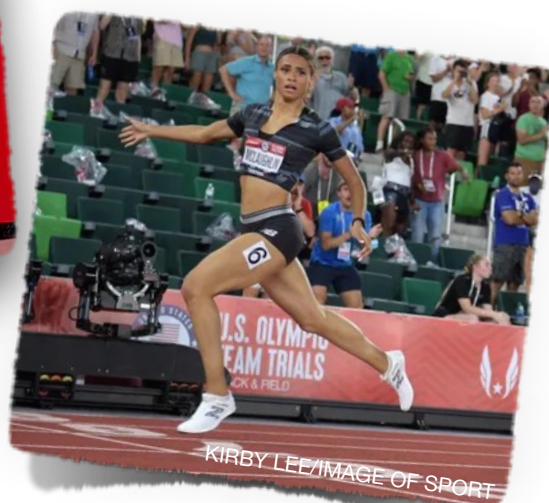


2021 Women's 400m Hurdles World Record Season

Sydney McLaughlin (USA) - 51.46

Hurdle Touchdown Times

UPDATED
2025.01.05



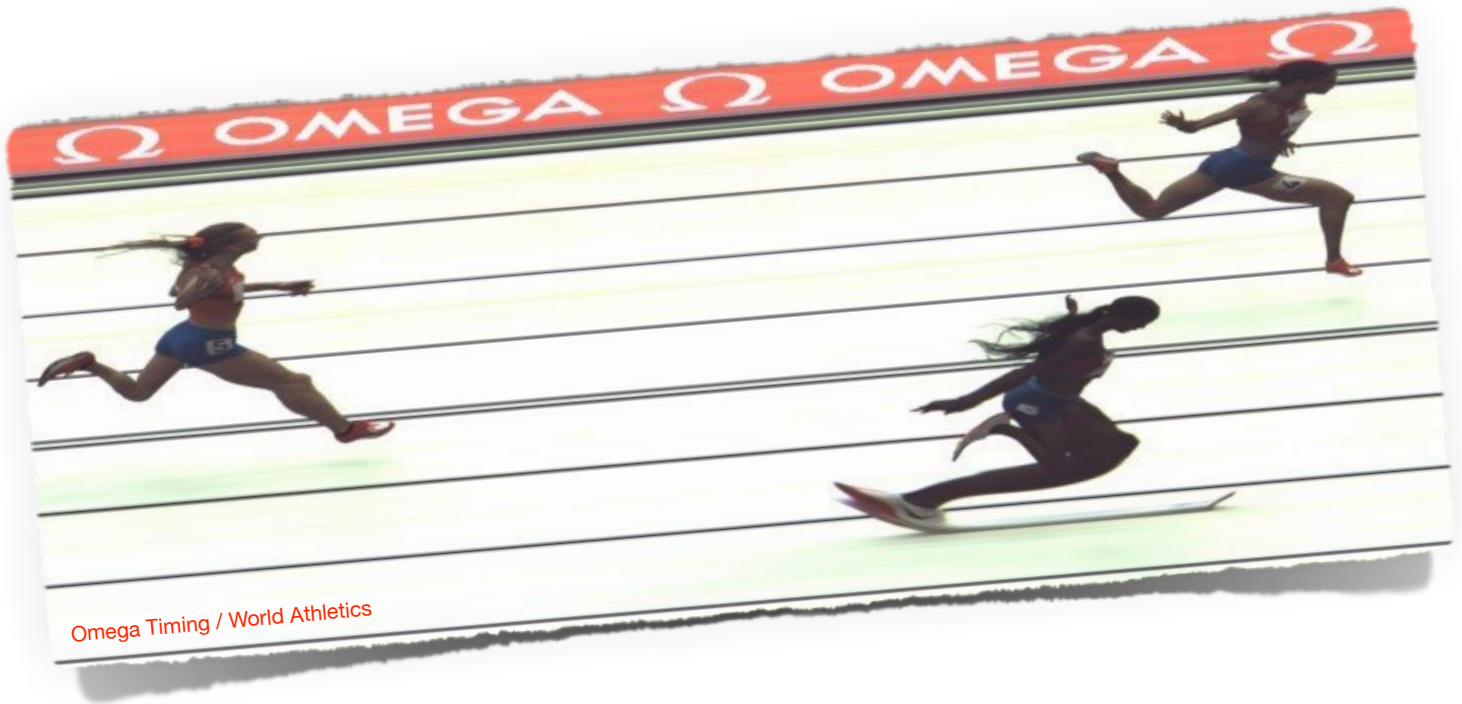
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Todd Henson

2021 Women's 400m Hurdles World Record Season Sydney McLaughlin (USA) - 51.46

Meetings Overview:

Sydney McLaughlin Season Overview	3
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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.

2020 Olympic Games (Tokyo, JPN) (TV Analysis)

FINAL

FINAL			date 04-Aug-21											Henson (2021) - Athlete First: 2021 year end hurdle report						
			H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-in	Official Time	Lane / Place	H1-H4	H4-H7	H7-H10		
McLaughlin, Sydney (USA) (199)			time	6.16	10.16	14.24	18.36	22.64	27.00	31.56	36.32	41.20	46.04		51.46	4 / 1				
reaction time			0.163	interval	4.00	4.08	4.12	4.28	4.36	4.56	4.76	4.88	4.84	5.42	WR		12.20	13.20	14.48	
				velocity	7.31	8.75	8.58	8.50	8.18	8.03	7.68	7.35	7.17	7.23	7.38	7.77	8.61	7.95	7.25	
H1 lead leg			R	strides	22	14	14	14	14	14	14	15	16	15	18.5	170.5				

Semi-Final 2

date		Henson (2024) - Athlete First: 2021 year end hurdle report															
02-Aug-21		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-in	Official Time	Lane / Place	H1-H4	H4-H7	H7-H10
McLaughlin, Sydney (USA) (199	time	6.30	10.26	14.40	18.62	22.96	27.56	32.33	37.10	42.10	47.26		53.03	5 / 1			
reaction time	0.204	interval	3.96	4.14	4.22	4.34	4.60	4.77	4.77	5.00	5.16	5.77			12.32	13.71	14.93
		velocity	7.14	8.84	8.45	8.29	8.06	7.61	7.34	7.00	6.78	6.93	7.54		8.52	7.66	7.03
H1 lead leg	R	strides	22	14	14	14	14	15	15	15	16	16	18.5	173.5			

Heat 3

Heat 3		date		31-Jul-21		Henson (2024) - Athlete First: 2021 year end hurdle report														
				H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	Official Time	Lane / Place	H1-H4	H4-H7	H7-H10	
McLaughlin, Sydney (USA) (199)				time	6.43	10.63	14.93	19.40	23.90	28.70	33.63	38.50	43.67	48.85		54.65	5 / 1			
reaction time				0.180	interval	4.20	4.30	4.47	4.50	4.80	4.93	4.87	5.17	5.18	5.80			12.97	14.23	15.22
					velocity	7.00	8.33	8.14	7.83	7.78	7.29	7.10	7.19	6.77	6.76	6.90	7.32	8.10	7.38	6.90
H1 lead leg				R	strides	22	14	14	14	14	15	15	15	16	16	18.5	173.5			

2020 USA Olympic Trials (Eugene, OR) (TV Analysis)

FINAL

[illegible]

Semi-Final 1

date				Henson (2021) - Athlete First: 2021 year end hurdle report																
26-Jun-21				H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	Official Time	Lane / Place	H1-H4	H4-H7	H7-H10	
McLaughlin, Sydney (USA) (199)				time	6.14	10.21	14.34	18.58	22.99	27.59	32.33	37.07	42.07	47.04						
reaction time				0.227	interval	4.07	4.13	4.24	4.41	4.60	4.74	4.74	5.00	4.97	5.99	53.03	5 / 1	12.44	13.75	14.71
					velocity	7.33	8.60	8.47	8.25	7.94	7.61	7.38	7.38	7.00	7.04	6.68	7.54	8.44	7.64	7.14
H1 lead leg				R	strides	22	14	14	14	14	15	15	15	16	15	18.2	172.2			

Heat 1

Heat 1		date 25-Jun-21												Henson (2021) - Athlete First: 2021 year end hurdle report						
				H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	Official Time	Lane / Place	H1-H4	H4-H7	H7-H10	
McLaughlin, Sydney (USA) (199)				time	6.33	10.46	14.67	19.10	23.77	28.50	33.26	38.07	42.93	48.00						
reaction time				0.255																
				interval		4.13	4.21	4.43	4.67	4.73	4.76	4.81	4.86	5.07	6.07		5 / 1	12.77	14.16	14.74
				velocity	7.11	8.47	8.31	7.90	7.49	7.40	7.35	7.28	7.20	6.90	6.59		7.40	8.22	7.42	7.12
H1 lead leg				R	22	14	14	15	15	15	15	15	15	16	18.2	174.2				

2021 Music City Track Carnival (Nashville, TN) (TV Analysis)

FINAL

FINAL										Henson (2021) - Athlete First: 2021 year end hurdle report															
date 06-Jun-21																									
										Run-in	Official Time	Lane / Place	H1-H4	H4-H7	H7-H10										
McLaughlin, Sydney (USA) (199)		time								6.34	10.64	14.88	19.07	23.45	27.92	32.53	37.34	42.44	47.48						
reaction time		interval									4.30	4.24	4.19	4.38	4.47	4.61	4.81	5.10	5.04	5.35					
		velocity								7.10	8.14	8.25	8.35	7.99	7.83	7.59	7.28	6.86	6.94	7.48					
H1 lead leg		R								22	15	14	14	14	14	15		16	16	18.5	158.5				

2021 USATF Golden Games (Walnut, CA)

FINAL

Henson (2021) - Athlete First: 2021 Sydney McLaughlin 400m hurdles world record season																		
H1 H2 H3 H4 H5 H6 H7 H8 H9 H10 Run-In Official Time Lane / Place H1-H4 H4-H7 H7-H10																		
McLaughlin, Sydney (USA) (199)	time	2.50	3.52	4.54	5.54	6.52	7.50	8.47	9.47	10.47	11.50	12.65	2 / 5					
reaction time	0.175	interval	7 steps	1.02	1.00	0.98	0.98	0.97	1.00	1.00	1.03	1.15	PB		3.04	2.93	3.03	
		velocity		5.20	8.33	8.33	8.50	8.67	8.67	8.76	8.50	8.50	8.25	9.13	7.91	8.39	8.70	8.42

Heat 2

Heat 2		date	09-May-21	Wind:	0.9 m/s	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	Official Time	Lane / Place	H1-H4	H4-H7	H7-H10
	McLaughlin, Sydney (USA)	(199) time															12.90	/ 5			
	reaction time	0.216	interval	No Information Available																	
			velocity														7.75				

2021 USATF Grand Prix (Eugene, OR) (TV Analysis)

FINAL

2021 USAF7 - Grand Prix (Lugano, CH) (TV Analysis)													Henson (2021) - Athlete First: 2021 year end hurdle report							
FINAL		date	24-Apr-21	Wind: -0.3 m/s																
				H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	Official Time	Lane / Place	H1-H4	H4-H7	H7-H10	
McLaughlin, Sydney (USA) (199)		time		2.57	3.63	4.65	5.65	6.65	7.65	8.65	9.65	10.67	11.71		12.86	2 / 4				
		reaction time													PB					
		interval		7 steps	1.06	1.02	1.00	1.00	1.00	1.00	1.00	1.02	1.04	1.15				3.08	3.00	3.06
		velocity		5.06	8.02	8.33	8.50	8.50	8.50	8.50	8.50	8.33	8.17	9.13	7.78			8.28	8.50	8.33

2021 Brian Clay Invitational (Azusa, CA)

Heat 2

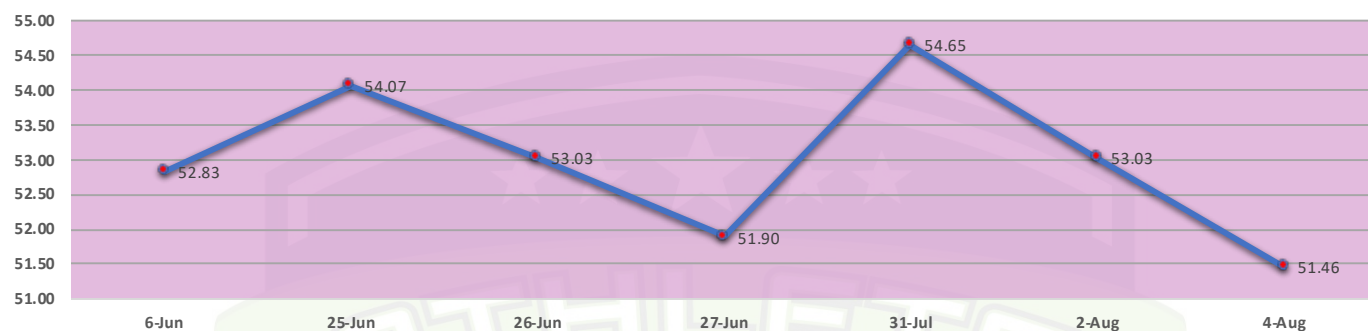
Henson (2021) - Athlete First: 2021 Sydney McLaughlin 400m hurdles world record season																	
date	16-Apr-21	Wind: 0.2 m/s															
	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	Official Time	Lane / Place	H1-H4	H4-H7	H7-H10	
McLaughlin, Sydney (USA) (199)	time	2.53	3.57	4.60	5.60	6.61	7.61	8.63	9.67	10.71	11.76	12.92	4 / 1				
	reaction time	interval	7 steps	1.04	1.03	1.00	1.01	1.00	1.02	1.04	1.05	1.16	PB		3.07	3.03	3.13
	velocity	5.14	8.17	8.25	8.50	8.42	8.50	8.33	8.17	8.17	8.10	9.05	7.74		8.31	8.42	8.15

2021 GCU Antelope Invitational (Phoenix, AZ)

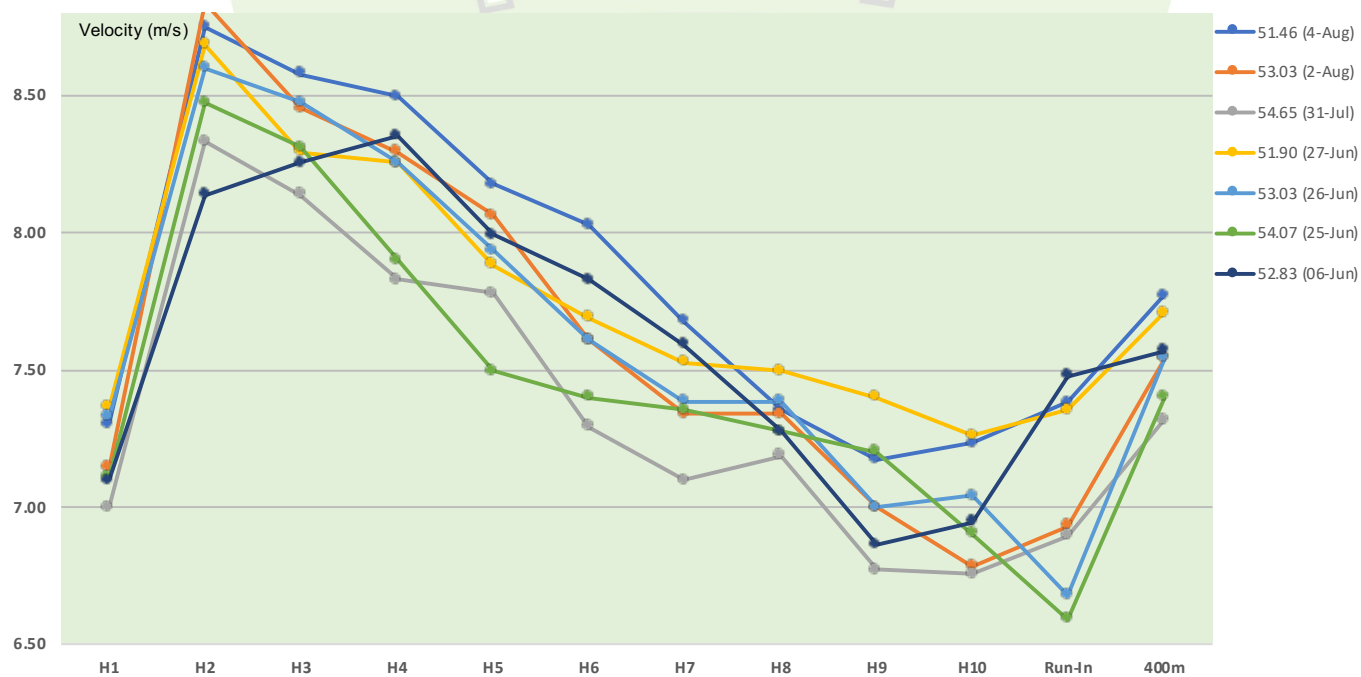
FINAL

2024 USF Airships Invitational (FIBA) - FIBA																	
FINAL		date	03-Apr-21		Wind: -0.5 m/s												
		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	Official Time	Lane / Place	H1-H4	H4-H7	H7-H10
McLaughlin, Sydney (USA) (199)		time											13.03	/ 1			
reaction time		interval	No Information Available														
velocity													PB				
													7.67				

Sydney McLaughlin 2021

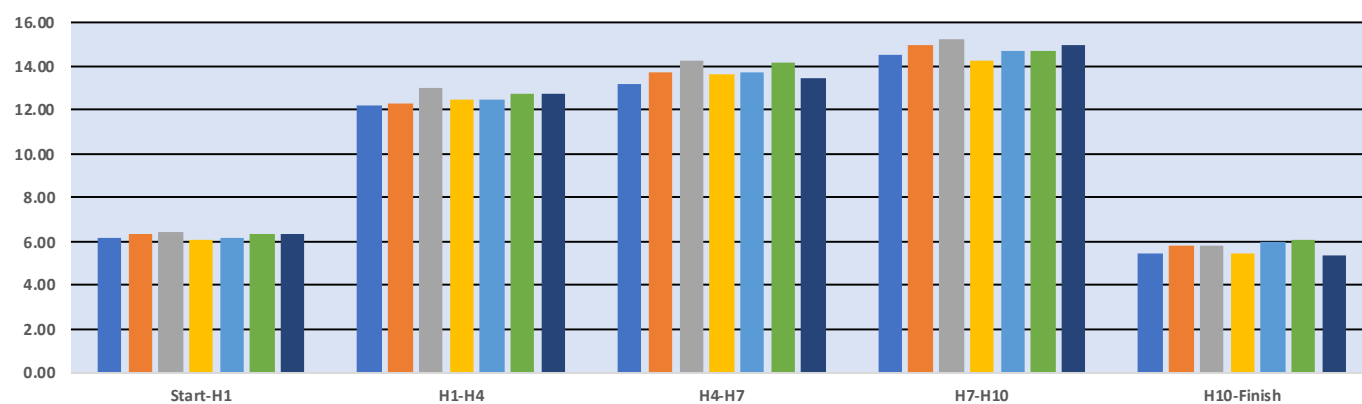


Hurdle Rhythmic Units



Time Intervals (s)

Hurdle Phases



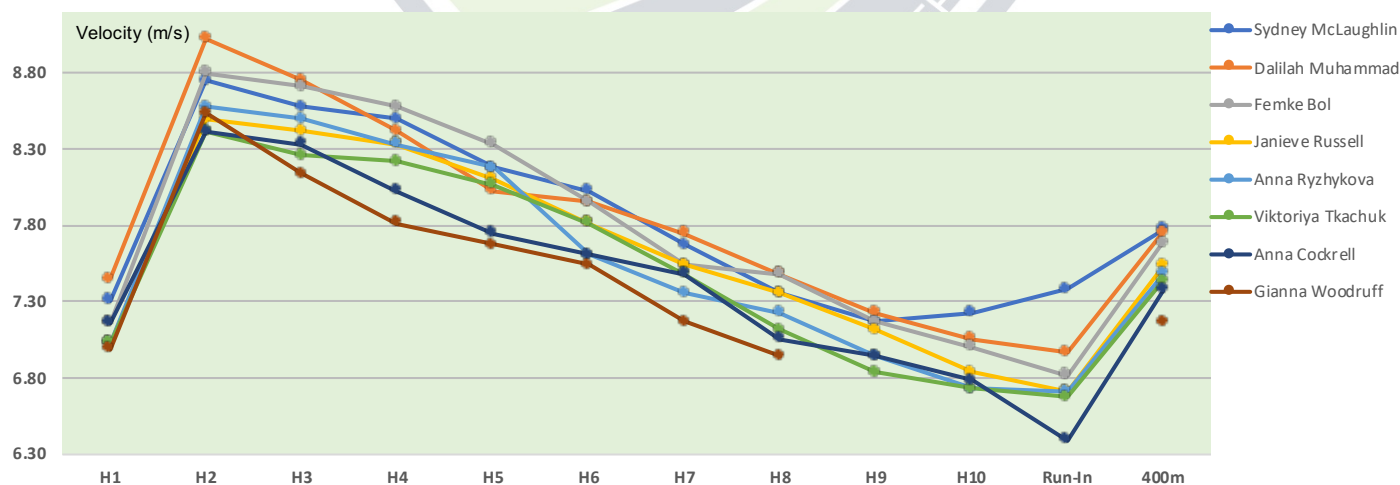
2020 Olympic Games (Tokyo, JPN) (TV Analysis)

Women's 400m Hurdles

Date 2021.08.04

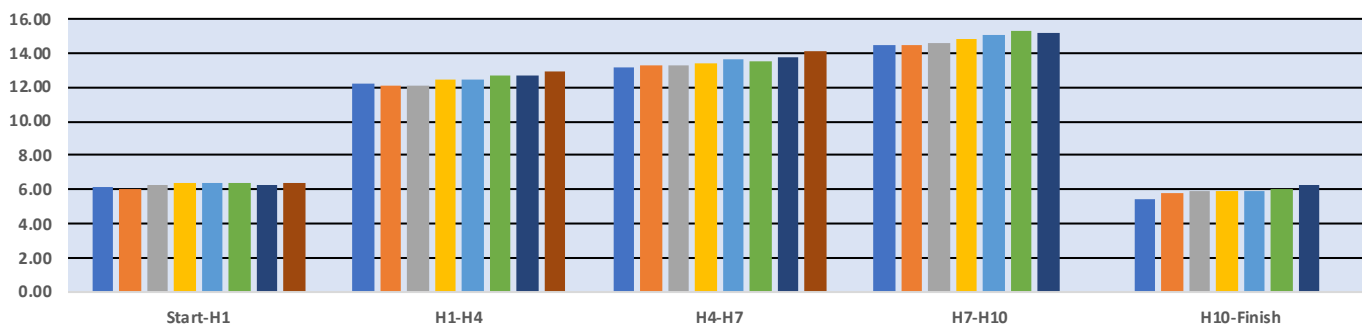
FINAL

			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		6.16	10.16	14.24	18.36	22.64	27.00	31.56	36.32	41.20	46.04		51.46	4 / 1			
	reaction time	0.163																
	interval			4.00	4.08	4.12	4.28	4.36	4.56	4.76	4.88	4.84	5.42	WR		12.20	13.20	14.48
	velocity		7.31	8.75	8.58	8.50	8.18	8.03	7.68	7.35	7.17	7.23	7.38	7.77		8.61	7.95	7.25
	H1 lead leg	R	22	14	14	14	14	14	14	15	16	15	18.5	170.5				
Muhammad, Dalilah (USA) (1990)	time		6.04	9.92	13.92	18.08	22.44	26.84	31.36	36.04	40.88	45.84		51.58	7 / 2			
	reaction time	0.200																
	interval			3.88	4.00	4.16	4.36	4.40	4.52	4.68	4.84	4.96	5.74	PB		12.04	13.28	14.48
	velocity		7.45	9.02	8.75	8.41	8.03	7.95	7.74	7.48	7.23	7.06	6.97	7.75		8.72	7.91	7.25
	H1 lead leg	R	22	14	14	15	15	15	15	15	16	16	19	176				
Bol, Femke (NED) (2000)	time		6.28	10.26	14.28	18.36	22.56	26.96	31.60	36.28	41.16	46.16		52.03	5 / 3			
	reaction time	0.165																
	interval			3.98	4.02	4.08	4.20	4.40	4.64	4.68	4.88	5.00	5.87	AR		12.08	13.24	14.56
	velocity		7.17	8.79	8.71	8.58	8.33	7.95	7.54	7.48	7.17	7.00	6.81	7.69		8.69	7.93	7.21
	H1 lead leg	L	22	15	15	15	15	15	15	15	15	15	19	176				
Russell, Janieve (JAM) (1993)	time		6.40	10.52	14.68	18.88	23.20	27.68	32.32	37.08	42.00	47.12		53.08	6 / 4			
	reaction time	0.136																
	interval			4.12	4.16	4.20	4.32	4.48	4.64	4.76	4.92	5.12	5.96	PB		12.48	13.44	14.80
	velocity		7.03	8.50	8.41	8.33	8.10	7.81	7.54	7.35	7.11	6.84	6.71	7.54		8.41	7.81	7.09
	H1 lead leg	R	23	15	15	15	15	15	15	16	16	17	19.7	181.7				
Ryzhykova, Anna (UKR) (1989)	time		6.40	10.48	14.60	18.80	23.08	27.68	32.44	37.28	42.32	47.52		53.48	2 / 5			
	reaction time	0.177																
	interval			4.08	4.12	4.26	4.34	4.48	4.68	4.92	5.12	5.20	5.96			12.40	13.64	15.08
	velocity		7.03	8.58	8.50	8.33	8.18	7.61	7.35	7.23	6.94	6.73	6.71	7.48		8.47	7.70	6.96
	H1 lead leg	R	22	14	14	14	14	15	15	15	15	16	19.2	173.2				
Tkachuk, Viktoriya (UKR) (1994)	time		6.40	10.56	14.80	19.06	23.40	27.88	32.56	37.48	42.60	47.80		53.79	3 / 6			
	reaction time	0.206																
	interval			4.16	4.24	4.26	4.34	4.48	4.68	4.92	5.12	5.20	5.99	PB		12.66	13.50	15.24
	velocity		7.03	8.41	8.25	8.22	8.06	7.81	7.48	7.11	6.84	6.73	6.68	7.44		8.29	7.78	6.89
	H1 lead leg	L	22	15	15	15	15	15	15	16	16	16	19.7	179.7				
Cockrell, Anna (USA) (1997)	time		6.28	10.44	14.64	19.00	23.52	28.12	32.80	37.76	42.80	47.96		54.22	8 / 7	(no official time given)		
	reaction time																	
	interval			4.16	4.20	4.36	4.52	4.60	4.68	4.96	5.04	5.16	6.26	DQ		12.72	13.80	15.16
	velocity		7.17	8.41	8.33	8.03	7.74	7.61	7.48	7.06	6.94	6.78	6.39	7.38		8.25	7.61	6.93
	H1 lead leg	L	22	15	15	15	15	15	15	16	16	16		160				
Woodruff, Gianna (PAN) (1993)	time		6.44	10.54	14.84	19.32	23.88	28.52	33.40	38.44				55.84	9 / 7			
	reaction time	0.235																
	interval			4.10	4.30	4.48	4.56	4.64	4.88	5.04						12.88	14.08	
	velocity		6.99	8.54	8.14	7.81	7.68	7.54	7.17	6.94						8.15	7.46	
	H1 lead leg	L	23	15	15	15	15	15	15	15				128				



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=-BT0QOqSR-k>

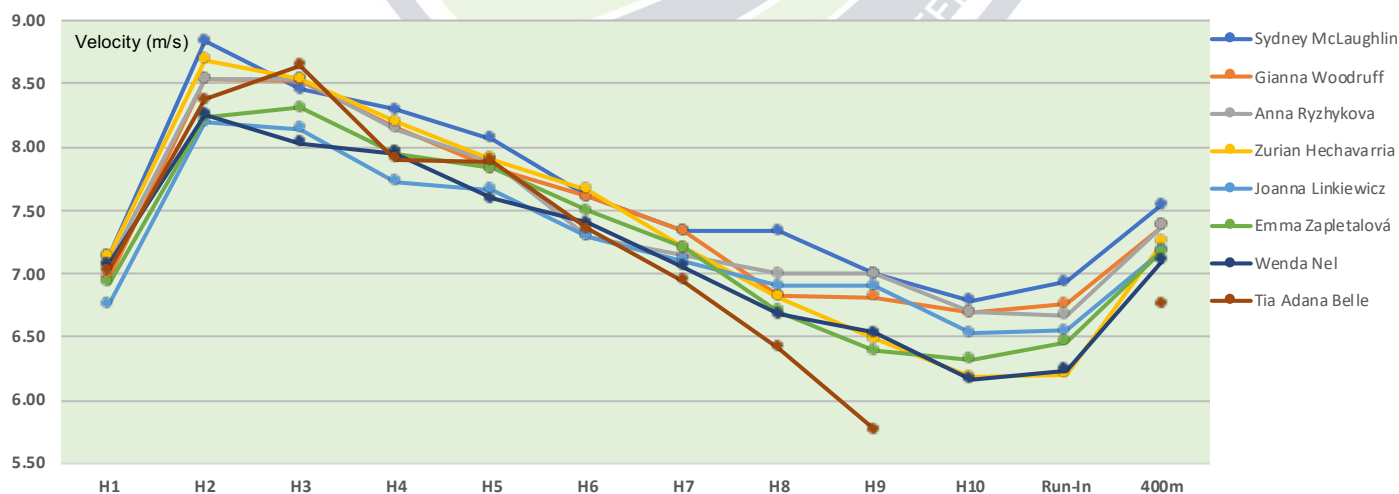
2020 Olympic Games (Tokyo, JPN) (TV Analysis)

Women's 400m Hurdles

Date 2021.08.02

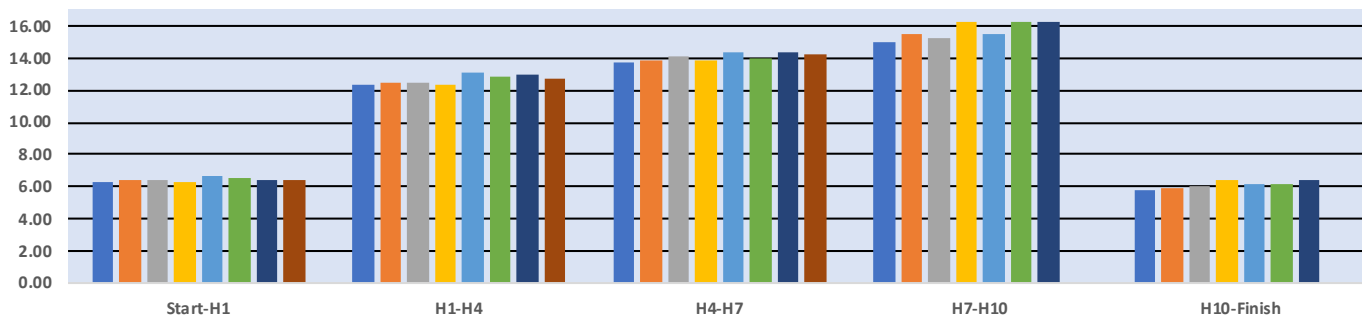
Semi-Final 2

			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		6.30	10.26	14.40	18.62	22.96	27.56	32.33	37.10	42.10	47.26		53.03	5 / 1			
	reaction time	0.204																
	interval			3.96	4.14	4.22	4.34	4.60	4.77	4.77	5.00	5.16	5.77			12.32	13.71	14.93
	velocity		7.14	8.84	8.45	8.29	8.06	7.61	7.34	7.34	7.00	6.78	6.93	7.54		8.52	7.66	7.03
Woodruff, Gianna (PAN) (1993)	time		6.46	10.56	14.67	18.96	23.43	28.03	32.80	37.93	43.07	48.30		54.22	4 / 2			
	reaction time	0.207																
	interval			4.10	4.11	4.29	4.47	4.60	4.77	5.13	5.14	5.23	5.92	AR PB		12.50	13.84	15.50
	velocity		6.97	8.54	8.52	8.16	7.83	7.61	7.34	6.82	6.81	6.69	6.76	7.38		8.40	7.59	6.77
Ryzhykova, Anna (UKR) (1989)	time		6.36	10.46	14.56	18.86	23.30	28.10	33.00	38.00	43.00	48.23		54.23	6 / 3			
	reaction time	0.162																
	interval			4.10	4.10	4.30	4.44	4.80	4.90	5.00	5.00	5.23	6.00			12.50	14.14	15.23
	velocity		7.08	8.54	8.54	8.14	7.88	7.29	7.14	7.00	7.00	6.69	6.67	7.38		8.40	7.43	6.89
Hechavarria, Zurian (CUB) (1995)	time		6.30	10.33	14.43	18.70	23.13	27.70	32.56	37.70	43.10	48.76		55.21	3 / 4			
	reaction time	0.167																
	interval			4.03	4.10	4.27	4.43	4.57	4.86	5.14	5.40	5.66	6.45			12.40	13.86	16.20
	velocity		7.14	8.68	8.54	8.20	7.90	7.66	7.20	6.81	6.48	6.18	6.20	7.25		8.47	7.58	6.48
Linkiewicz, Joanna (POL) (1990)	time		6.66	10.93	15.23	19.76	24.33	29.13	34.06	39.13	44.20	49.56		55.67	9 / 5			
	reaction time	0.157																
	interval			4.27	4.30	4.53	4.57	4.80	4.93	5.07	5.07	5.36	6.11			13.10	14.30	15.50
	velocity		6.76	8.20	8.14	7.73	7.66	7.29	7.10	6.90	6.90	6.53	6.55	7.19		8.02	7.34	6.77
Zapletalová, Emma (SVK) (2000)	time		6.50	10.75	14.96	19.36	23.83	28.50	33.36	38.58	44.06	49.60		55.79	2 / 6			
	reaction time	0.136																
	interval			4.25	4.21	4.40	4.47	4.67	4.86	5.22	5.48	5.54	6.19			12.86	14.00	16.24
	velocity		6.92	8.24	8.31	7.95	7.83	7.49	7.20	6.70	6.39	6.32	6.46	7.17		8.16	7.50	6.47
Nel, Wenda (RSA) (1988)	time		6.36	10.60	14.96	19.36	23.97	28.70	33.66	38.90	44.26	49.94		56.35	8 / 7			
	reaction time	0.189																
	interval			4.24	4.36	4.40	4.61	4.73	4.96	5.24	5.36	5.68	6.41			13.00	14.30	16.28
	velocity		7.08	8.25	8.03	7.95	7.59	7.40	7.06	6.68	6.53	6.16	6.24	7.10		8.08	7.34	6.45
Belle, Tia Adana (BAR) (1996)	time		6.40	10.58	14.63	19.06	23.50	28.26	33.30	38.76	44.83			59.26	7 / 8			
	reaction time	0.146																
	interval			4.18	4.05	4.43	4.44	4.76	5.04	5.46	6.07					12.66	14.24	
	velocity		7.03	8.37	8.64	7.90	7.88	7.35	6.94	6.41	5.77					8.29	7.37	
	H1 lead leg	L																
			26	15	15	15	15	16	16	17	18			153				



Time Intervals (s)

Hurdle Phases



Evaluated with: ObjectusVideo

Quality & Frame Rate: 1920 x 1080 @ 30fps

Timing From: First Movement

Source: <https://www.olympics.com/en/video/track-and-field-day-10-evening-session-athletics-tokyo-2020-replays>

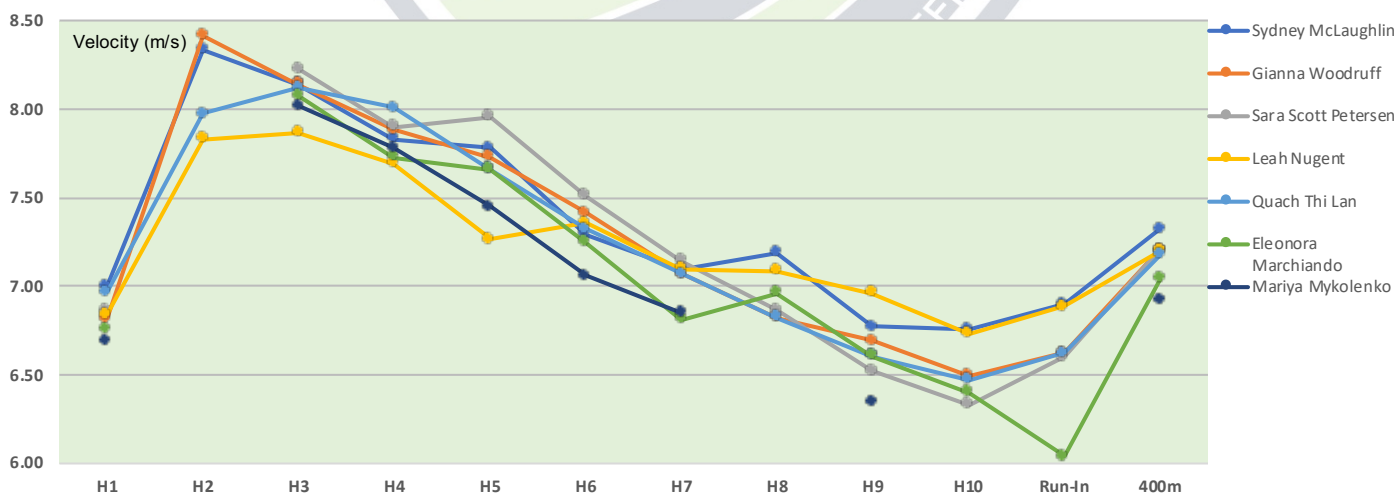
2020 Olympic Games (Tokyo, JPN) (TV Analysis)

Women's 400m Hurdles

Date 2021.07.31

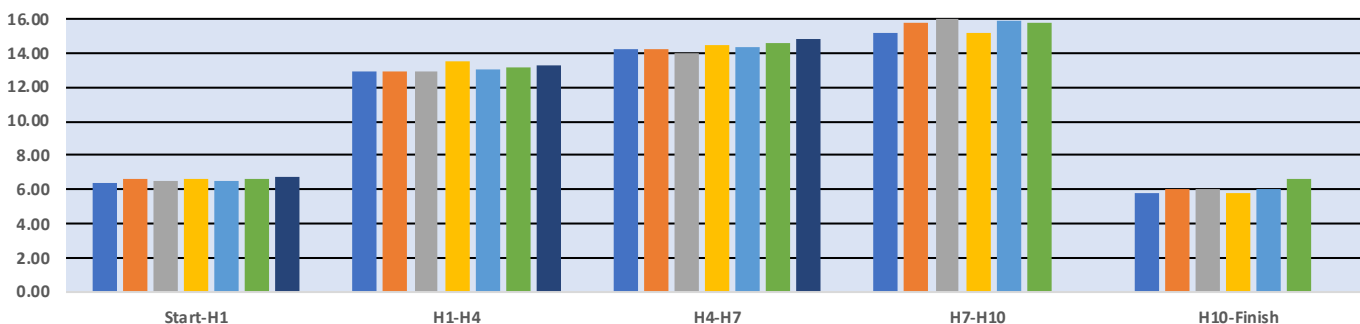
Heat 3

				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			6.43	10.63	14.93	19.40	23.90	28.70	33.63	38.50	43.67	48.85		54.65	5 / 1			
	reaction time	0.180	interval		4.20	4.30	4.47	4.50	4.80	4.93	4.87	5.17	5.18	5.80			12.97	14.23	15.22
			velocity	7.00	8.33	8.14	8.47	7.78	7.29	7.10	7.19	6.77	6.76	6.90	7.32		8.10	7.38	6.90
	H1 lead leg	R	strides	22	14	14	14	14	15	15	15	16	16	18.5	173.5				
Woodruff, Gianna (PAN) (1993)	time			6.60	10.76	15.06	19.50	24.03	28.75	33.70	38.83	44.06	49.45		55.49	7 / 2			
	reaction time	0.268	interval		4.16	4.30	4.44	4.53	4.72	4.95	5.13	5.23	5.39	6.04			12.90	14.20	15.75
			velocity	6.82	8.41	8.14	7.88	7.73	7.42	7.07	6.82	6.69	6.49	6.62	7.21		8.14	7.39	6.67
	H1 lead leg	L	strides	23	15	15	15	15	15	15	16	16	17	19	181				
Petersen, Sara Scott (DEN) (1987)	time			6.56		15.07	19.50	23.90	28.56	33.46	38.56	43.93	49.46		55.52	9 / 3			
	reaction time	0.161	interval			8.51	4.43	4.40	4.66	4.90	5.10	5.37	5.53	6.06			12.94	13.96	16.00
			velocity	6.86		8.23	7.90	7.95	7.51	7.14	6.86	6.52	6.33	6.60	7.20		8.11	7.52	6.56
	H1 lead leg	R	strides	22	15		15	15	15	15	16	17	17	19.7	166.7				
Nugent, Leah (JAM) (1992)	time			6.58	11.05	15.50	20.05	24.87	29.63	34.56	39.50	44.53	49.73		55.54	6 / 4			
	reaction time	0.240	interval		4.47	4.45	4.55	4.82	4.76	4.93	4.94	5.03	5.20	5.81	DQ		(no official time given)		
			velocity	6.84	7.83	7.87	7.69	7.26	7.35	7.10	7.09	6.96	6.73	6.88	7.20		13.47	14.51	15.17
	H1 lead leg	R	strides	22	15	14	14	15	15	15	15	15	15	18.2	173.2		7.80	7.24	6.92
Quach Thi Lan (VIE) (1995)	time			6.46	10.85	15.16	19.53	24.10	28.88	33.83	38.96	44.26	49.67		55.71	8 / 5			
	reaction time	0.150	interval		4.39	4.31	4.37	4.57	4.78	4.95	5.13	5.30	5.41	6.04			13.07	14.30	15.84
			velocity	6.97	7.97	8.12	8.01	7.66	7.32	7.07	6.82	6.60	6.47	6.62	7.18		8.03	7.34	6.63
	H1 lead leg	R	strides	22	15	15	15	15	15	15	16	16	16	19	179				
Marchiando, Eleonora (ITA) (1997)	time			6.66		15.33	19.86	24.43	29.26	34.40	39.43	44.73	50.20		56.82	3 / 6			
	reaction time	0.166	interval			8.67	4.53	4.57	4.83	5.14	5.03	5.30	5.47	6.62			13.20	14.54	15.80
			velocity	6.76		8.07	7.73	7.66	7.25	6.81	6.96	6.60	6.40	6.04	7.04		7.95	7.22	6.65
	H1 lead leg	L	strides	24			16	16	16	17	17	17	17	21.2	161.2				
Mykolenko, Mariya (UKR) (1994)	time			6.73		15.46	19.96	24.66	29.62	34.73		45.76			57.86	4 / 6			
	reaction time	0.200	interval			8.73	4.50	4.70	4.96	5.11		11.03					13.23	14.77	
			velocity	6.69		8.02	7.78	7.45	7.06	6.85		6.35			6.91		7.94	7.11	
	H1 lead leg	R	strides	23	15		15	15	16	16		16		116					
Knight, Jessie (GBR) (1994)	time			fell into hurdle											dnf	2 / --			
	reaction time	0.160	interval																
			velocity																
	H1 lead leg	R	strides	23											23				



Time Intervals (s)

Hurdle Phases



Evaluated with: ObjectusVideo

Quality & Frame Rate: 1920 x 1080 @ 30fps

Timing From: First Movement

Source: <https://www.olympics.com/en/video/track-and-field-day-8-morning-session-athletics-tokyo-2020-replays>

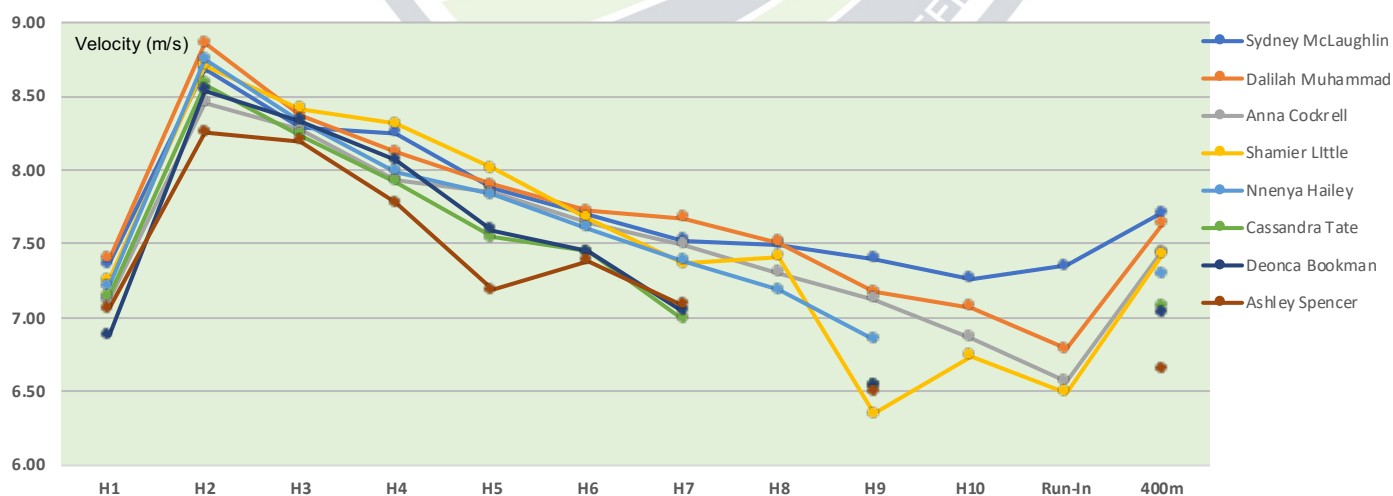
2020 USA Olympic Trials (Eugene, OR) (TV Analysis)

Women's 400m Hurdles

Date 2021.06.27

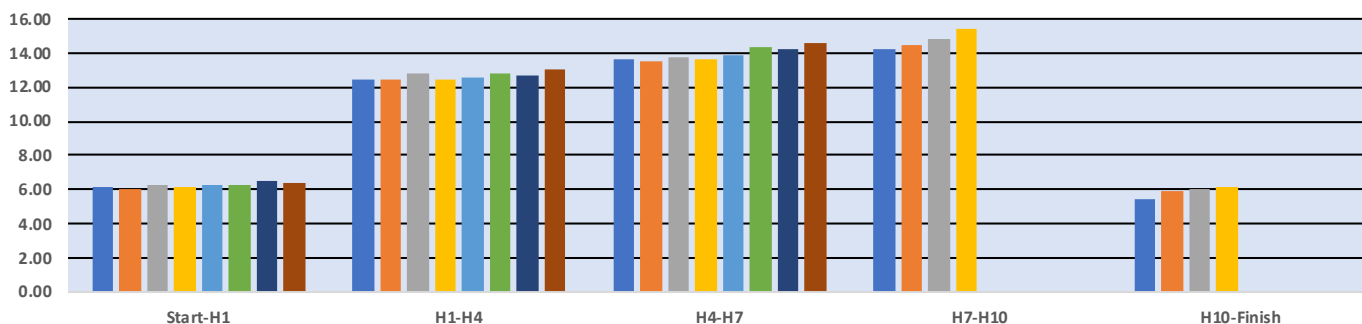
FINAL

			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		6.11	10.14	14.36	18.60	23.04	27.59	32.24	36.91	41.64	46.46		51.90	6 / 1			
	reaction time	0.194																
	interval			4.03	4.22	4.24	4.44	4.55	4.65	4.67	4.73	4.82	5.44	WR		12.49	13.64	14.22
	velocity		7.36	8.68	8.29	8.25	7.88	7.69	7.53	7.49	7.40	7.26	7.35	7.71		8.41	7.70	7.38
Muhammad, Dalilah (USA) (1990)	time		6.08	10.03	14.21	18.52	22.95	27.48	32.04	36.70	41.58	46.53		52.42	7 / 2			
	reaction time	0.167																
	interval			3.95	4.18	4.31	4.43	4.53	4.56	4.66	4.88	4.95	5.89			12.44	13.52	14.49
	velocity		7.40	8.86	8.37	8.12	7.90	7.73	7.68	7.51	7.17	7.07	6.79	7.63		8.44	7.77	7.25
Cockrell, Anna (USA) (1997)	time		6.32	10.46	14.69	19.10	23.56	28.14	32.81	37.60	42.51	47.61		53.70	9 / 3			
	reaction time	0.201																
	interval			4.14	4.23	4.41	4.46	4.58	4.67	4.79	4.91	5.10	6.09	PB		12.78	13.71	14.80
	velocity		7.12	8.45	8.27	7.94	7.85	7.64	7.49	7.31	7.13	6.86	6.57	7.45		8.22	7.66	7.09
Little, Shamier (USA) (1995)	time		6.20	10.22	14.38	18.59	22.96	27.52	32.27	36.99	42.50	47.69		53.85	5 / 4			
	reaction time	0.213																
	interval			4.02	4.16	4.21	4.37	4.56	4.75	4.72	5.51	5.19	6.16			12.39	13.68	15.42
	velocity		7.26	8.71	8.41	8.31	8.01	7.68	7.37	7.42	6.35	6.74	6.49	7.43		8.47	7.68	6.81
Hailey, Nnenna (USA) (1994)	time		6.24	10.24	14.44	18.82	23.29	27.89	32.63	37.50	42.61			54.79	8 / 5			
	reaction time	0.251																
	interval			4.00	4.20	4.38	4.47	4.60	4.74	4.87	5.11			DQ		12.58	13.81	
	velocity		7.21	8.75	8.33	7.99	7.83	7.61	7.38	7.19	6.85			7.30		8.35	7.60	
Tate, Cassandra (USA) (1990)	time		6.30	10.38	14.63	19.05	23.69	28.39	33.40		44.11			56.51	4 / 6			
	reaction time	0.194																
	interval			4.08	4.25	4.42	4.64	4.70	5.01		10.71			7.08		12.75	14.35	
	velocity		7.14	8.58	8.24	7.92	7.54	7.45	6.99		6.54			7.08		8.24	7.32	
Bookman, Deonca (USA) (1995)	time		6.54	10.64	14.84	19.18	23.79	28.49	33.46		44.17			56.90	2 / 7			
	reaction time	0.349																
	interval			4.10	4.20	4.34	4.61	4.70	4.97		10.71			7.03		12.64	14.28	
	velocity		6.88	8.54	8.33	8.06	7.59	7.45	7.04		6.54			7.03		8.31	7.35	
Spencer, Ashley (USA) (1993)	time		6.37	10.61	14.88	19.38	24.25	28.99	33.93		44.71			60.19	3 / 8			
	reaction time	0.222																
	interval			4.24	4.27	4.50	4.87	4.74	4.94		10.78			6.65		13.01	14.55	
	velocity		7.06	8.25	8.20	7.78	7.19	7.38	7.09		6.49			6.65		8.07	7.22	
H1 lead leg	time																	
	interval																	
	velocity																	
	strides																	



Time Intervals (s)

Hurdle Phases



1st-4th Place

Source: Athlete Tracking (2021.06.28). Women's 400mH - Unofficial Split Times.

Retrieved from <https://twitter.com/athletranking/status/1409736538364260357?s=21>

5th-8th Place

Evaluated with: ObjectusVideo

Quality & Frame Rate: 1920 x 1080 @ 30fps

Timing From: First Movement

Source: <https://www.youtube.com/watch?v=YiZ62VM5bqA>

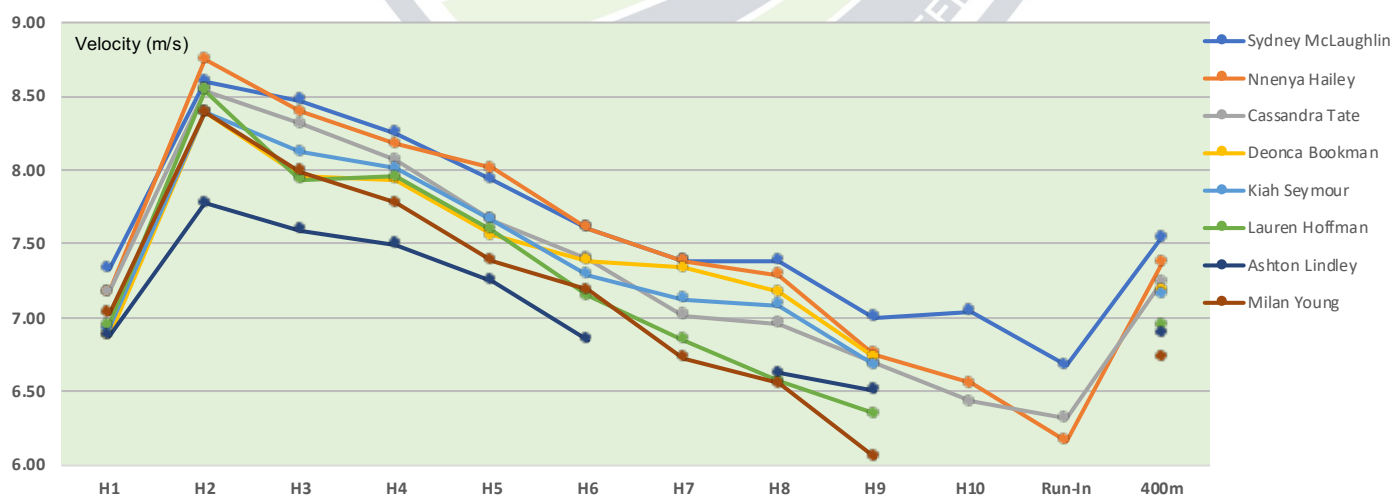
2020 USA Olympic Trials (Eugene, OR) (TV Analysis)

Women's 400m Hurdles

Date 2021.06.26

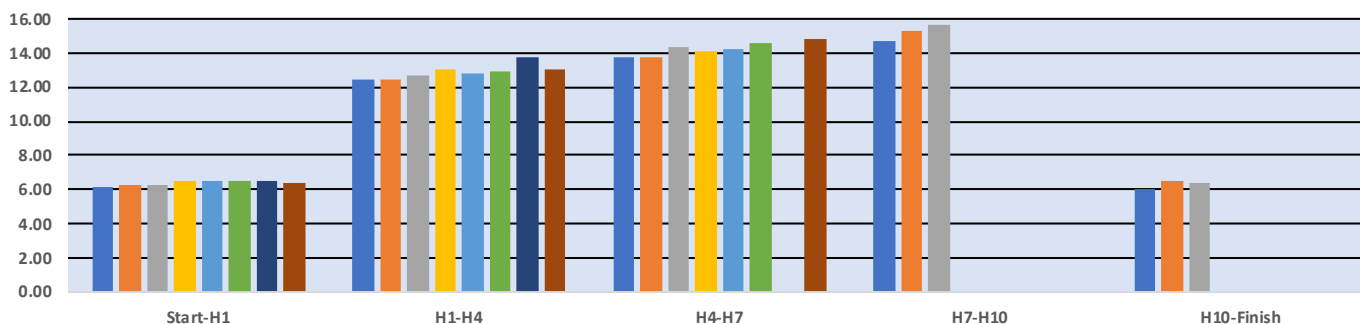
Semi-Final 1

			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		6.14	10.21	14.34	18.58	22.99	27.59	32.33	37.07	42.07	47.04		53.03	5 / 1			
	reaction time	0.227																
	interval		7.33	8.60	4.13	4.24	4.41	4.60	4.74	4.74	5.00	4.97	5.99			12.44	13.75	14.71
	velocity													7.54		8.44	7.64	7.14
	strides		22	14	14	14	14	15	15	15	16	15	18.2	172.2				
Hailey, Nnenna (USA) (1994)	time		6.27	10.27	14.44	18.72	23.09	27.69	32.43	37.23	42.41	47.75		54.24	8 / 2			
	reaction time	0.266																
	interval		7.18	4.00	4.17	4.28	4.37	4.60	4.74	4.80	5.18	5.34	6.49	PB		12.45	13.71	15.32
	velocity													7.37		8.43	7.66	6.85
	strides			16	16	15	16	17	17	17	18	18	22.5	172.5				
Tate, Cassandra (USA) (1990)	time		6.27	10.37	14.58	18.92	23.49	28.22	33.21	38.24	43.47	48.91		55.24	6 / 3			
	reaction time	0.211																
	interval		7.18	4.10	4.21	4.34	4.57	4.73	4.99	5.03	5.23	5.44	6.33			12.65	14.29	15.70
	velocity													7.24		8.30	7.35	6.69
	strides		22	14	14	14	15	15	16	15	16	16		157				
Bookman, Deonca (USA) (1995)	time		6.54	10.71	15.11	19.52	24.15	28.89	33.66	38.54	43.74			55.66	9 / 4			
	reaction time	0.338																
	interval		6.88	4.17	4.40	4.41	4.63	4.74	4.77	4.88	5.20			PB		12.98	14.14	
	velocity													7.19		8.09	7.43	
	strides			17	17	17	17	17	17	17	18	18		155				
Seymour, Kiah (USA) (1994)	time		6.50	10.67	14.98	19.35	23.92	28.72	33.63	38.57	43.81			55.84	7 / 5			
	reaction time	0.204																
	interval		6.92	4.17	4.31	4.37	4.57	4.80	4.91	4.94	5.24					12.85	14.28	
	velocity													7.16		8.17	7.35	
	strides		24	16	16	16	16		17	17	17	18		157				
Hoffman, Lauren (USA) (1999)	time		6.47	10.57	14.98	19.38	23.99	28.89	34.00	39.33	44.84			57.59	3 / 6			
	reaction time	0.224																
	interval		6.96	4.10	4.41	4.40	4.61	4.90	5.11	5.33	5.51					12.91	14.62	
	velocity													6.95		8.13	7.18	
	strides			15	16	16	16		17	18	18			116				
Lindley, Ashton (USA) (2002)	time		6.54	11.04	15.65	20.32	25.15	30.26		40.83	46.21			58.04	2 / 7			
	reaction time	0.288																
	interval		6.88	4.50	4.61	4.67	4.83	5.11		10.57	5.38					13.78		
	velocity													6.89		7.62		
	strides			16	16	16	16			6.62	6.51			81				
Young, Milan (USA) (1999)	time		6.40	10.57	14.95	19.45	24.19	29.06	34.26	39.60	45.38			59.39	4 / 8			
	reaction time	0.187																
	interval		7.03	4.17	4.38	4.50	4.74	4.87	5.20	5.34	5.78					13.05	14.81	
	velocity													6.74		8.05	7.09	
	strides		22	15	15	15	15		16	16	17			131				



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=ZMxyKQ1hg18>

2020 USA Olympic Trials (Eugene, OR) (TV Analysis)

Women's 400m Hurdles

Date 2021.06.25

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	6.03	10.06	14.40	18.80	23.40	28.13	33.10	38.30	43.60	49.03		55.51	3 / 1			
	reaction time	0.184															
	interval		4.03	4.34	4.40	4.60	4.73	4.97	5.20	5.30	5.43	6.48			12.77	14.30	15.93
	velocity		7.46	8.68	8.06	7.95	7.61	7.40	6.73	6.60	6.45	6.17	7.21		8.22	7.34	6.59
	H1 lead leg	R															
	strides		22	15	15	15	15	15	15	16	16	19	178				

Date 2021.06.25

Heat 3

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
Tate, Cassandra (USA) (1990)	time	6.36	10.43	14.80	19.36	24.00	28.70	33.60	38.90	44.26	49.75		56.11	2 / 1			
	reaction time	0.230															
	interval		4.07	4.37	4.56	4.64	4.70	4.90	5.30	5.36	5.49	6.36			13.00	14.24	16.15
	velocity		7.08	8.60	8.01	7.68	7.54	7.14	6.60	6.53	6.38	6.29	7.13		8.08	7.37	6.50
	H1 lead leg	R															
	strides		14	14	15	15	15	15	16	16	16	19.2	155.2				
Cockrell, Anna (USA) (1997)	time	6.40	10.70	15.20	19.73	24.50	29.46	34.70	39.73	44.90	50.26		56.83	7 / 2			
	reaction time	0.196															
	interval		4.30	4.50	4.53	4.77	4.96	5.24	5.03	5.17	5.36	6.57			13.33	14.97	15.56
	velocity		7.03	8.14	7.78	7.73	7.34	7.06	6.68	6.96	6.77	6.53	6.09		7.88	7.01	6.75
	H1 lead leg	L															
	strides		22	15	15	15	15	16	15	16	16	20	180				

Date 2021.06.25

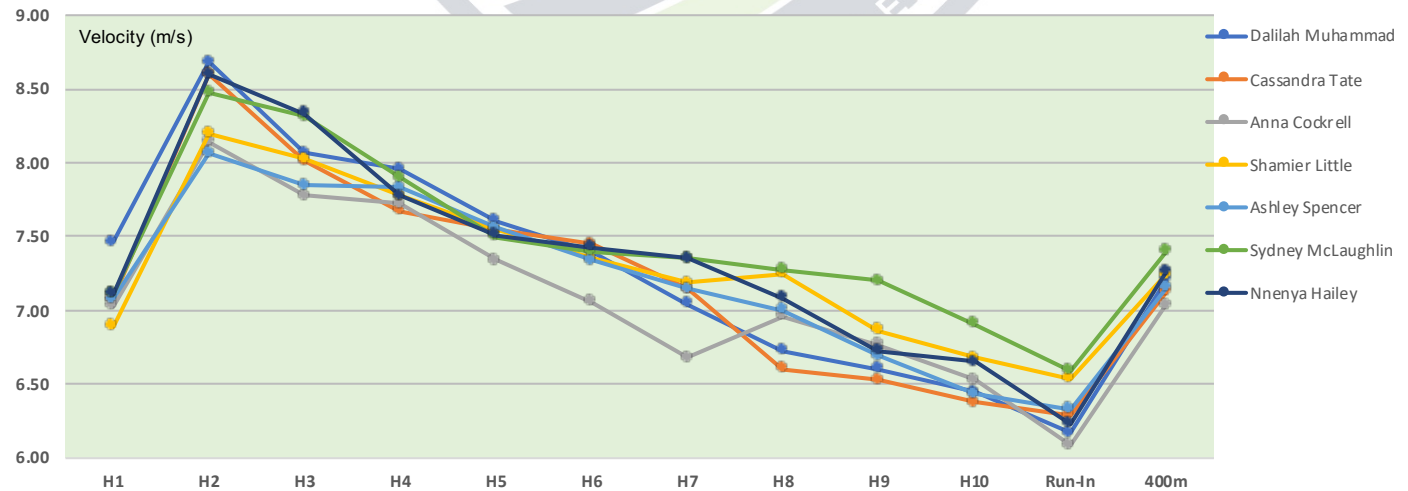
Heat 2

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
Little, Shamier (USA) (1995)	time	6.53	10.80	15.16	19.66	24.30	29.06	33.93	38.76	43.86	49.10		55.22	7 / 1			
	reaction time	0.301															
	interval		4.27	4.36	4.50	4.64	4.76	4.87	4.83	5.10	5.24	6.12			13.13	14.27	15.17
	velocity		6.89	8.20	8.03	7.78	7.54	7.35	7.19	7.25	6.86	6.68	6.54		8.00	7.36	6.92
	H1 lead leg	R															
	strides		23	15	15	15	16	16	16	16	16	19	183				
Spencer, Ashley (USA) (1993)	time	6.36	10.70	15.16	19.63	24.26	29.03	33.93	38.93	44.16	49.60		55.92	8 / 2			
	reaction time	0.182															
	interval		4.34	4.46	4.47	4.63	4.77	4.90	5.00	5.23	5.44	6.32			13.27	14.30	15.67
	velocity		7.08	8.06	7.85	7.83	7.56	7.34	7.14	7.00	6.69	6.43	6.33		7.91	7.34	6.70
	H1 lead leg	L															
	strides		22	15	15	15	15	15	15	15	15	18	175				

Date 2021.06.25

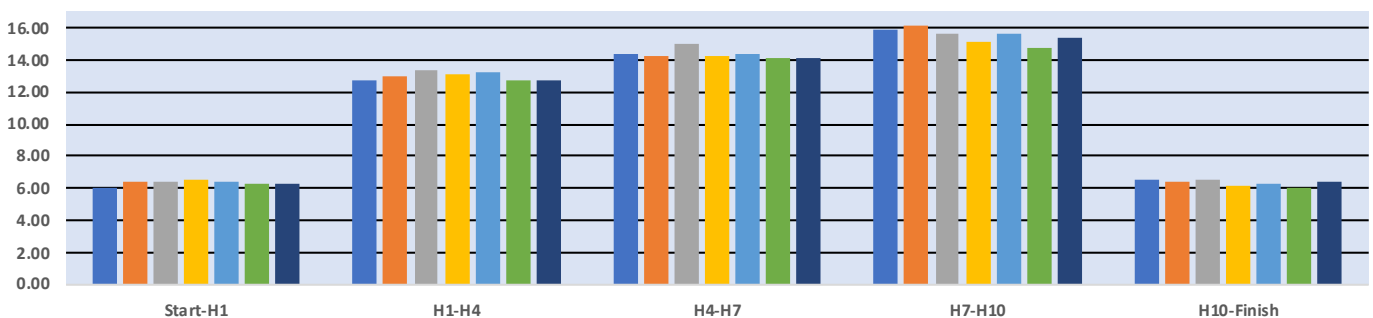
Heat 1

		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	6.33	10.46	14.67	19.10	23.77	28.50	33.26	38.07	42.93	48.00		54.07	5 / 1			
	reaction time	0.255															
	interval		4.13	4.21	4.43	4.67	4.73	4.76	4.81	4.86	5.07	6.07			12.77	14.16	14.74
	velocity		7.11	8.47	8.31	7.90	7.49	7.40	7.35	7.28	7.20	6.90	6.59		8.22	7.42	7.12
	H1 lead leg	R															
	strides		22	14	14	15	15	15	15	15	16	18.2	174.2				
Hailey, Nnenna (USA) (1994)	time	6.33	10.40	14.60	19.10	23.76	28.47	33.23	38.17	43.37	48.63		55.05	8 / 2			
	reaction time	0.291															
	interval		4.07	4.20	4.50	4.66	4.71	4.76	4.94	5.20	5.26	6.42			12.77	14.13	15.40
	velocity		7.11	8.60	8.33	7.78	7.51	7.43	7.35	7.09	6.73	6.65	6.23		8.22	7.43	6.82
	H1 lead leg	L															
	strides		16	16	17	17	17	17	17	18	18	22.2	175.2				



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=QhAEK8AeHsk&t=95s>

Biomechanical Analysis

2021 Music City Track Carnival (Nashville, TN) (TV Analysis)

Women's 400m Hurdles

Date 2021.06.06

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	6.34	10.64	14.88	19.07	23.45	27.92	32.53	37.34	42.44	47.48		52.83	5 / 1			
	reaction time																
	interval		4.30	4.24	4.19	4.38	4.47	4.61	4.81	5.10	5.04	5.35			12.73	13.46	14.95
	velocity	7.10	8.14	8.25	8.35	7.99	7.83	7.59	7.28	6.86	6.94	7.48	7.57		8.25	7.80	7.02
	H1 lead leg	R															
	strides	22	15	14	14	14	14	15		16	16	18.5	158.5				

2019 IAAF World Championships (Doha, QAT)

Date 2021.06.06

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	6.27	10.27	14.38	18.65	22.98	27.42	31.96	36.73	41.57	46.58		52.23	4 / 2			
	reaction time	0.161															
	interval		4.00	4.11	4.27	4.33	4.44	4.54	4.77	4.84	5.01	5.65	PB		12.38	13.31	14.62
	velocity	7.18	8.75	8.52	8.20	8.08	7.88	7.71	7.34	7.23	6.99	7.08	7.66		8.48	7.89	7.18
	H1 lead leg	R															
	strides	23	15	15	15	15	15	15	16	16	16	19.2	180.2				

2018 South Eastern Conference Championships (Knoxville, TN) (TV Analysis)

Date 2018.05.13

FINAL

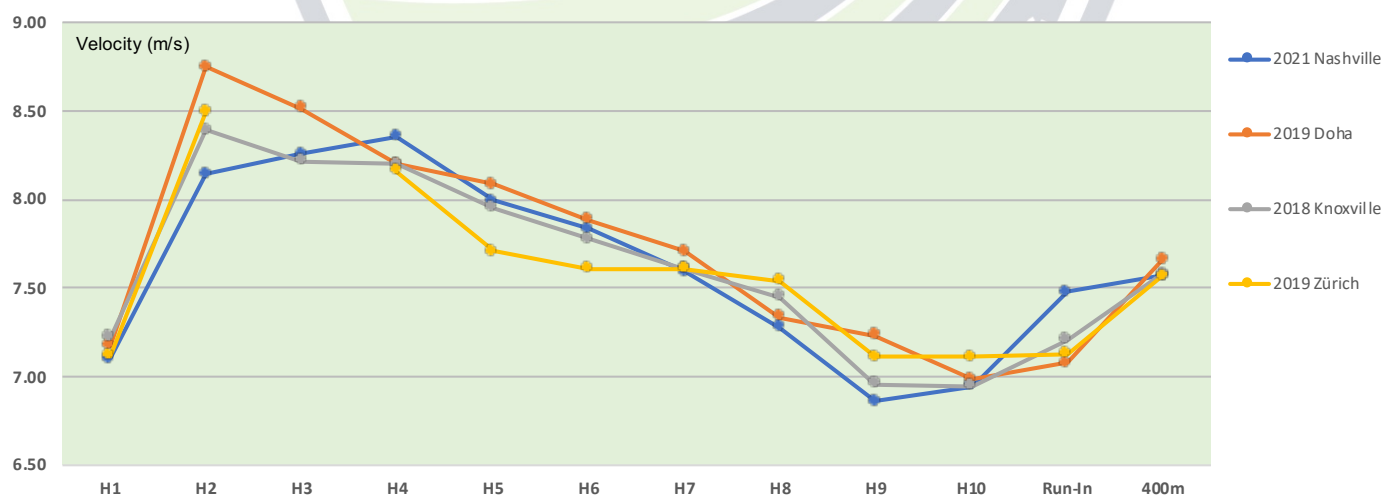
		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10
McLaughlin, Sydney (USA) (1999)	time	6.23	10.40	14.66	18.93	23.33	27.83	32.43	37.13	42.16	47.20		52.75	5 / 1			
	reaction time																
	interval		4.17	4.26	4.27	4.40	4.50	4.60	4.70	5.03	5.04	5.55	WJR PB		12.70	13.50	14.77
	velocity	7.22	8.39	8.22	8.20	7.95	7.78	7.61	7.45	6.96	6.94	7.21	7.58		8.27	7.78	7.11
	H1 lead leg	R															
	strides		15	15	15	15	15	15	15	16	16	18.5	155.5				

2019 Weltklasse (Zürich, SUI) (TV Analysis)

Date 2018.05.13

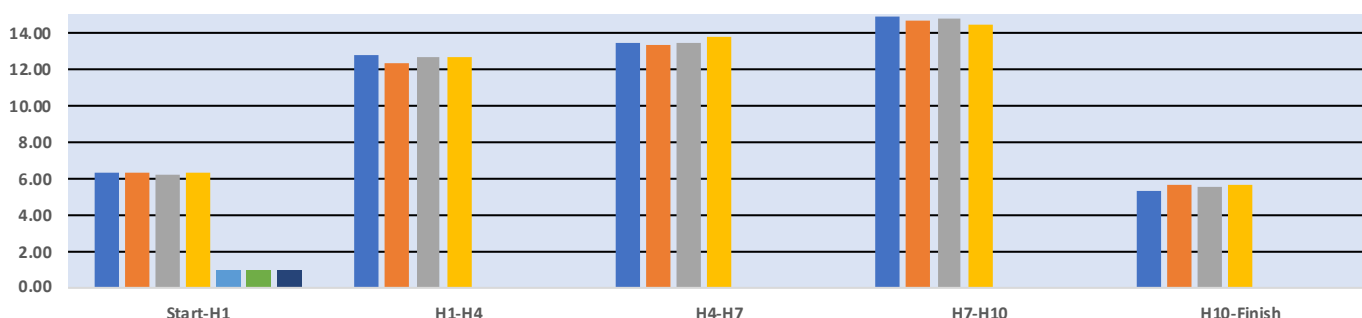
FINAL

		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	6.32	10.44		19.02	23.56	28.16	32.76	37.40	42.32	47.24		52.85	3 / 1			
	reaction time	0.147															
	interval		4.12		8.58	4.54	4.60	4.60	4.64	4.92	4.92	5.61			12.70	13.74	14.48
	velocity	7.12	8.50		8.16	7.71	7.61	7.61	7.54	7.11	7.11	7.13	7.57		8.27	7.64	7.25
	H1 lead leg	R															
	strides	23	15			15	15	15	15	16	16	19	149				



Time Intervals (s)

Hurdle Phases



2021 ATL Music City Track Carnival

Evaluated with: ObjectusVideo

Quality & Frame Rate: 1280 x 720 @ 30fps

Timing From: First Movement

Source: <https://www.youtube.com/watch?v=Xti0evM1wUQ>

2018 South Eastern Conference Championships

Evaluated with: ObjectusVideo

Quality & Frame Rate: 1920 x 1080 @ 30fps

Timing From: First Movement

Source: <https://www.youtube.com/watch?v=DRlu2cpflMc>

2019 IAAF World Championships (Doha, QAT)

Evaluated with: ObjectusVideo

Quality & Frame Rate: 1920 x 1080 @ 30fps

Timing From: First Movement

Source: https://www.youtube.com/watch?v=ZAz0GS_4QTY

2019 Weltklasse (Zürich, SUI)

Evaluated with: ObjectusVideo

Quality & Frame Rate: 1280 x 720 @ 25fps

Timing From: First Movement

Source: <https://www.youtube.com/watch?v=poeZDX--3Q>

2021 USATF Golden Games (Walnut, CA) (TV Analysis)

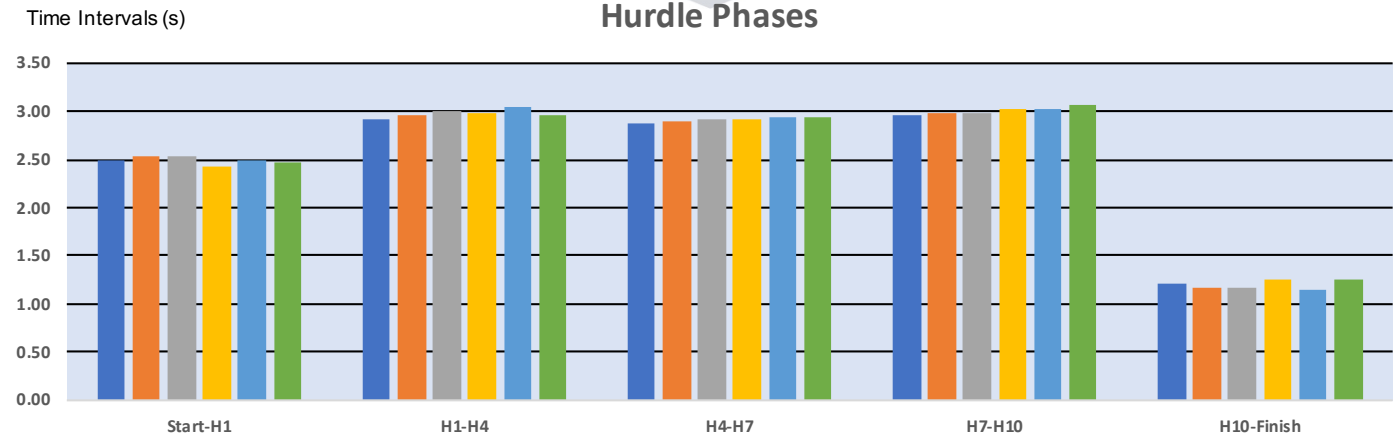
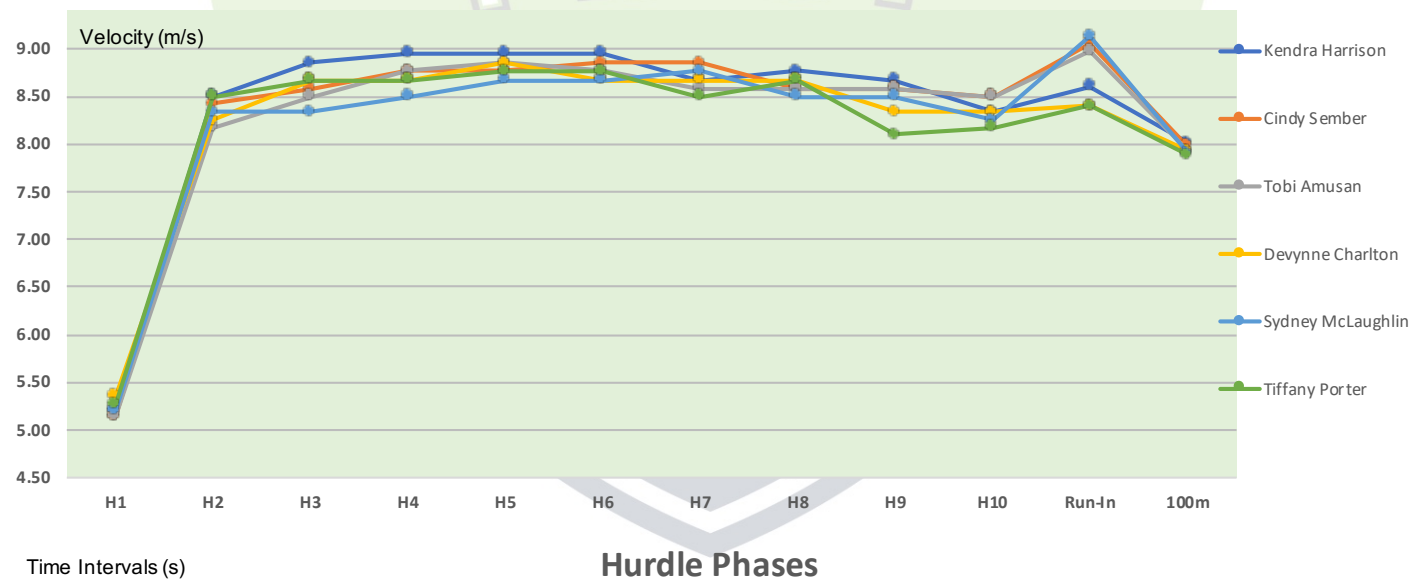
100m Hurdles

Date: 2021.05.09

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
Harrison, Kendra (USA) (1992)	time		2.50	3.50	4.46	5.41	6.36	7.31	8.29	9.26	10.24	11.26		12.48	4 / 1			
	reaction time	0.185											1.22			2.91	2.88	2.97
	interval			1.00	0.96	0.95	0.95	0.95	0.98	0.97	0.98	1.02	1.22			8.76	8.85	8.59
Sember, Cindy (GBR) (1994)	time		2.53	3.54	4.53	5.50	6.47	7.43	8.39	9.38	10.37	11.37		12.53	3 / 2			
	reaction time	0.173											1.16			2.97	2.89	2.98
	interval			1.01	0.99	0.97	0.97	0.96	0.96	0.99	0.99	1.00	1.16			8.59	8.82	8.56
Amusan, Tobi (NGR) (1997)	time		2.53	3.57	4.57	5.54	6.50	7.47	8.46	9.45	10.44	11.44		12.61	7 / 3			
	reaction time	0.172											1.17			3.01	2.92	2.98
	interval			1.04	1.00	0.97	0.96	0.97	0.99	0.99	0.99	1.00	1.17			8.47	8.73	8.56
Charlton, Devynne (BAH) (1995)	time		2.43	3.46	4.44	5.42	6.38	7.36	8.34	9.32	10.34	11.36		12.61	1 / 4			
	reaction time	0.147											1.25	NR PB		2.99	2.92	3.02
	interval			1.03	0.98	0.98	0.96	0.98	0.98	0.98	1.02	1.02	1.25			8.53	8.73	8.44
McLaughlin, Sydney (USA) (1999)	time		2.50	3.52	4.54	5.54	6.52	7.50	8.47	9.47	10.47	11.50		12.65	2 / 5			
	reaction time	0.175											1.15	PB		3.04	2.93	3.03
	interval			1.02	1.02	1.00	0.98	0.98	0.97	1.00	1.00	1.03	1.15			8.39	8.70	8.42
Porter, Tiffany (GBR) (1987)	time		2.47	3.47	4.45	5.43	6.40	7.37	8.37	9.35	10.40	11.44		12.69	5 / 6			
	reaction time	0.156											1.25			2.96	2.94	3.07
	interval			1.00	0.98	0.98	0.97	0.97	1.00	0.98	1.05	1.04	1.25			8.61	8.67	8.31
	velocity		5.20	8.50	8.67	8.67	8.76	8.76	8.50	8.67	8.10	8.17	8.40	7.88				



Evaluated with: ObjectusVideo
 Quality & Frame Rate: 1920 x 1080 @ 30fps
 Timing From: First Movement
 Source: https://www.youtube.com/watch?v=mrq_-49zHXw

Biomechanical Analysis

2021 USATF Grand Prix (Eugene, OR) (TV Analysis)

100m Hurdles

Date: 2021.04.24

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
Camacho-Quinn, Jasmine (PUR) (199)	time	2.47	3.47	4.45	5.40	6.37	7.32	8.29	9.28	10.26	11.26		12.46	5 / 1	2.93 8.70	2.89 8.82	2.97 8.59
	reaction time											1.22					
	interval velocity	5.26	8.50	8.67	8.95	8.76	8.95	8.76	8.59	8.67	8.50	8.61	8.03				
Anderson, Brittany (JAM) (2001)	time	2.53	3.54	4.54	5.50	6.47	7.47	8.46	9.46	10.50	11.57		12.82	8 / 2	2.97 8.59	2.96 8.61	3.11 8.20
	reaction time											1.22					
	interval velocity	5.14	8.42	8.50	8.85	8.76	8.50	8.59	8.50	8.17	7.94	8.61	7.80				
Brooks, Taliyah (USA) (1995)	time	2.50	3.52	4.50	5.50	6.50	7.50	8.49	9.52	10.56	11.62		12.83	6 / 3	3.00 8.50	2.99 8.53	3.13 8.15
	reaction time											1.22					
	interval velocity	5.20	8.33	8.67	8.50	8.50	8.50	8.59	8.25	8.17	8.02	8.61	7.79				
McLaughlin, Sydney (USA) (1999)	time	2.57	3.63	4.65	5.65	6.65	7.65	8.65	9.65	10.67	11.71		12.86	2 / 4	3.08 8.28	3.00 8.50	3.06 8.33
	reaction time											1.22	PB				
	interval velocity	5.06	8.02	8.33	8.50	8.50	8.50	8.50	8.50	8.33	8.17	8.61	7.78				

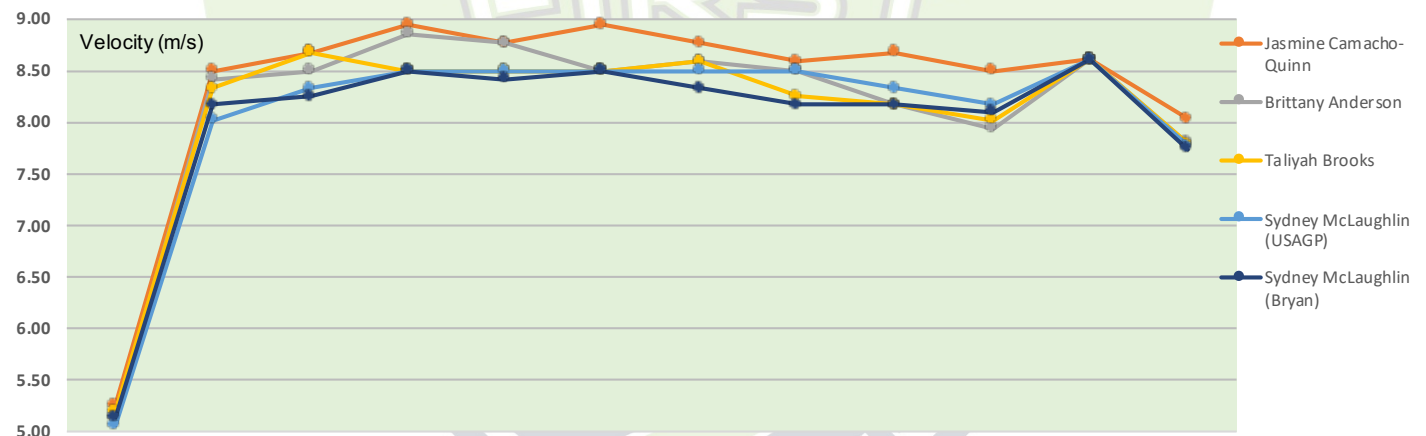
2021 Bryan Clay Invitational (Azusa, CA) (TV Analysis)

Date: 2021.04.16

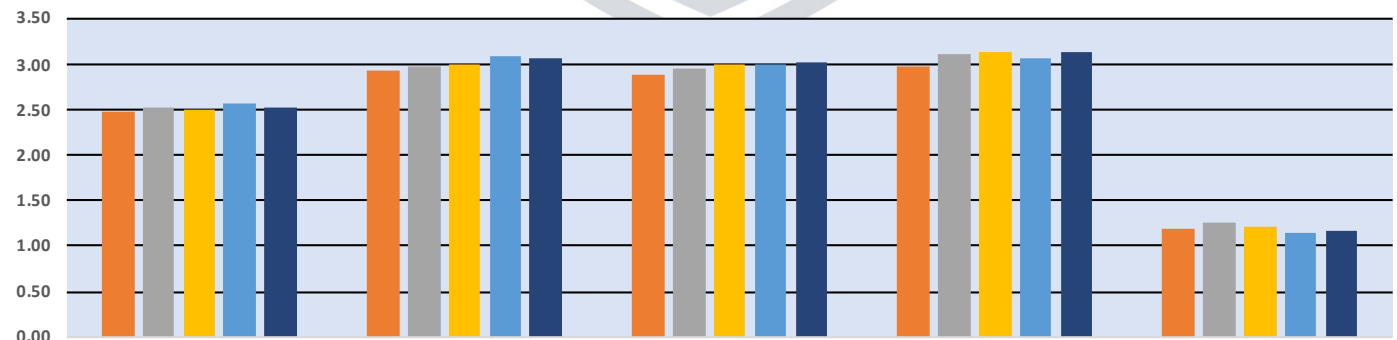
Wind: 0.2 m/s

FINAL

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	100m	Lane/Place	H1-H4	H4-H7	H7-H10
McLaughlin, Sydney (USA) (1999)	time	2.53	3.57	4.60	5.60	6.61	7.61	8.63	9.67	10.71	11.76		12.92	4 / 1	3.07 8.31	3.03 8.42	3.13 8.15
	reaction time											1.22	PB				
	interval velocity	5.14	8.17	8.25	8.50	8.42	8.50	8.33	8.17	8.17	8.10	8.61	7.74				



Time Intervals (s)



USATF Grand Prix

Evaluated with: ObjectusVideo

Quality & Frame Rate: 1920 x 1080 @ 30fps

Timing From: First Movement

Source: <https://www.youtube.com/watch?v=Z1emR0y6sw0>

Bryan Clay Invitational

Evaluated with: ObjectusVideo

Quality & Frame Rate: 1920 x 1080 @ 30fps

Timing From: First Movement

Source: <https://www.youtube.com/watch?v=MXxag179KQ4>