phases



Women's 400m Hurdles

2022 Top 10 Times - Women's 400m Hurdles

McLaughlin, Sydney (USA) (1999)		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane/Place	H1-H4	H4-H7	H7-H10	
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						
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		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	strides	22	14	14	14	14	14	14	15	15	15	18.7	169.7				
McLaughlin, Sydney (USA) (1999)		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane/Place	H1-H4	H4-H7	H7-H10	
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						
reaction time		interval		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	15	15	18.2	168.2				
McLaughlin, Sydney (USA) (1999)		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane/Place	H1-H4	H4-H7	H7-H10	
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						
reaction time		interval		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	R	strides	22	14	14	14	16	13	15	15	15	16	117					
McLaughlin, Sydney (USA) (1999)		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane/Place	H1-H4	H4-H7	H7-H10	
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						
reaction time	0.182	interval		4.03	4.09	4.27	4.33		9.20	4.70	4.77	4.67	5.38			12.39	13.53	14.14
		velocity	7.21	8.68	8.56	8.20	8.08		7.61	7.45	7.34	7.49	7.43	7.74		8.47	7.76	7.43
H1 lead leg	R	strides	22	14	14	14	14		15	15	15	15	18	141				
McLaughlin, Sydney (USA) (1999)		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane/Place	H1-H4	H4-H7	H7-H10	
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						
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			12.30	13.48	14.53
		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		8.54	7.79	7.23
H1 lead leg	R	strides	22	14	14	14	14	15	15	15	15	16	18	172				
Boi, Femke (NED) (2000)		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane/Place	H1-H4	H4-H7	H7-H10	
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						
reaction time	0.203	interval		4.02	4.08	4.18	4.30	4.48	4.60	4.68	4.78	4.92	5.87			12.28	13.38	14.38
		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		8.55	7.85	7.30
H1 lead leg	L	strides	22	15	15	15	15	15	15	15	15	15	19	176				
Boi, Femke (NED) (2000)		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane/Place	H1-H4	H4-H7	H7-H10	
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						
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	strides	22	15	15	15	15		15	15	15	15	19	146				
Boi, Femke (NED) (2000)		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane/Place	H1-H4	H4-H7	H7-H10	
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						
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
		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	7.11
H1 lead leg	L	strides	22	15	15	15	15	15	15	15	15	16	19.5	177.5				
Boi, Femke (NED) (2000)		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane/Place	H1-H4	H4-H7	H7-H10	
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						
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	strides	22	15	15	15	15	15	15	15	15	15	18.7	175.7				
Boi, Femke (NED) (2000)		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane/Place	H1-H4	H4-H7	H7-H10	
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						
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	7.05	7.57		8.45	7.64	7.14
H1 lead leg	L	strides	22	15	15	15	15	15	15	15	15	15	18	175				
McLaughlin, Sydney (USA) (1999)		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane/Place	H1-H4	H4-H7	H7-H10	
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						
reaction time		interval		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	strides	22	14	14	14	14	15	15	15	15	16	18.2	172.2				
Boi, Femke (NED) (2000)		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane/Place	H1-H4	H4-H7	H7-H10	
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						
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
		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		8.27	7.66	7.16
H1 lead leg	L	strides	22	15	15	15	15	15	15	15	15	15	19	176				
Boi, Femke (NED) (2000)		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane/Place	H1-H4	H4-H7	H7-H10	
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						
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	strides	22	15	15	15	15	15	15	15	15	15	19.5	161.5				
Boi, Femke (NED) (2000)		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane/Place	H1-H4	H4-H7	H7-H10	
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						
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	6.84	6.61	7.54				

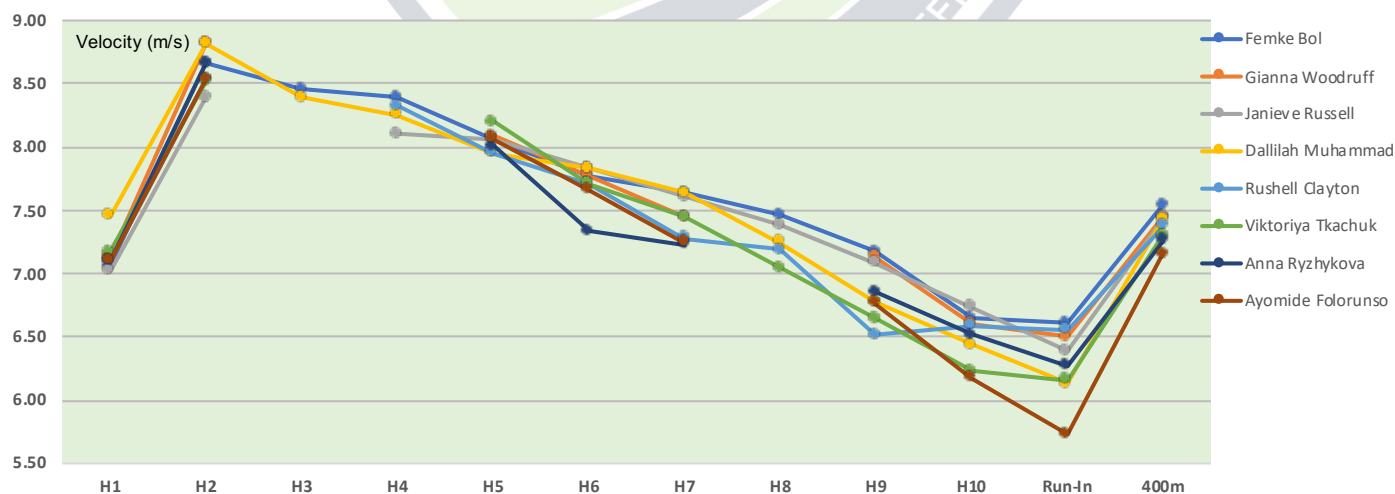
2022 Weltklasse (Zürich, SUI) (TV Analysis)

Women's 400m Hurdles

Date 2022.09.08

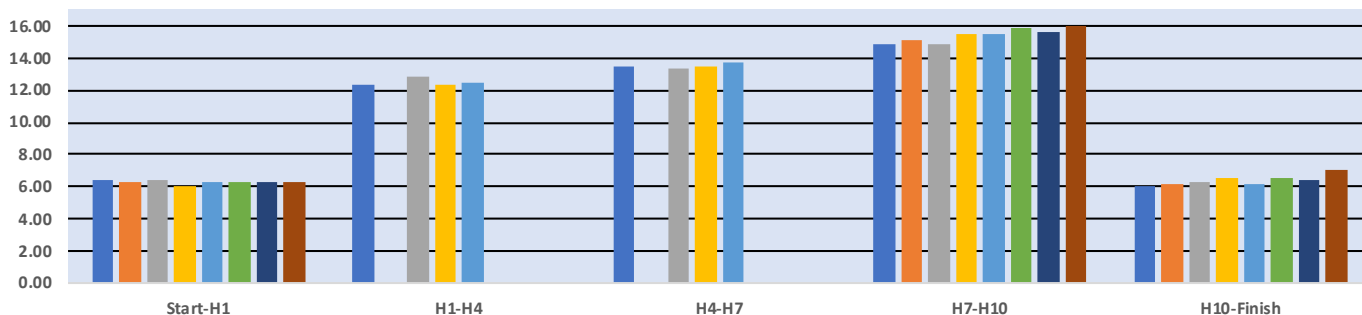
FINAL

			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																
	strides		22	15	15	15	15	15	15	15	15	16	19	177				
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	8.82			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				
	strides		23	15														
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	136				
	strides		23	15														
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										16	20	179				
	strides		22	15	15	15	15	15	15	15	16	16						
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				
	strides		23	15														
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			12.81	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				
	strides		22	15														
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				
	strides		22	14														
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				
	strides		23	15														



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=gwP7oW-uSxE>

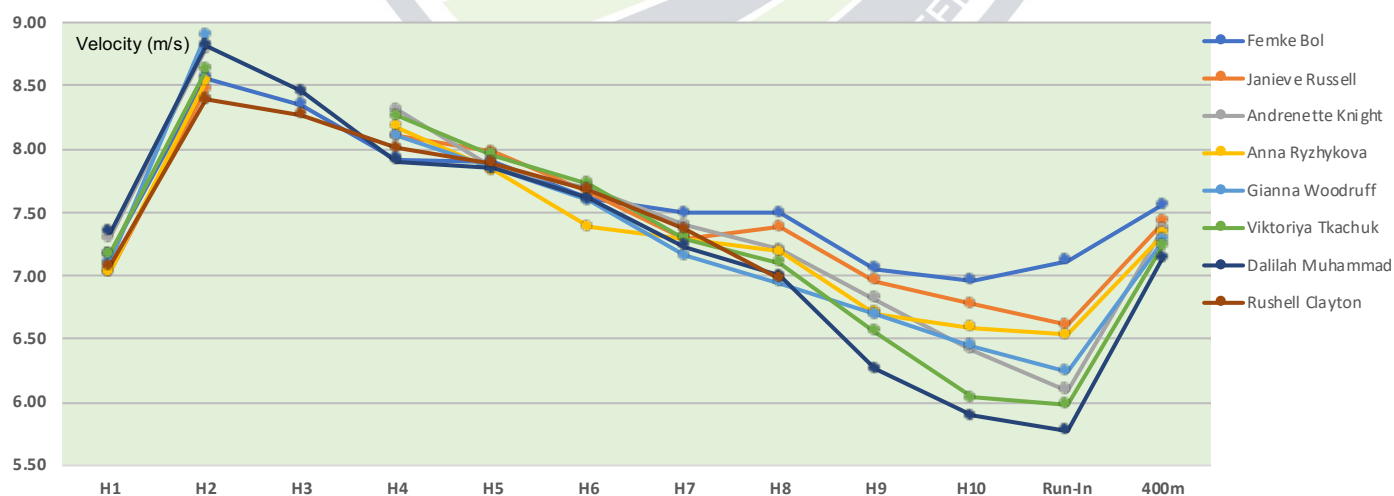
2022 Athletissima (Lausanne, SUI) (TV Analysis)

Women's 400m Hurdles

Date 2022.08.26

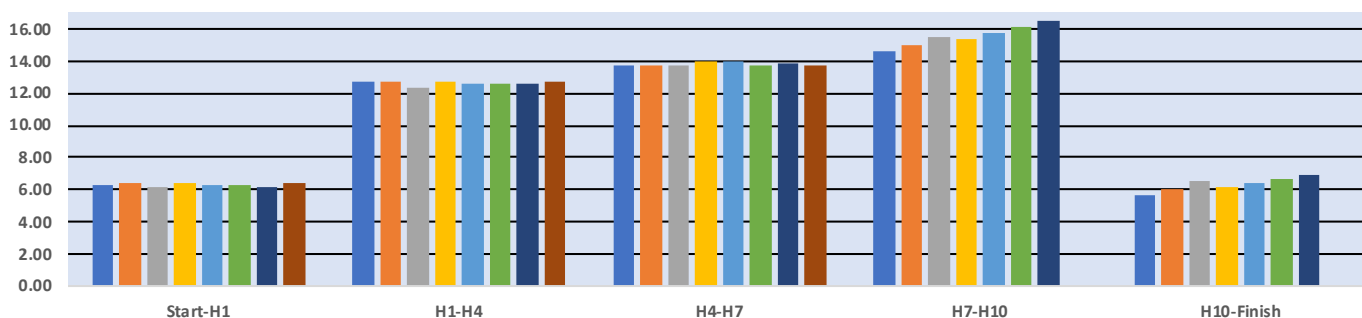
FINAL

				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
			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		8.27	7.66	7.16
	H1 lead leg	L	strides	22	15	15	15	15	15	15	15	15	15	19	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		8.64	4.39	4.57	4.80	4.74	5.03	5.17	6.05			12.77	13.76	14.94
			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
	H1 lead leg	R	strides	23	15		15	15	16	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		8.42	4.46	4.55	4.73	4.86	5.14	5.46	6.57			12.40	13.74	15.46
			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
	H1 lead leg	R	strides	22	15		15	15	15	16	16	16	17	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		8.56	4.47	4.74	4.80	4.87	5.22	5.31	6.12			12.66	14.01	15.40
			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
	H1 lead leg	R	strides	22	14		14	15	15	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		8.64	4.46	4.63	4.89	5.04	5.23	5.43	6.41			12.57	13.96	15.70
			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
	H1 lead leg	L	strides	23	15		15	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		8.47	4.40	4.53	4.80	4.93	5.34	5.80	6.69			12.53	13.73	16.07
			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
	H1 lead leg	L	strides	22	15		15	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	5.94	6.93			12.54	13.90	16.53
			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	6.35
	H1 lead leg	R	strides	22	14	14	15	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	
			velocity	7.08	8.39	8.27	8.01	7.88	7.68	7.37	6.97						8.22	7.64	
	H1 lead leg	R	strides	22	15	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=QIGvQel3Cwk>

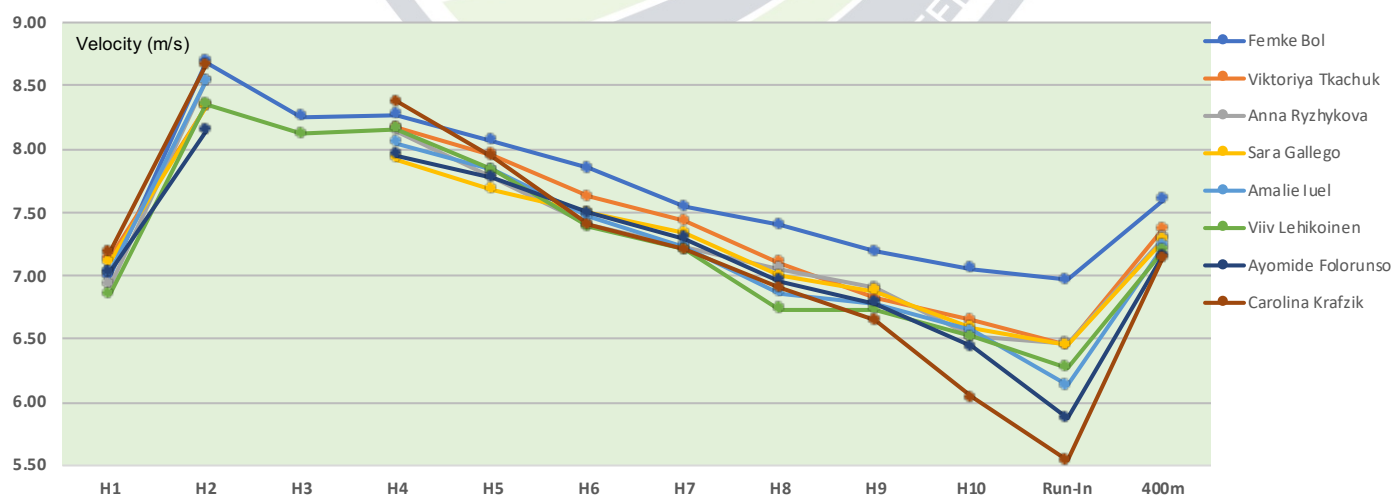
2022 European Athletics Championships (Munich, GER) (TV Analysis)

Women's 400m Hurdles

Date 2022.08.19

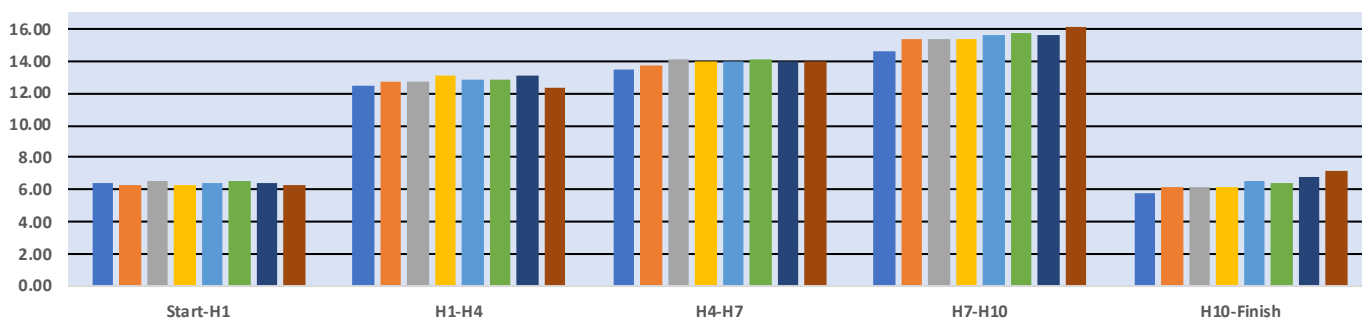
FINAL

			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	3 / 1			
	reaction time	0.279																
	interval		7.00	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	22	15	15	15	15	15	15	15	15	15	15	18.7				
	strides													175.7				
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	22	15			15	15	15	15	16	16	20	149				
	strides																	
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	22	14			14	15	15	15	15	16	19.5	145.5				
	strides																	
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	23	15			16	16	16	17	17	17	21.7	158.7				
	strides																	
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	23	15			15	15	15	16	16	16	20	151				
	strides																	
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	5.20	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	25	16	16	16	16	16	17	17	17	17	20.5	193.5				
	strides																	
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	23	15			15	16	16	16	17	17	21.5	156.5				
	strides																	
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	23	15			15	16	16	17	17	19	22.5	160.5				
	strides																	



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

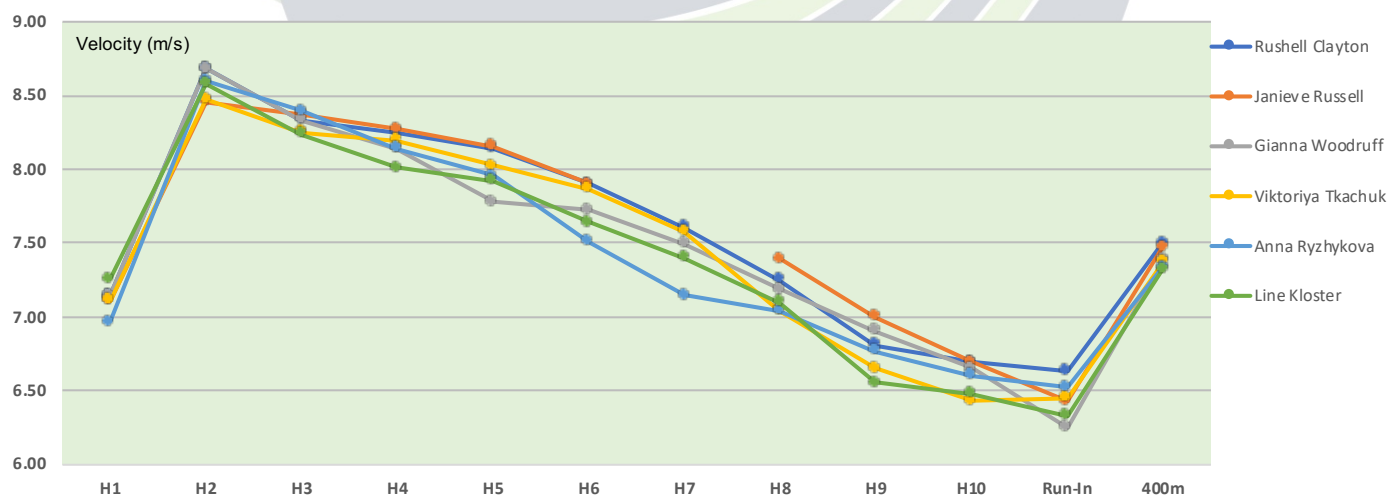
2022 Herculis Meeting International d'Athlétisme (Monaco, MON) (TV Analysis)

Women's 400m Hurdles

Date 2022.08.10

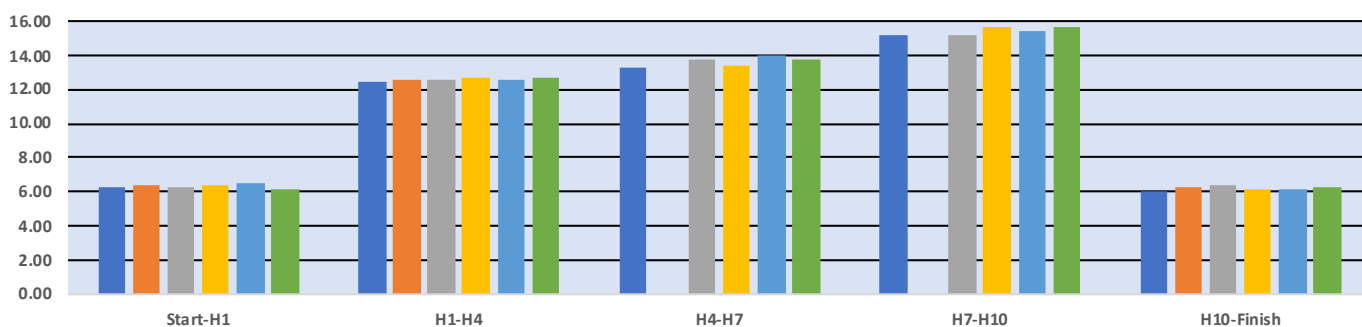
FINAL

			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	PB		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
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		
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
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
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
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
	time																	
	interval																	
	velocity																	
	strides																	



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=gPZF18RRJqI>

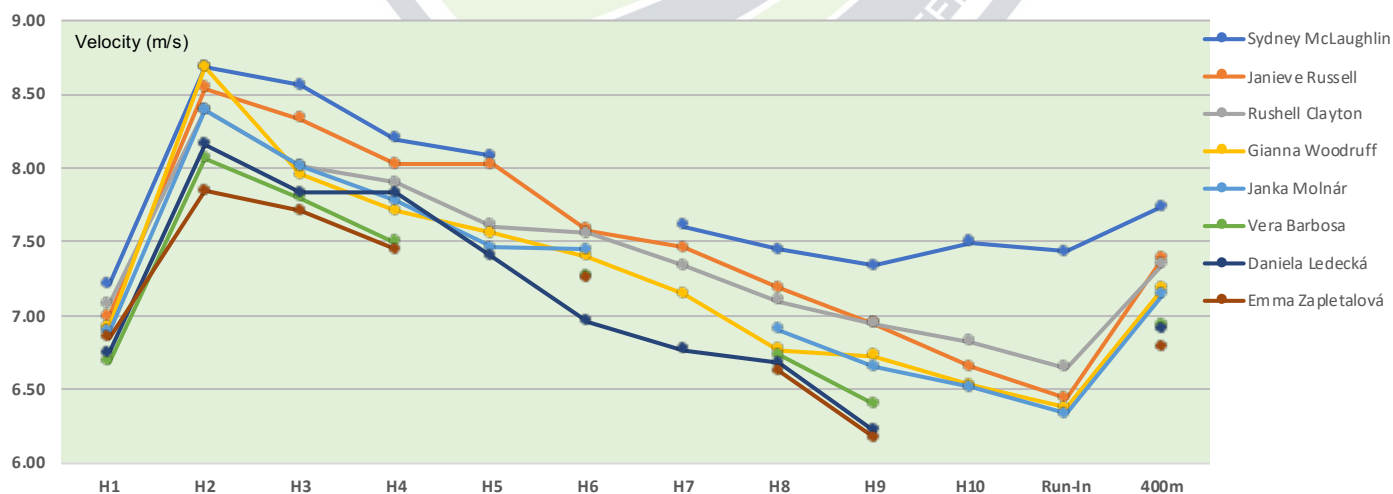
2022 Gyulai István Memorial (Székesfehérvár, HUN) (TV Analysis)

Women's 400m Hurdles

Date 2022.08.08

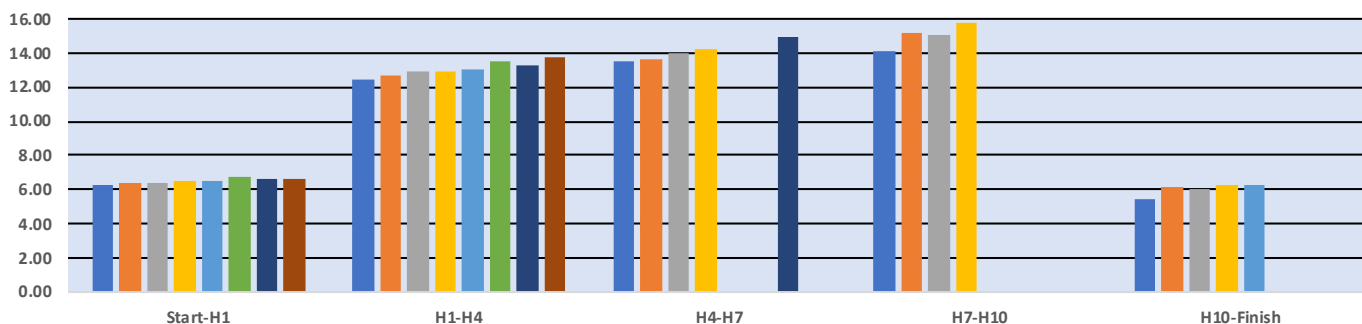
FINAL

			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							9.20	4.70	4.77	4.67	5.38			12.39	13.53	14.14
	interval velocity		7.21	8.68	8.56	8.20	8.08		7.61	7.45	7.34	7.49	7.43	7.74		8.47	7.76	7.43
	H1 lead leg	R	22	14	14	14	14			15	15	15	18	141				
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							4.69	4.87	5.04	5.26	6.21			12.66	13.67	15.17
	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		8.29	7.68	6.92
	H1 lead leg	R	23	15	15	15	15			16	16	17		132				
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							4.77	4.93	5.04	5.13	6.02			12.97	14.00	15.10
	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		8.10	7.50	6.95
	H1 lead leg	L	22	15	15	15	15			16	16	16		145				
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							4.73	5.17	5.20	5.36	6.27			12.97	14.26	15.73
	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		8.10	7.36	6.68
	H1 lead leg	L	23	15	15	15	15			15	16	17		147				
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								10.14	5.26	5.37	6.31			13.04		
	interval velocity		6.89	8.39	8.01	7.78	7.46	7.45		6.90	6.65	6.52	6.34	7.14		8.05		
	H1 lead leg	L	23	16	16	16	16				17	17		121				
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						9.64		10.39	5.47					13.50		
	interval velocity		6.69	8.06	7.80	7.49		7.26		6.74	6.40			6.94		7.78		
	H1 lead leg	L	24	16	16	16	16				18			106				
Ledecská, 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						5.03	5.17	5.24	5.63					13.23	14.93	
	interval velocity		6.75	8.16	7.83	7.83	7.40	6.96	6.77	6.68	6.22			6.91		7.94	7.03	
	H1 lead leg	R	23	15	15	15	15	16	16	16	17			148				
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						9.66		10.57	5.67					13.70		
	interval velocity		6.85	7.85	7.71	7.45		7.25		6.62	6.17			6.78		7.66		
	H1 lead leg	R	23	16	16	16	16				17			104				



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>

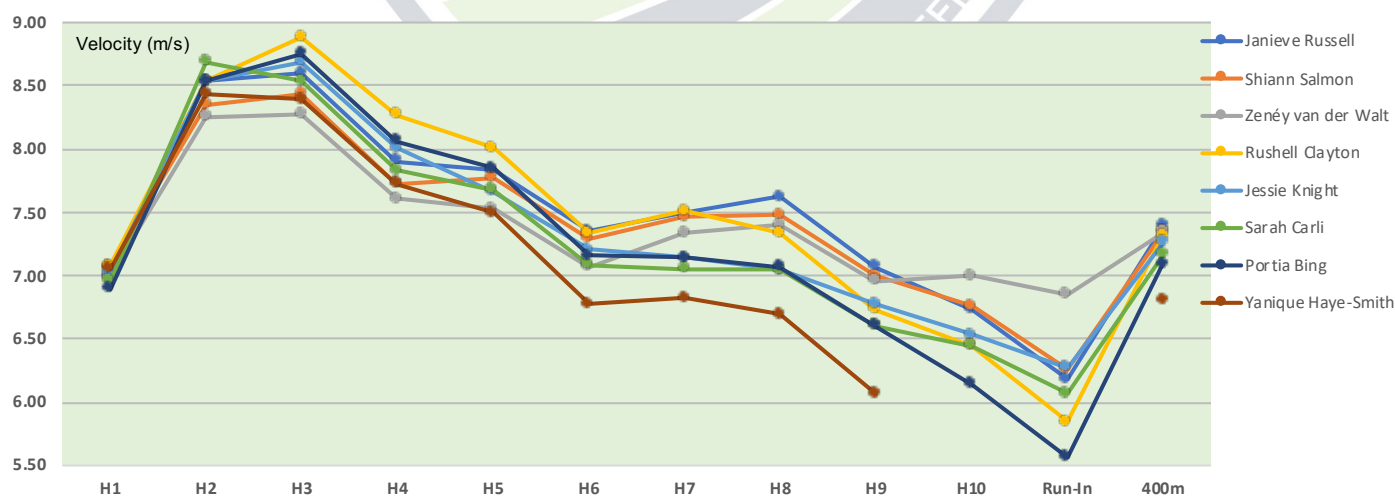
2022 Commonwealth Games (Birmingham, GBR) (TV Analysis)

Women's 400m Hurdles

Date 2022.08.06

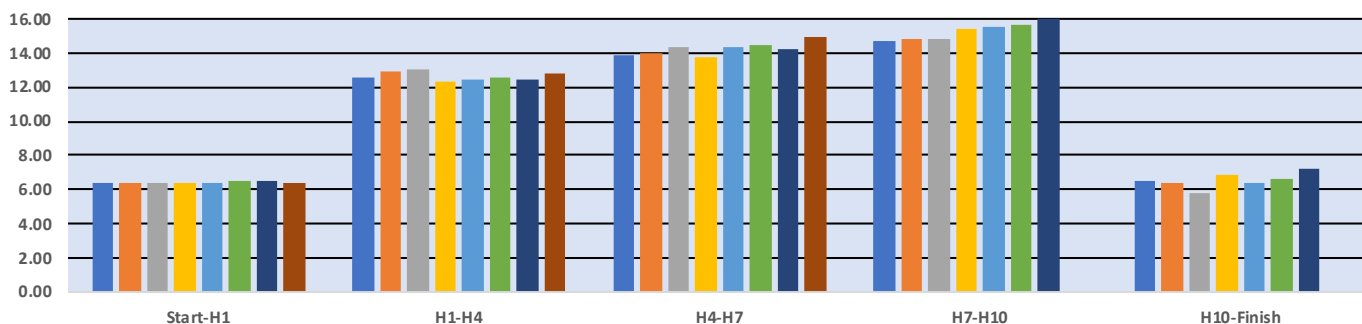
FINAL

			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	interval		4.10	4.07	4.43	4.47	4.76	4.67	4.59	4.95	5.20	6.47			12.60	13.90	14.74
		velocity	7.00	8.54	8.60	7.90	7.83	7.35	7.49	7.63	7.07	6.73	6.18	7.39		8.33	7.55	7.12
H1 lead leg	R	strides	23	15	15	15	15	15	16	16	17	17	20	184				
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	interval		4.19	4.15	4.53	4.50	4.80	4.69	4.68	5.00	5.18	6.39			12.87	13.99	14.86
		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	strides	22	15	15	15	15	15	15	15	16	16	19.7	178.7				
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	interval		4.24	4.23	4.60	4.65	4.95	4.77	4.73	5.03	5.00	5.84	PB		13.07	14.37	14.76
		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	strides	22	15	15	15	15	15	15	16	16	16	19	179				
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	interval		4.10	3.94	4.23	4.37	4.77	4.66	4.77	5.20	5.43	6.84			12.27	13.80	15.40
		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	strides	22	15	15	15	15	15	15	16	16	17	20	181				
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	interval		4.10	4.03	4.47	4.57	4.86	4.90	4.97	5.17	5.36	6.38			12.50	14.33	15.50
		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	strides	22	15	15	15	15	15	15	16	16	16	19.2	179.2				
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	interval		4.03	4.10	4.47	4.56	4.94	4.96	4.97	5.30	5.43	6.59			12.60	14.46	15.70
		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	strides	23	15	15	15	16	16	16	17	17	17	21	188				
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	interval		4.10	4.00	4.34	4.46	4.89	4.90	4.95	5.30	5.70	7.19			12.44	14.25	15.95
		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	strides	22	14	14	14	14	15	15	16		17	20.5	161.5				
Haye-Smith, Yanique (TKS) (1990)	time		6.38	10.53	14.70	19.23	23.90	29.07	34.20	39.43	45.20			58.78	3 / 8			
reaction time	0.170	interval		4.15	4.17	4.53	4.67	5.17	5.13	5.23	5.77					12.85	14.97	
		velocity	7.05	8.43	8.39	7.73	7.49	6.77	6.82	6.69	6.07					8.17	7.01	
H1 lead leg	R	strides	24	16	16	16	16	17	17	18	18			158				



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=E0V3Xr9uJk>

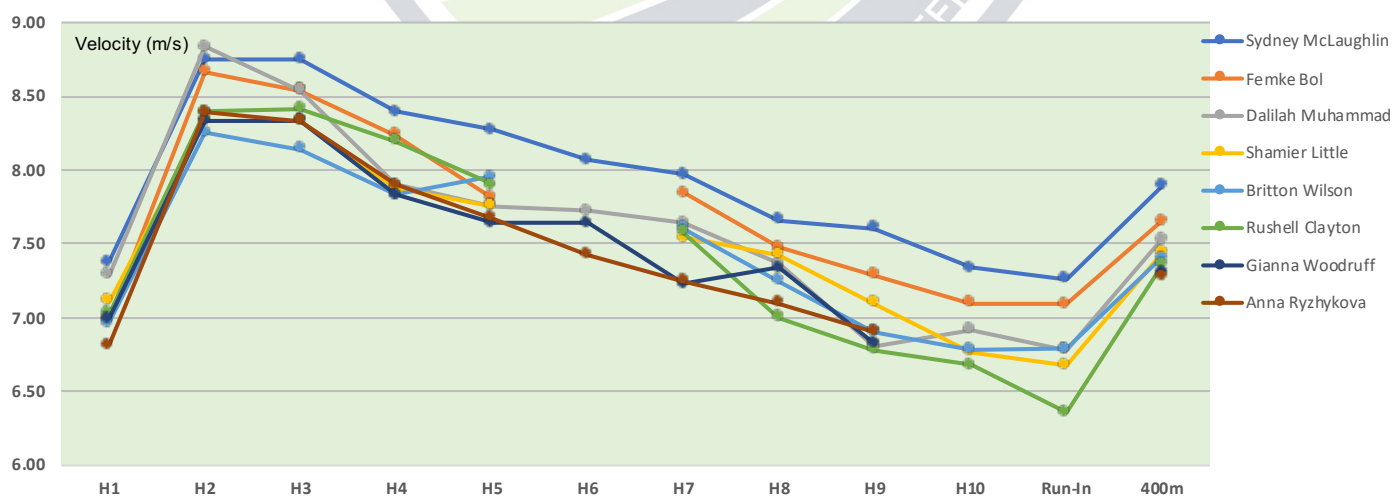
2022 World Athletics Championships (Eugene, OR) (TV Analysis)

Women's 400m Hurdles

Date 2022.07.22

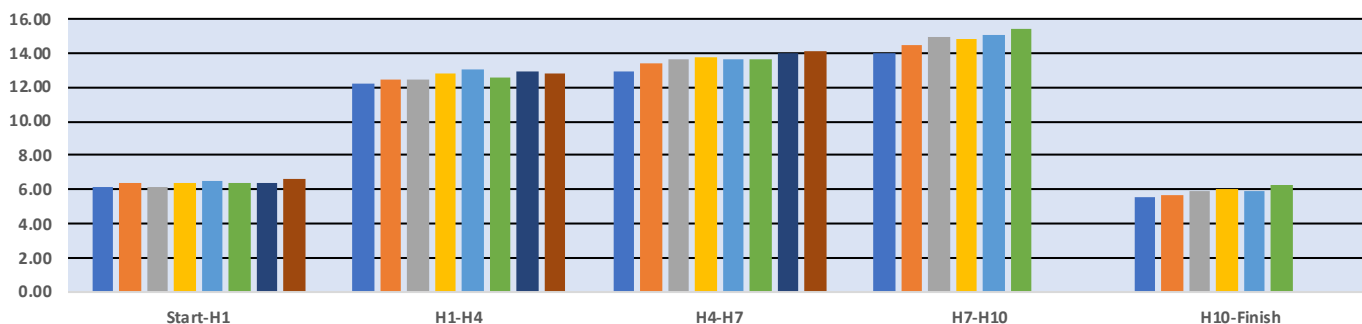
FINAL

			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		7.38	4.00	4.00	4.17	4.23	4.34	4.39	4.57	4.60	4.77	5.51	WR		12.17	12.96	13.94
	velocity		8.75	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
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		7.00	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		8.66	8.54	8.54	8.24	7.81		7.85	7.48	7.29	7.10	7.09	7.65		8.47	7.84	7.29
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		7.29	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		8.84	8.54	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
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		7.11	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		8.33	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
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
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	5.24	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
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		7.00	4.20	4.20	4.47	4.58	4.58	4.84	4.77	5.13					12.87	14.00	
	velocity		8.33	8.33	8.33	7.83	7.64	7.64	7.23	7.34	6.82			7.31		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		6.82	4.17	4.20	4.43	4.56	4.71	4.83	4.93	5.07					12.80	14.10	
	velocity		8.39	8.33	8.33	7.90	7.68	7.43	7.25	7.10	6.90			7.28		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=RMZQOI-Gf4o&t=11769s>

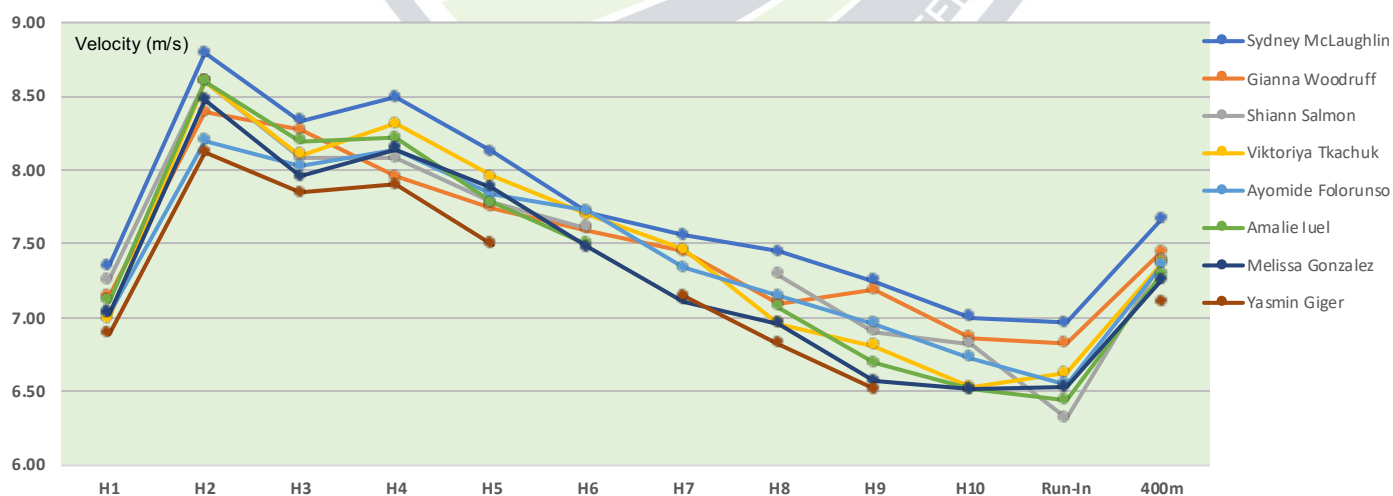
2022 World Athletics Championships (Eugene, OR) (TV Analysis)

Women's 400m Hurdles

Date 2022.07.20

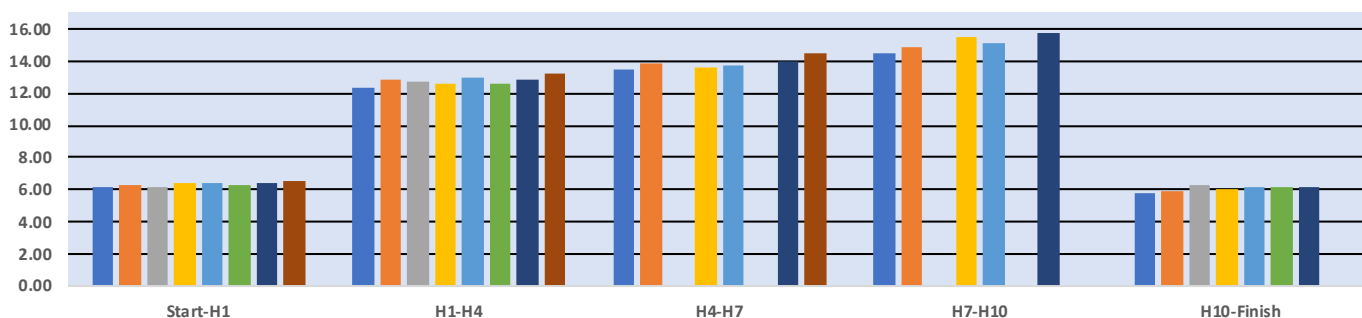
Semi-Final 3

			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														12.30	13.48	14.53
	interval velocity		7.35	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
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														12.80	13.83	14.90
	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		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														12.73		
	interval velocity		7.26	8.60	8.08	8.08	7.78	7.61		9.60	5.07	5.13	6.33	7.39		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														12.60	13.64	15.53
	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		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														12.93	13.77	15.13
	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		8.12	7.63	6.94
Iuel, 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														12.60		
	interval velocity		7.11	8.60	8.20	8.22	7.78	7.49		7.07	6.69	6.52	6.44	7.30		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														12.83	14.04	15.73
	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		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														13.20	14.47	
	interval velocity		6.89	8.12	7.85	7.90	7.49		7.14	6.82	6.52			7.10		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>

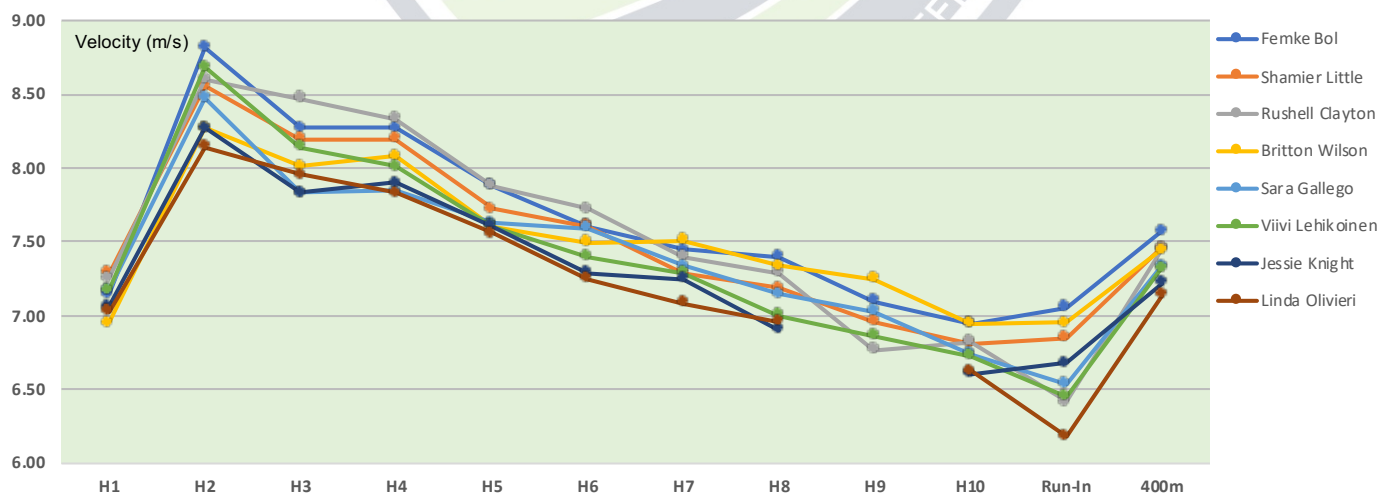
2022 World Athletics Championships (Eugene, OR) (TV Analysis)

Women's 400m Hurdles

Date 2022.07.20

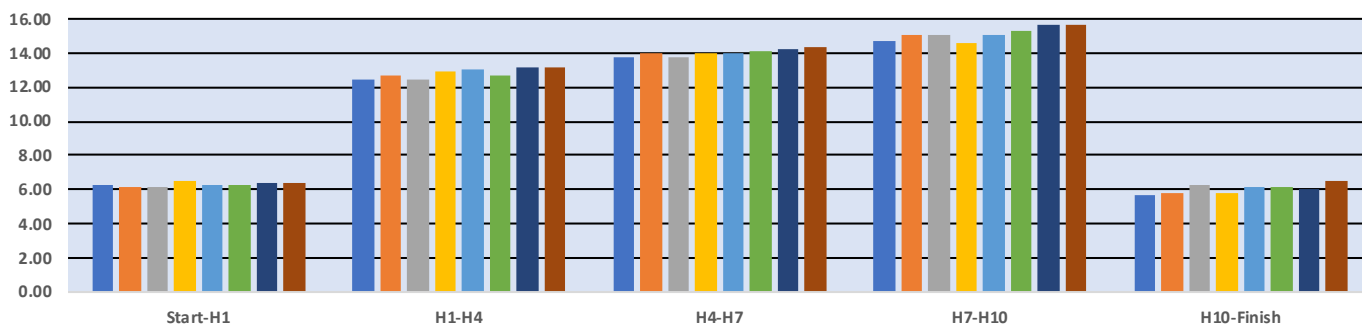
Semi-Final 2

			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														12.43	13.74	14.70
	interval		7.14	8.82	8.27	8.23	4.44	4.60	4.70	4.73	4.93	5.04	5.67			8.45	7.64	7.14
	velocity																	
	H1 lead leg	L	22	15	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														12.63	13.93	15.04
	interval		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
	velocity																	
	H1 lead leg	R	23	15	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														12.40	13.70	15.10
	interval		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
	velocity																	
	H1 lead leg	L	22	14	14	15	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														12.93	13.93	14.64
	interval		4.23	4.37	4.33	4.60	4.67	4.66	4.77	4.83	4.83	5.04	5.75			8.12	7.54	7.17
	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				
	H1 lead leg	R	23	15	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														13.06	13.97	15.07
	interval		4.13	4.47	4.46	4.59	4.61	4.77	4.90	4.98	5.19	5.19	6.12			8.04	7.52	6.97
	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				
	H1 lead leg	L	24	15	16	16	16	16	16	17	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														12.70	14.13	15.30
	interval		4.03	4.30	4.37	4.60	4.73	4.80	5.00	5.10	5.20	6.20	NR PB			8.27	7.43	6.86
	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				
	H1 lead leg	R	23	15	15	15	16	16	16	17	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		49.40		55.39	2 / 7			
	reaction time	0.148														13.13	14.23	15.67
	interval		7.06	8.27	7.83	7.90	7.61	7.29	7.25	6.90		10.60	5.99			8.00	7.38	6.70
	velocity											6.60	6.68	7.22				
	H1 lead leg	R	22	15	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		49.57		56.04	1 / 8			
	reaction time	0.135														13.17	14.40	15.60
	interval		7.03	8.14	7.95	7.83	7.56	7.25	7.09	6.96		10.57	6.47			7.97	7.29	6.73
	velocity											6.62	6.18	7.14				
	H1 lead leg	R	23	15	15	15	15	15	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>

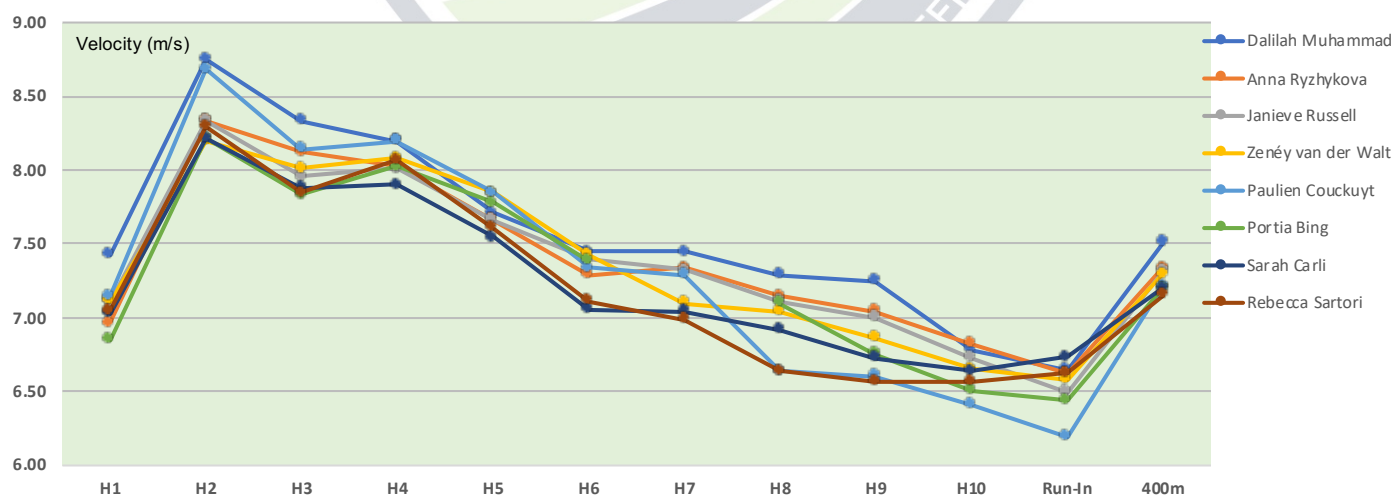
2022 World Athletics Championships (Eugene, OR) (TV Analysis)

Women's 400m Hurdles

Date 2022.07.20

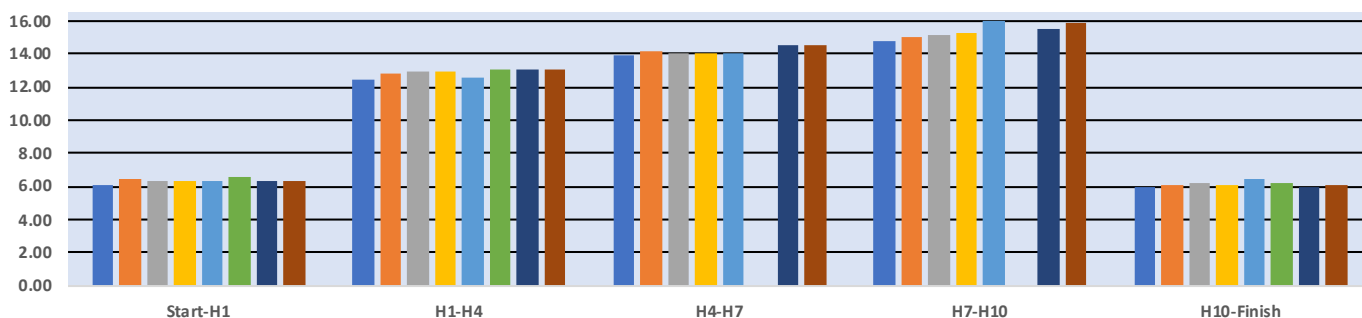
Semi-Final 1

			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
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
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
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			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
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
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		
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
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



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

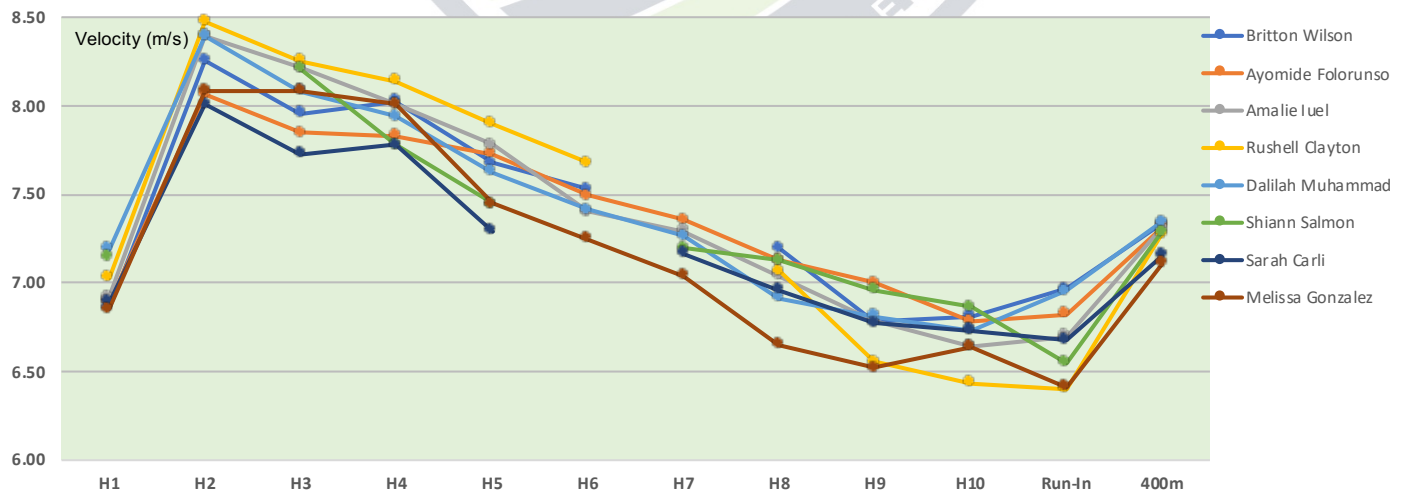
Heat 5

			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								9.73	5.16	5.14	5.74			13.00		
	interval 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	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								4.91	5.00	5.16	5.86			13.27	13.96	15.07
	interval 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	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								4.97	5.16	5.27	5.97	PB		12.80	14.03	15.40
	interval 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								9.90	5.34	5.44	6.25			12.67		
	interval 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	15			17	17	19.5	150.5				

Date 2022.07.19

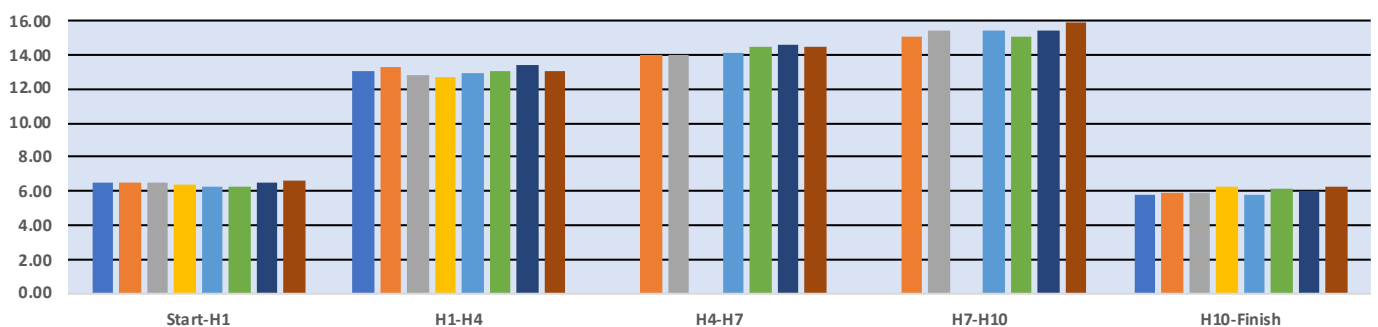
Heat 4

			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								4.82	5.06	5.14	5.75			12.91	14.13	15.40
	interval 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	1515	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								4.91	5.03	5.10	6.11			13.03	14.43	15.04
	interval velocity		7.14		8.53	8.21	7.78	7.45		7.13	6.96	6.86	6.55	7.28		8.06	7.28	6.98
	H1 lead leg	L	22		15	15	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								5.03	5.17	5.20	5.99			13.40	14.57	15.40
	interval 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	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								5.26	5.37	5.27	6.24			13.03	14.50	15.90
	interval 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	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=FRLzKKt6RA>

Heat 4

Evaluated with: ObjectusVideo

Quality & Frame Rate: 1920 x 1080 @ 30fps

Timing From: Gun Flash

Source: <https://www.youtube.com/watch?v=FRLzKKt6RA>

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

Women's 400m Hurdles

Date 2022.07.19

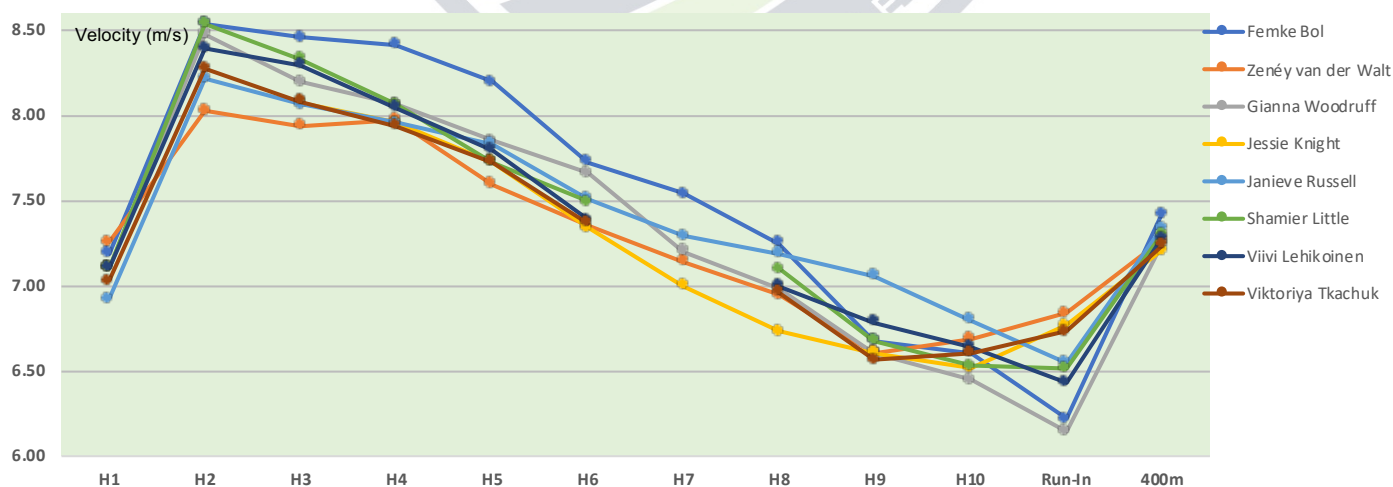
Heat 3

			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		7.19	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		8.54	8.45	8.41	8.20	7.73	7.54	7.25	6.68	6.60	6.60	6.22	7.42		8.47	7.81	6.83
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		7.26	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		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
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		7.11	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		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
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	5.30	5.37	5.91			13.07	14.30	15.87
	interval		7.11		8.07	7.95	7.73	7.34	7.00	6.73	6.60	6.52	6.77	7.21		8.03	7.34	6.62
	velocity					15	15	15	15	15	16	16	19	126				

Date 2022.07.19

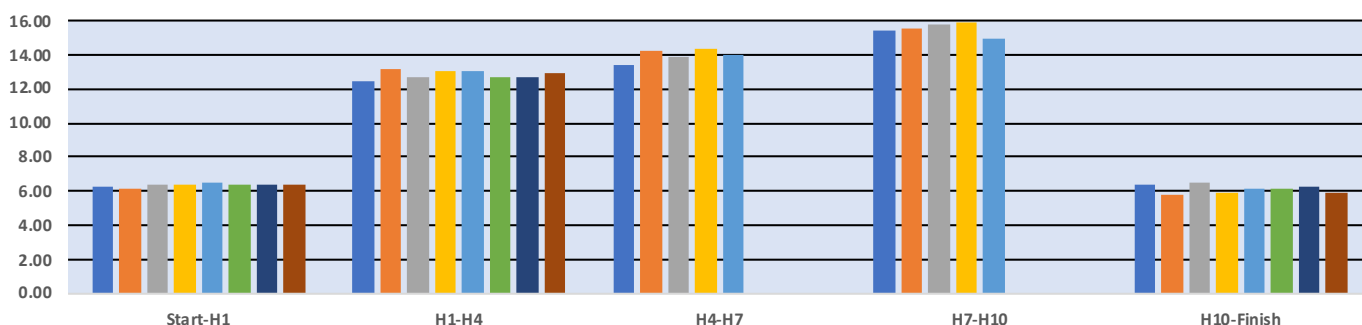
Heat 2

			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
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								9.86	5.24	5.36	6.14			12.64		
	interval		7.11	8.54	8.33	8.06	7.73	7.49		7.10	6.68	6.53	6.51	7.30		8.31		
	velocity		23	15	15	15	15	15		16	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								10.00	5.16	5.27	6.22			12.74		
	interval		7.11	8.39	8.29	8.05	7.80	7.38		7.00	6.78	6.64	6.43	7.28		8.24		
	velocity		23	15	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								10.05	5.33	5.30	5.94			12.97		
	interval		7.03	8.27	8.08	7.94	7.73	7.37		6.97	6.57	6.60	6.73	7.24		8.10		
	velocity			15	15	15	15	15		17	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=FRLzKKt6RA>

Heat 2

Evaluated with: ObjectusVideo

Quality & Frame Rate: 1920 x 1080 @ 30fps

Timing From: First Movement

Source: <https://www.youtube.com/watch?v=FRLzKKt6RA>

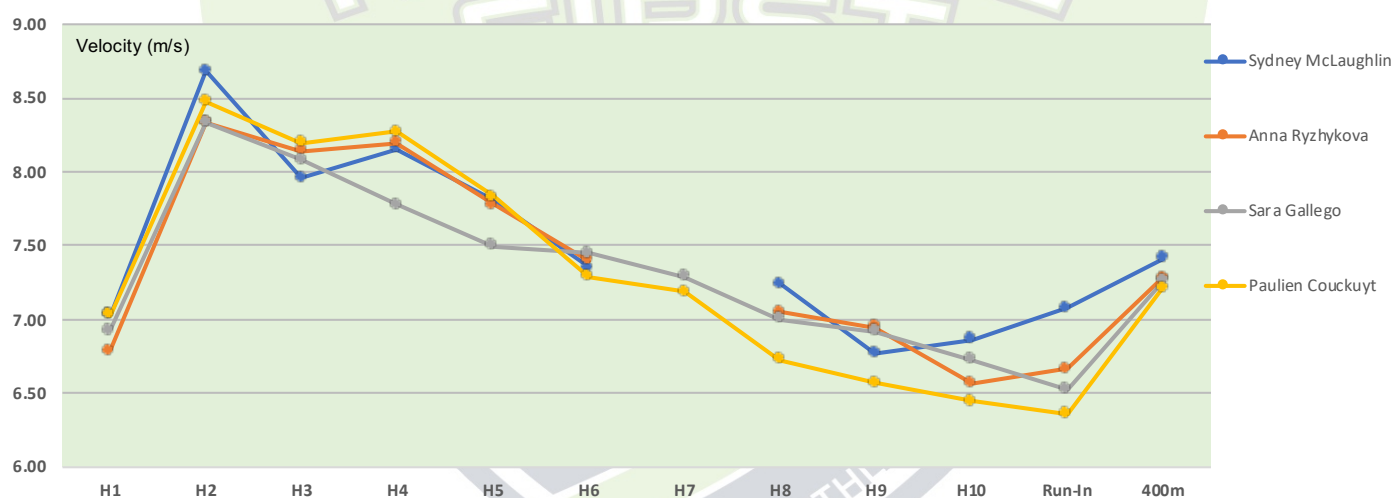
2022 World Athletics Championships (Eugene, OR) (TV Analysis)

Women's 400m Hurdles

Date 2022.07.19

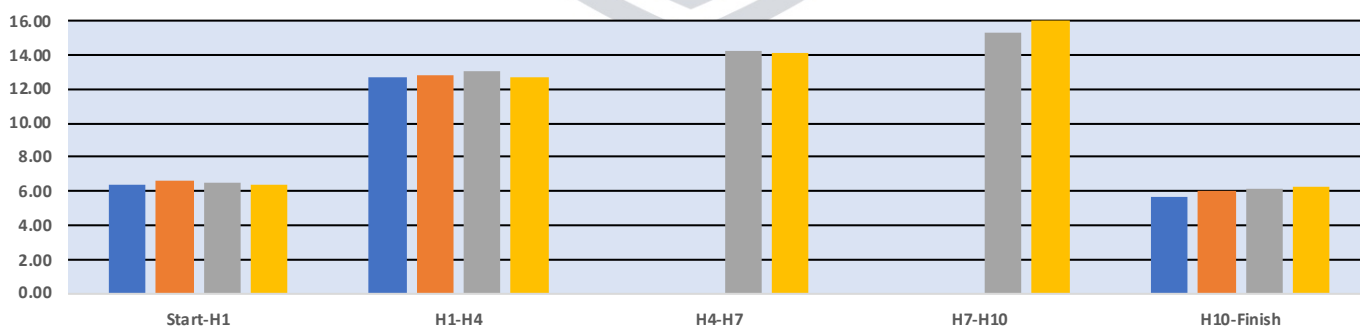
Heat 1

			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								9.67	5.17	5.10	5.65			12.72		
	interval		7.03	4.03	4.40	4.29	4.48	4.76		7.24	6.77	6.86	7.08	7.41		8.25		
	velocity																	
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								9.93	5.04	5.33	6.00			12.77		
	interval		6.79	4.20	4.30	4.27	4.50	4.73		7.05	6.94	6.57	6.67	7.28		8.22		
	velocity																	
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								5.00	5.06	5.20	6.13			13.03	14.17	15.26
	interval		6.92	4.20	4.33	4.50	4.67	4.70	4.80	5.00	5.06	5.20	6.13	7.26		8.06	7.41	6.88
	velocity																	
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								5.20	5.33	5.43	6.29			12.63	14.14	15.96
	interval		7.03	4.13	4.27	4.23	4.47	4.80	4.87	5.20	5.33	5.43	6.29	7.22		8.31	7.43	6.58
	velocity																	
	H1 lead leg	R	22	14	14	14	14	15					18	143				
	H1 lead leg	R	22	14	14	14	14	15					19.2	142.2				
	H1 lead leg	L	23	15	16	16	16	16	16	17	17	17	20.2	189.2				
	H1 lead leg	L	23	15	15	15	15	16	16	17	17	17	21	187				



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=ERLzKKt6RA>

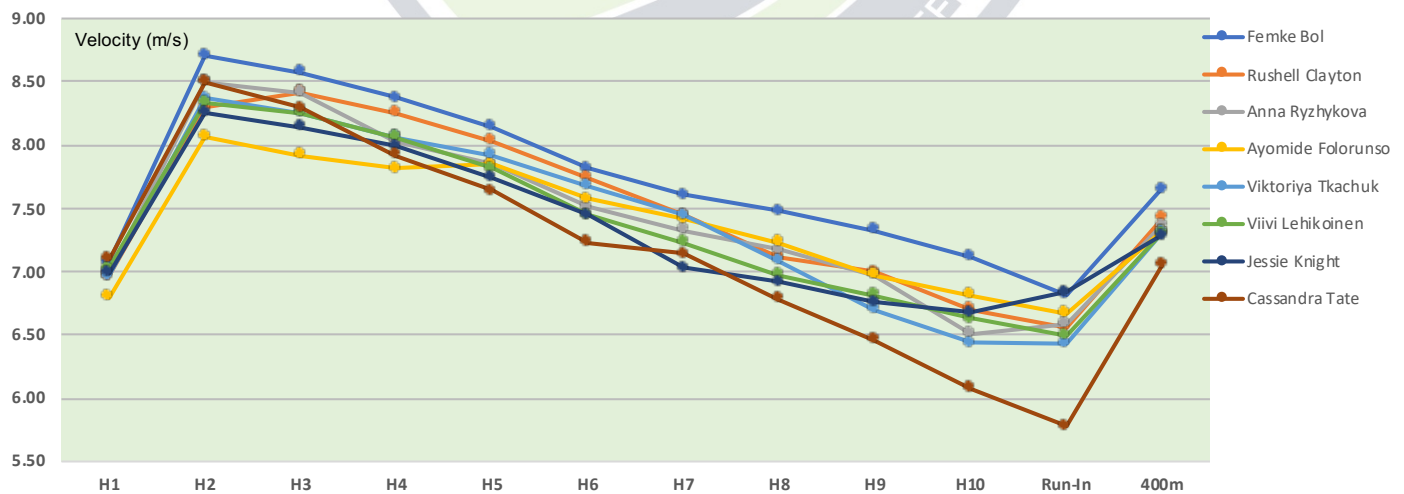
2022 Bauhaus Galan (Stockholm, SWE) (TV Analysis)

Women's 400m Hurdles

Date 2022.06.30

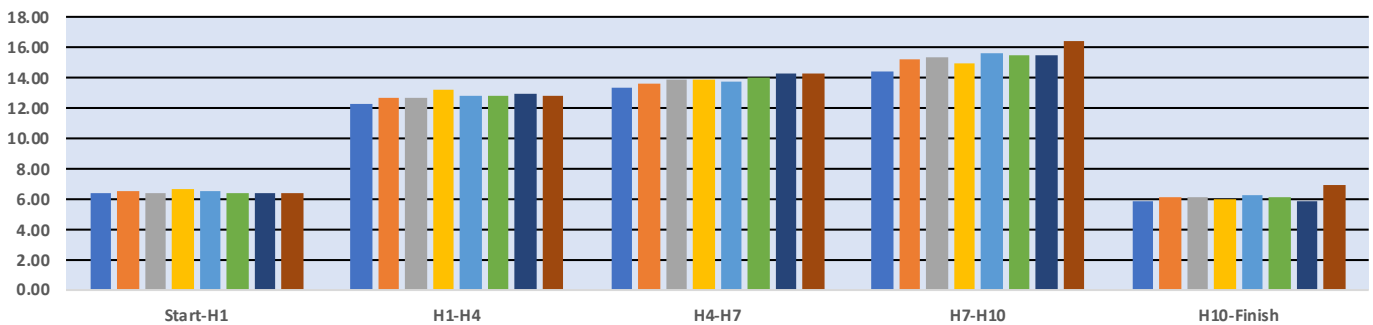
FINAL

			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		7.08	4.02	4.08	4.18	4.30	4.48	4.60	4.68	4.78	4.92	5.87			12.28	13.38	14.38
	velocity		8.71	8.58	8.37	8.14	7.81	7.61	7.48	7.32	7.11	6.81	6.56	7.65		8.55	7.85	7.30
	H1 lead leg	L	22	15	15	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	5.22	6.10				12.62	13.58	15.14
	velocity		6.97	8.29	8.41	8.25	8.03	7.74	7.45	7.11	7.00	6.70	6.56	7.42		8.32	7.73	6.94
	H1 lead leg	L	23	15	15	15	15	15	16	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	5.38	6.07				12.64	13.90	15.28
	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	6.87
	H1 lead leg	R	22	14	14	14	14	15	15	15	15	16	19	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	5.14	6.00				13.24	13.80	15.00
	velocity		6.80	8.06	7.92	7.81	7.85	7.58	7.42	7.23	6.97	6.81	6.67	7.32		7.93	7.61	7.00
	H1 lead leg	L	23	15	15	15	15	16	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	4.84	5.02	5.14	5.28	6.22			12.76	13.68	15.60
	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	6.73
	H1 lead leg	L	22	15	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
	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	6.80
	H1 lead leg	L	24	16	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
	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	6.78
	H1 lead leg	R	22	15	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
	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	6.43
	H1 lead leg	L	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>

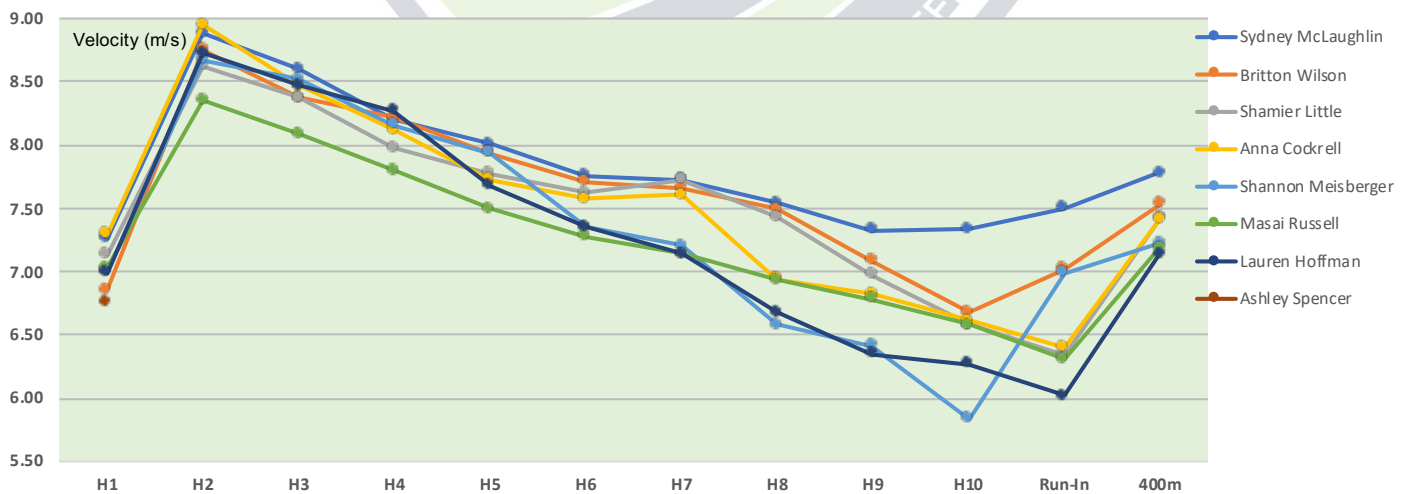
2022 USATF National Championships (Eugene, OR) (TV Analysis)

Women's 400m Hurdles

Date 2022.06.25

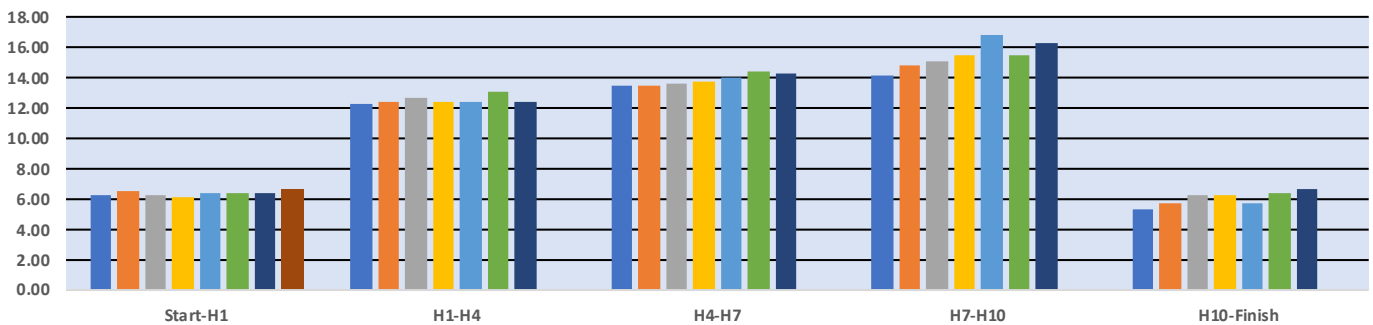
FINAL

			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	5 / 1			
	reaction time																	
	interval			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	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	6 / 2			
	reaction time																	
	interval			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		160				
Little, Shamier (USA) (1995)	time		6.31	10.37	14.55	18.94	23.44	28.03	32.57	37.27	42.29	47.61	53.94	53.92	8 / 3			
	reaction time																	
	interval			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			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																	
	interval			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			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																	
	interval			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				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																	
	interval			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			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																	
	interval			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			135				
Spencer, Ashley (USA) (1993)	time		6.67												dnf	3 / --		
	reaction time																	
	interval																	
	velocity		6.75															
	H1 lead leg	R																
	strides		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=6aGd0PD9Ifs>

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

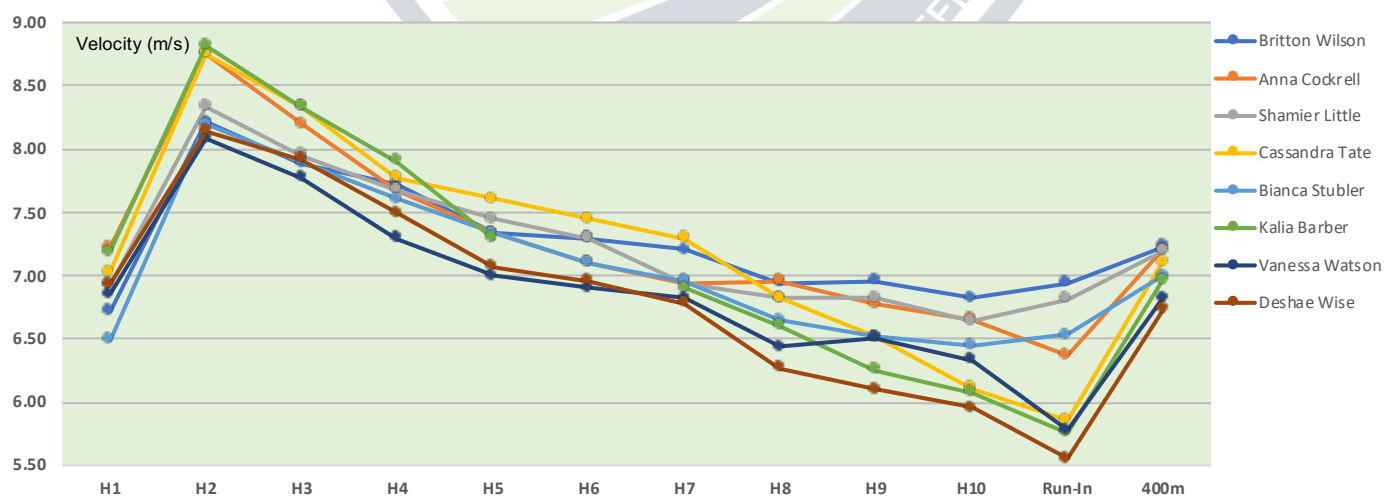
2022 USATF National Championships (Eugene, OR) (TV Analysis)

Women's 400m Hurdles

Date 2022.06.24

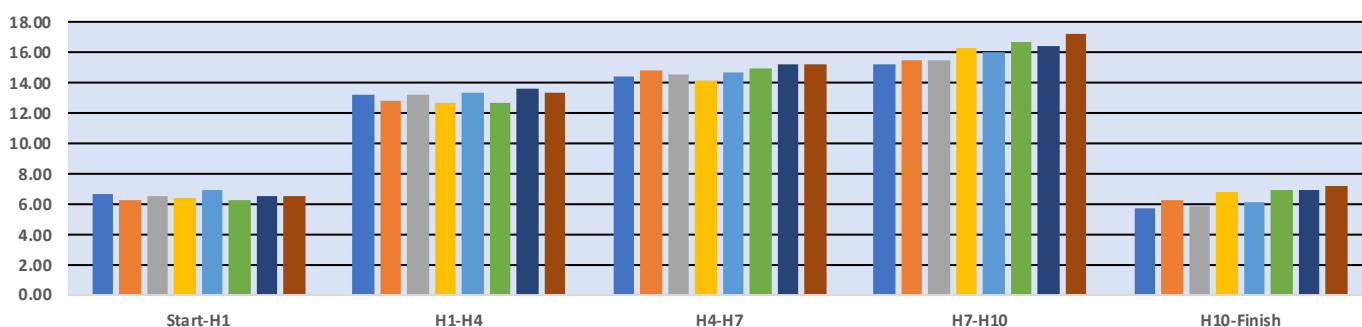
Semi-Final 2

			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																	
	interval			4.26	4.44	4.53	4.77	4.80	4.86	5.04	5.03	5.13	5.76			13.23	14.43	15.20
	velocity		6.72	8.22	7.88	7.73	7.34	7.29	7.20	6.94	6.82	6.82	6.94	7.23		7.94	7.28	6.91
	H1 lead leg	L												18.5				
	strides		24	16	16	16	16	16	16	16	16	16	16	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																	
	interval			4.00	4.27	4.56	4.77	4.93	5.04	5.03	5.17	5.26	6.28			12.83	14.74	15.46
	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		8.18	7.12	6.79
	H1 lead leg	L												20				
	strides		22	14	14	15	15	15	16	16	16	16	16	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																	
	interval			4.20	4.40	4.56	4.70	4.80	5.04	5.13	5.13	5.27	5.87			13.16	14.54	15.53
	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		7.98	7.22	6.76
	H1 lead leg	R												20				
	strides		23	15	15	15	15	15	16	16	16	16	16	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																	
	interval			4.00	4.20	4.50	4.60	4.70	4.80	5.13	5.37	5.73	6.83			12.70	14.10	16.23
	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		8.27	7.45	6.47
	H1 lead leg	R												21				
	strides		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																	
	interval			4.27	4.43	4.60	4.77	4.93	5.03	5.27	5.37	5.43	6.12			13.30	14.73	16.07
	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		7.89	7.13	6.53
	H1 lead leg	L												20				
	strides		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																	
	interval			3.97	4.20	4.43	4.80		10.14	5.30	5.60	5.76	6.95			12.60	14.94	16.66
	velocity		7.19	8.82	8.33	7.90	7.29		6.90	6.60	6.25	6.08	5.76	6.97		8.33	7.03	6.30
	H1 lead leg	L												21				
	strides		23	15	15	15	16			17	17	17	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																	
	interval			4.33	4.50	4.80	5.00	5.07	5.13	5.44	5.38	5.53	6.92			13.63	15.20	16.35
	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		7.70	6.91	6.42
	H1 lead leg	R												140				
	strides		24	16	16	16	17	17	17	17								
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																	
	interval			4.30	4.42	4.67	4.95	5.03	5.16	5.58	5.74	5.88	7.20			13.39	15.14	17.20
	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		7.84	6.94	6.10
	H1 lead leg	R												138				
	strides		24	16	16	16	16	16	17	17								



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=4aPGPscx12l>

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

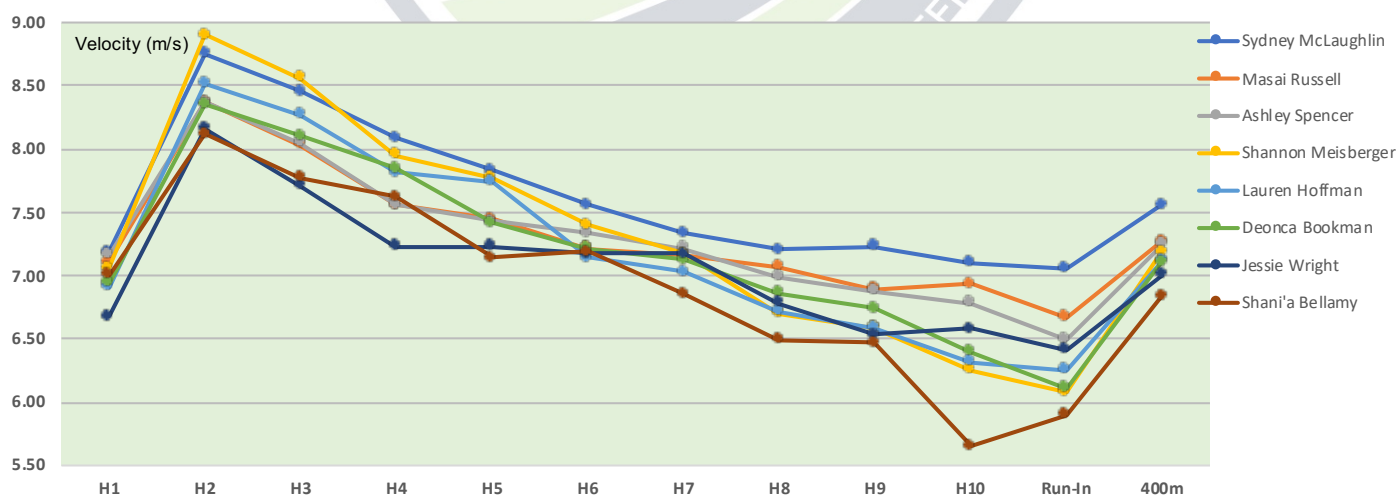
2022 USATF National Championships (Eugene, OR) (TV Analysis)

Women's 400m Hurdles

Date 2022.06.24

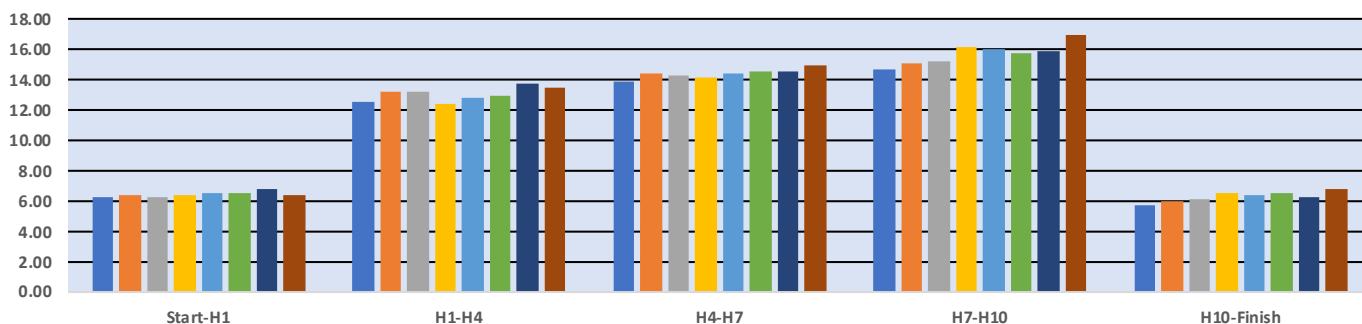
Semi-Final 1

			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	5 / 1			
	reaction time																	
	interval			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																
	strides		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																	
	interval			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																
	strides		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																	
	interval			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																
	strides		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																	
	interval			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																
	strides		22	15	15	15	15	16	16	16	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																	
	interval			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																
	strides		23	15	15	15	16	16	16	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																	
	interval			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																
	strides		24	16	16	16	17	17	17	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																	
	interval			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																
	strides		24	16	17	17	17	17	17	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																	
	interval			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																
	strides		23	15	15	15	15	15	16	16		115						



Time Intervals (s)

Hurdle Phases



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=4aPGPscx12>

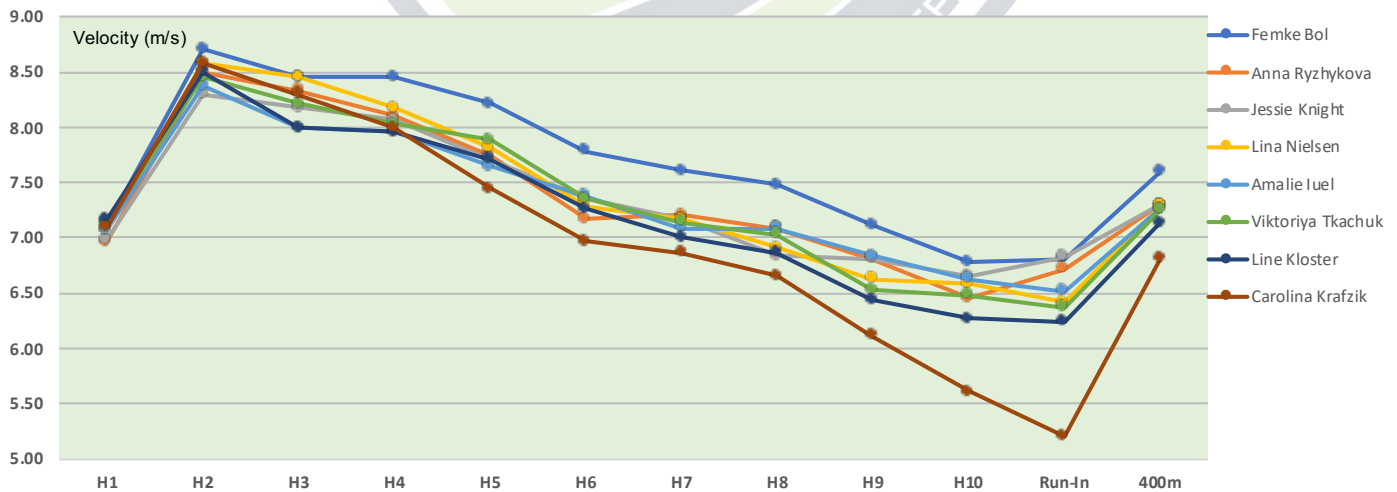
2022 Bislett Games (Oslo, NOR) (TV Analysis)

Women's 400m Hurdles

Date 2022.06.16

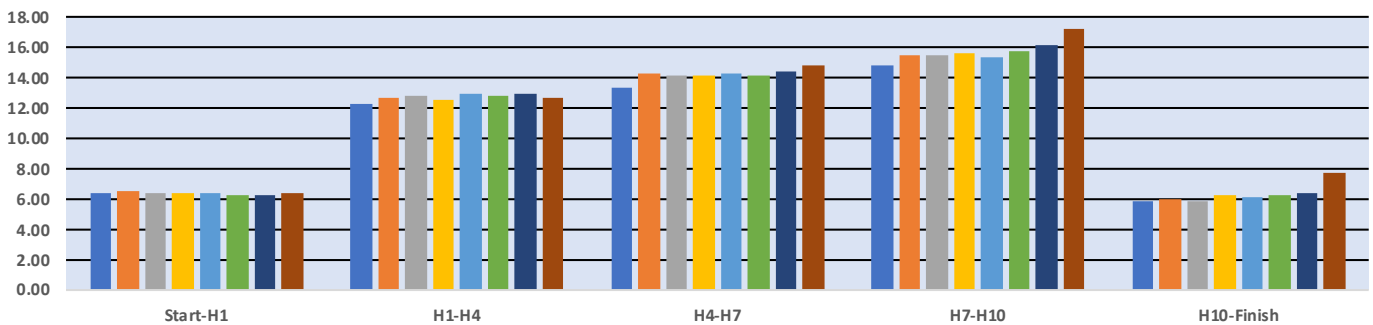
FINAL

			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	6 / 1			
	reaction time	0.177														12.30	13.36	14.76
	interval		7.12	4.02	4.14	4.26	4.50	4.60	4.68	4.92	5.16	5.87				8.54	7.86	7.11
	velocity																	
	H1 lead leg	L	22	15	15	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	7 / 2			
	reaction time	0.175														12.64	14.26	15.50
	interval		6.97	4.12	4.20	4.32	4.52	4.88	4.86	4.94	5.14	5.42	5.95			8.31	7.36	6.77
	velocity		8.50	8.33	8.10	7.74	7.17	7.20	7.09	6.81	6.46	6.72	7.30					
	H1 lead leg	R	22	14	14	14	14	15	15	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	4 / 3			
	reaction time	0.160														12.84	14.18	15.52
	interval		6.99	4.22	4.28	4.34	4.54	4.76	4.88	5.12	5.14	5.26	5.86			8.18	7.40	6.77
	velocity		8.29	8.18	8.06	7.71	7.35	7.17	6.84	6.81	6.65	6.83	7.29					
	H1 lead leg	R	22	15	15	15	15	15	15	16	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	8 / 4			
	reaction time	0.147														12.50	14.16	15.66
	interval		7.08	4.08	4.14	4.28	4.48	4.80	4.88	5.06	5.28	5.32	6.23			8.40	7.42	6.70
	velocity		8.58	8.45	8.18	7.81	7.29	7.17	6.92	6.63	6.58	6.42	7.28					
	H1 lead leg	L	23	15	15	15	15	15	15	16	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	2 / 5			
	reaction time	0.148														12.96	14.26	15.34
	interval		7.08	4.18	4.38	4.40	4.58	4.74	4.94	4.98	5.12	5.28	6.14			8.10	7.36	6.84
	velocity		8.37	7.99	7.95	7.64	7.38	7.09	7.09	6.84	6.63	6.51	7.26					
	H1 lead leg	L	23	15	15	15	15	16	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	5 / 6			
	reaction time	0.142														12.76	14.10	15.74
	interval		7.14	4.14	4.26	4.36	4.44	4.76	4.90	4.98	5.36	5.40	6.28			8.23	7.45	6.67
	velocity		8.45	8.22	8.03	7.88	7.35	7.14	7.03	6.53	6.48	6.37	7.25					
	H1 lead leg	L	22	15	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	3 / 7			
	reaction time	0.135														12.90	14.36	16.12
	interval		7.17	4.12	4.38	4.40	4.54	4.82	5.00	5.10	5.44	5.58	6.41			8.14	7.31	6.51
	velocity		8.50	7.99	7.95	7.71	7.26	7.00	6.86	6.43	6.27	6.24	7.13					
	H1 lead leg	R	22	14	15	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	1 / 8			
	reaction time	0.170														12.68	14.82	17.22
	interval		7.10	4.08	4.22	4.38	4.70	5.02	5.10	5.26	5.72	6.24	7.68			8.28	7.09	6.10
	velocity		8.58	8.29	7.99	7.45	6.97	6.86	6.65	6.12	5.61	5.21	6.81					
	H1 lead leg	L	23	15	15	15	17	17	17	18	20	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=T3w8xwxh1rk>

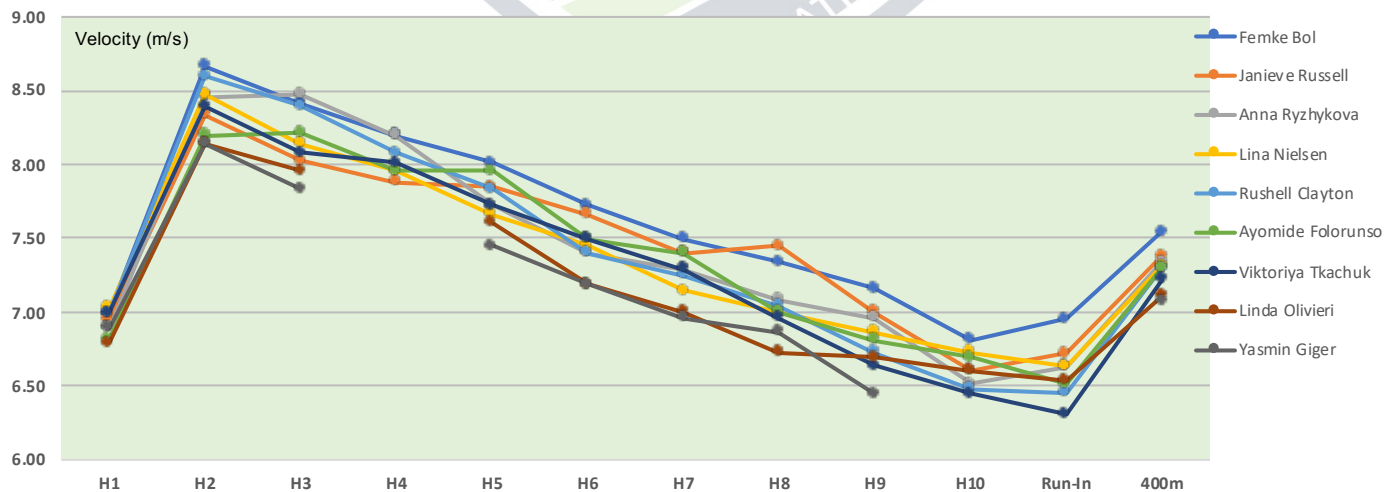
2022 Golden Gala Pietro Mennea (Rome, ITA) (TV Analysis)

Women's 400m Hurdles

Date: 2022.06.09

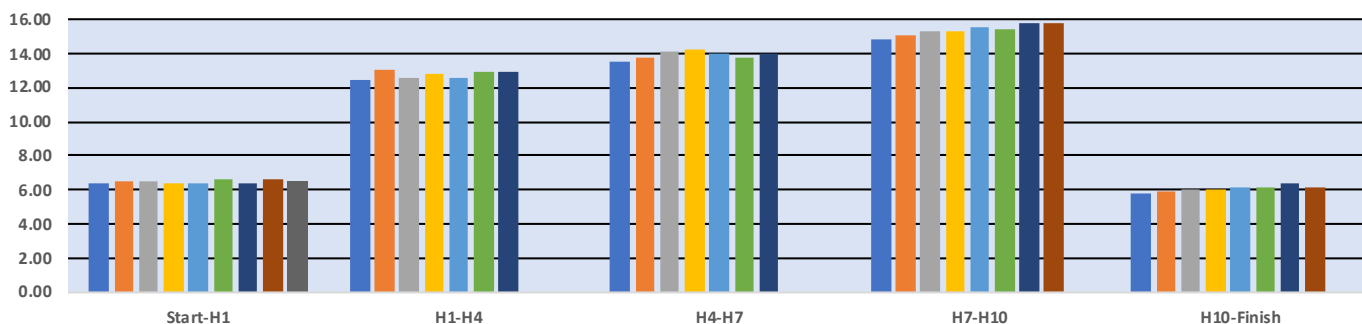
FINAL

				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	strides	22	15	15	15		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	strides	23	15	15	15		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	strides	22	14	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	strides	23	15	15	15	15	16	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	strides	23	15	15	15		16	16	16	17	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	strides	23	15	15	15		16	16	16	17	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	strides	22	15	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	strides	23	15	15	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	strides	23	15	15	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=jYFVaoe8BPc>

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

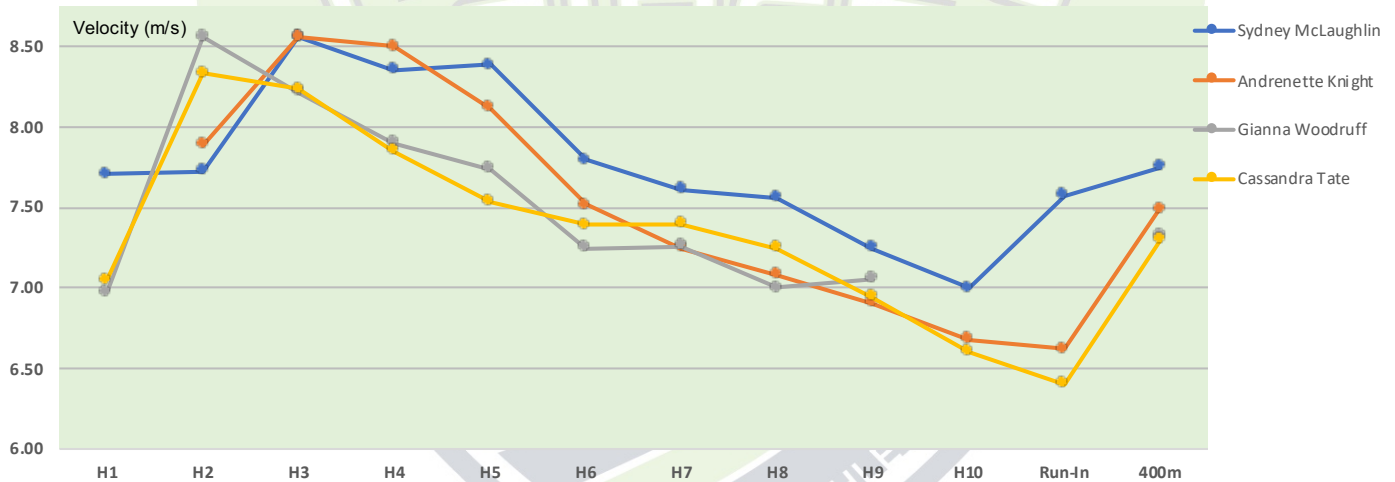
Women's 400m Hurdles

Date: 2022.06.05

(H5 5m long)

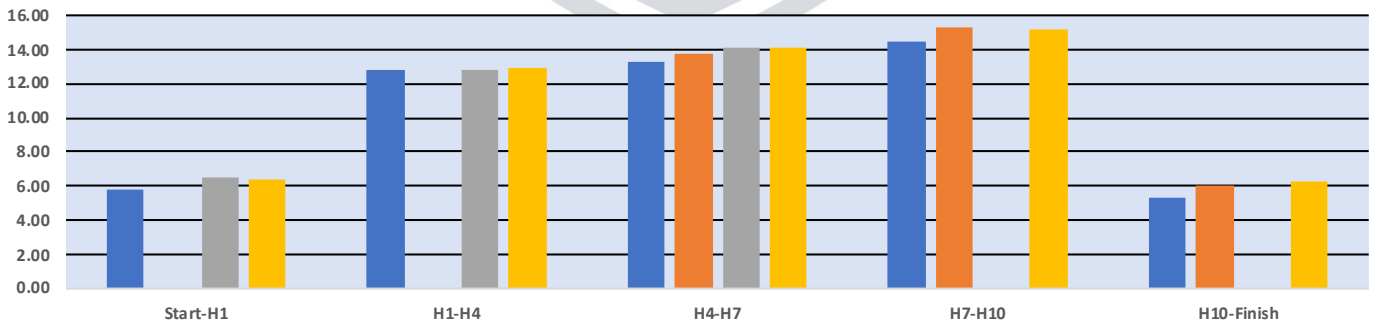
FINAL

		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																
	interval		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			8.20	7.94	7.26
Knight, Andrenette (JAM) (1996)	H1 lead leg	R															
	strides		14	14	14	16	13	15	15		16		117				
	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			13.75	15.25
Woodruff, Gianna (PAN) (1993)	interval		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
	velocity			15	15	17	13	16	16		16		108				
	H1 lead leg																
	strides																
Tate, Cassandra (USA) (1990)	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														12.78	14.13	
	interval	6.98	4.09	4.26	4.43	5.17	4.14	4.82	5.00	4.96					8.22	7.43	
	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		12.91	14.10	15.17
Tate, Cassandra (USA) (1990)	H1 lead leg	L													8.13	7.45	6.92
	strides		21	14	14	14	17	13	15	15	15		138				



Time Intervals (s)

Hurdle Phases



Evaluated with: ObjectusVideo

Quality & Frame Rate: 1280 x 716 @ 30fps

Timing From: Gun Flash

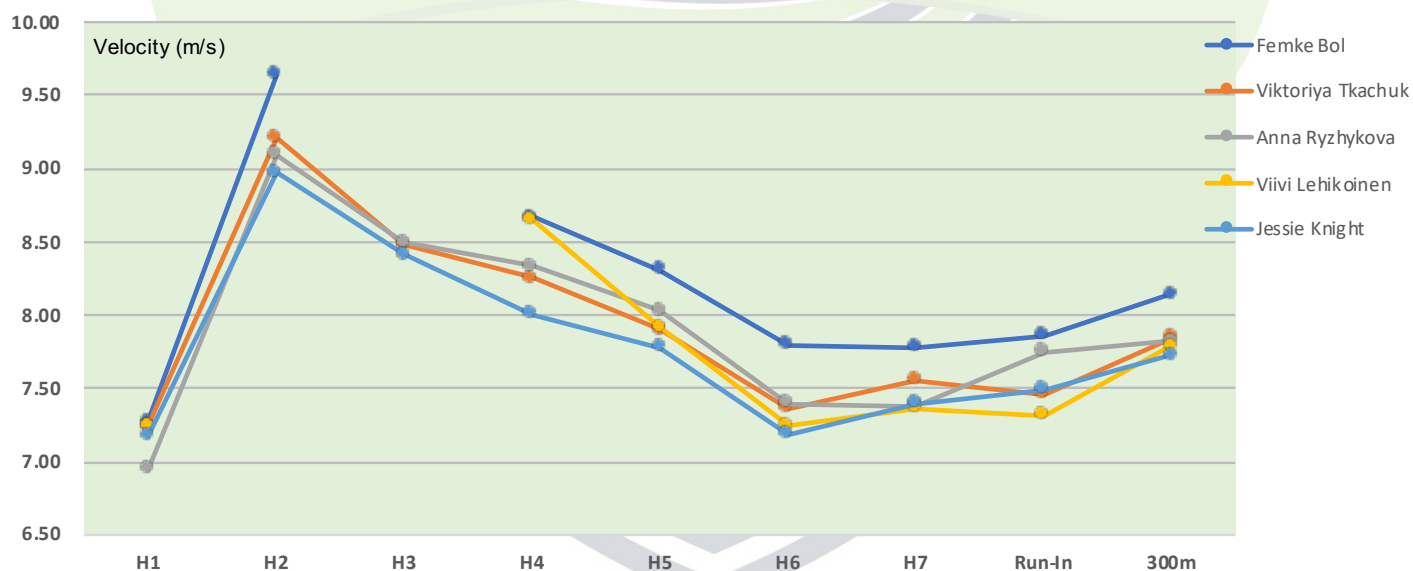
Source: https://www.youtube.com/watch?v=eA-Okk_fs_k&t=12s

2022 Golden Spike (Ostrava, CZE) (300m Hurdles) (TV Analysis)**Women's 400m Hurdles**

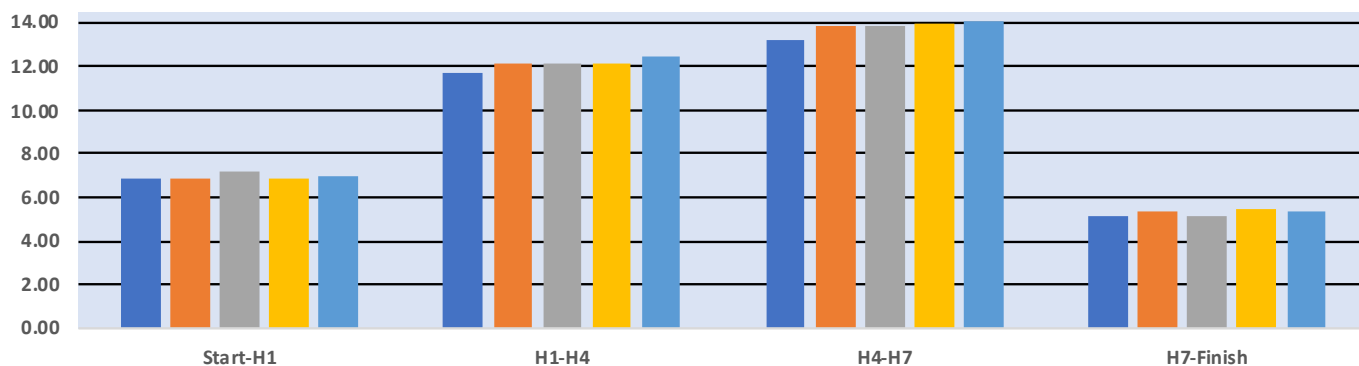
Date 2022.05.31

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	
	interval														
	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	
	interval														
	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	
	interval														
	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	
	interval														
	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	
	interval														
	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_MF2eqo

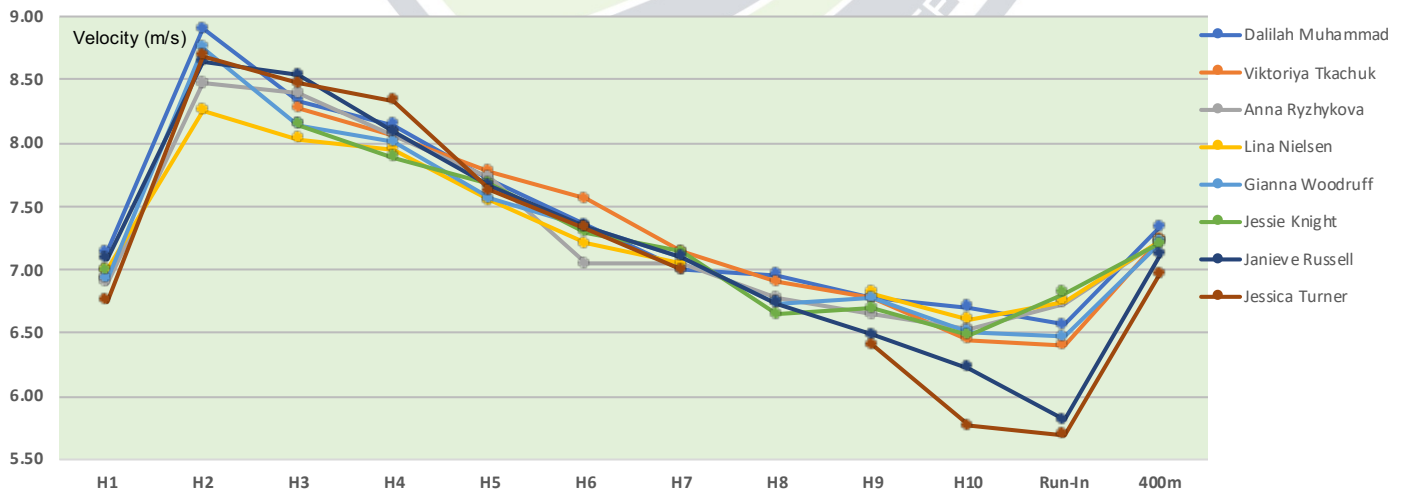
2022 Müller Birmingham Diamond League (Birmingham, GBR) (TV Analysis)

Women's 400m Hurdles

Date 2022.05.21

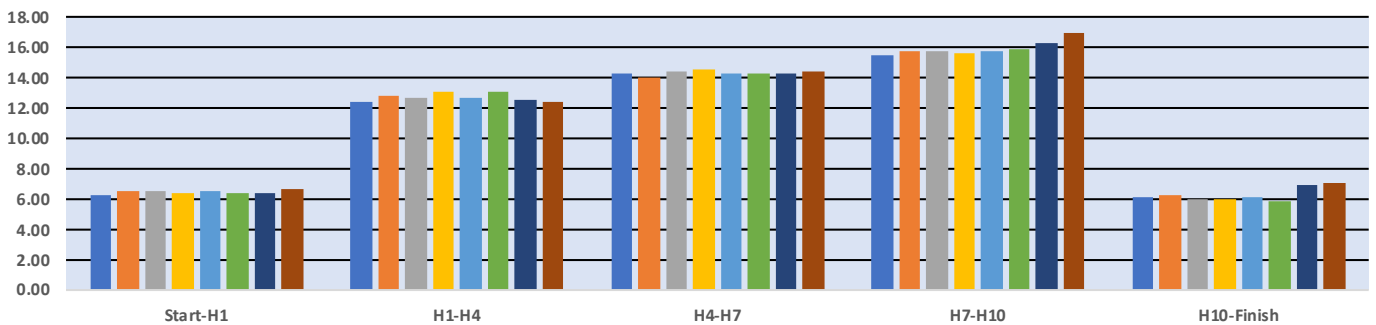
FINAL

			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														12.43	14.30	15.42
	interval		7.14	3.93	4.20	4.30	4.54	4.76	5.00	5.03	5.17	5.22	6.09			8.45	7.34	6.81
	velocity		8.91	8.33	8.33	8.14	7.71	7.35	7.00	6.96	6.77	6.70	6.57	7.33				
Tkachuk, Viktoriya (UKR) (1994)	H1 lead leg	R	22	14	15	15	15	15	16	16	16	16	20	180				
	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			8.46	4.34	4.50	4.63	4.90	5.07	5.17	5.43	6.25			12.80	14.03	15.67
	interval		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
Ryzhykova, Anna (UKR) (1989)	H1 lead leg	L	22		15	15	15	15	16	16	17	17	20.7	153.7				
	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			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
	interval		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
Nielsen, Lina (GBR) (1996)	H1 lead leg	R	22	14	14	14	14	15	15	16	16	16	19.2	175.2				
	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			4.24	4.36	4.40	4.64	4.86	4.97	10.27	5.30	5.93			13.00	14.47	15.57
	interval		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
Woodruff, Gianna (PAN) (1993)	H1 lead leg	L	23	15	15	15	15	16	16		16	16	19.2	150.2				
	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			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
	interval		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
Knight, Jessie (GBR) (1994)	H1 lead leg	L	23	15	15	15	15	15	15	16	16	17	20	182				
	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			8.60	4.44	4.56	4.80	4.90	5.27	5.23	5.40	5.87			13.04	14.26	15.90
	interval		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
Russell, Janieve (JAM) (1993)	H1 lead leg	R	22		15	15	15	15	15	16	16	16	19.2	149.2				
	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			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
	interval		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
Turner, Jessica (GBR) (1995)	H1 lead leg	R	23	15	15	15	16	16	16	17	17	17	21	188				
	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			4.03	4.13	4.20	4.59	4.78	5.00	10.93	6.07	7.03			12.36	14.37	17.00
	interval		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
Turner, Jessica (GBR) (1995)	H1 lead leg	L	25	15	15	15	16	16	17			19		138				
	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			4.03	4.13	4.20	4.59	4.78	5.00	10.93	6.07	7.03			12.36	14.37	17.00
	interval		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



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=MW6WoY1qkBs>