

2019 Women's 400m Hurdles World Record Season

UPDATED
2021.08.25

Dalilah Muhammad (USA) - 52.16

Hurdle Touchdown Times



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Todd Henson

2019 Women's 400m Hurdles World Record Season

Dalilah Muhammad (USA) - 52.16

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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.

2019 Women's 400m Hurdles World Record Season - Dalilah Muhammad (USA) (1990)

2019 IAAF World Championships (Doha, QAT) (TV Analysis)

FINAL		date	Henson (2020) - Athlete First: 2019 year end hurdle report																
		04-Oct-19	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	Official Time	Lane / Place	H1-H4	H4-H7	H7-H10	
Muhammad, Dalilah (USA) (1990)	time		6.19	10.11	14.23	18.49	22.86	27.24	31.72	36.39	41.21	46.23		52.16	6 / 1				
	reaction time	0.200	interval	3.92	4.12	4.26	4.37	4.38	4.48	4.67	4.82	5.02	5.93	WR			12.30	13.23	14.51
			velocity	7.27	8.93	8.50	8.22	8.01	7.99	7.81	7.49	7.26	6.97	6.75	7.67		8.54	7.94	7.24
	H1 lead leg	R	strides	23	15	15	15	15	15	15	16	16	20	180					

Semi-Final 1

Semi-Final 1		date	Henson (2020) - Athlete First: 2019 year end hurdle report															
		02-Oct-19	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	Official Time	Lane / Place	H1-H4	H4-H7	H7-H10
Muhammad, Dalilah (USA) (1990)	time		6.14	10.07	14.25	18.55	23.08	27.63	32.36	37.30	42.37	47.64		53.91	5 / 1			
	reaction time	0.167	interval	3.93	4.18	4.30	4.53	4.55	4.73	4.94	5.07	5.27	6.27			12.41	13.81	15.28
			velocity	7.33	8.91	8.37	8.14	7.73	7.69	7.40	6.90	6.64	6.38	7.42		8.46	7.60	6.87
	H1 lead leg	R	strides	23	15	15	15	15	15	16	16	16	19.2	180.2				

Heat 3

Heat 3		date	Henson (2021) - Athlete First: 2019 year end hurdle report															
		01-Oct-19	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	Official Time	Lane / Place	H1-H4	H4-H7	H7-H10
Muhammad, Dalilah (USA) (1990)	time		6.24	10.28	14.60	18.96	23.56	28.40	33.24	38.20	43.44	48.68		54.87	5 / 1			
	reaction time	0.194	interval	4.04	4.32	4.36	4.60	4.84	4.84	4.96	5.24	5.24	6.19			12.72	14.28	15.44
			velocity	7.21	8.66	8.10	8.03	7.61	7.23	7.23	7.06	6.68	6.46	7.29		8.25	7.35	6.80
	H1 lead leg	R	strides	23	15	15	15	15	15	15	16	16	19.2	179.2				

2019 Weltklasse (Zürich, SUI) (TV Analysis)

FINAL		date	Henson (2020) - Athlete First: 2019 year end hurdle report															
		29-Aug-19	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	Official Time	Lane / Place	H1-H4	H4-H7	H7-H10
Muhammad, Dalilah (USA) (1990)	time		6.24	10.20	14.48	19.06	23.64	28.22	32.78	37.54	42.46	47.48		54.13	4 / 3			
	reaction time	0.193	interval	3.96	4.28	4.58	4.58	4.58	4.56	4.76	4.92	5.02	6.65			12.82	13.72	14.70
			velocity	7.21	8.84	8.18	7.64	7.64	7.68	7.35	7.11	6.97	6.02	7.39		8.19	7.65	7.14
	H1 lead leg	R	strides	23	15	15	15	15	15	16	16	16	19.5	180.5				

2019 USATF National Championships (Des Moines, IA)

FINAL		date	Vazel (2019) - statistical analysis and historical context of the new 400H world record																
		28-Jul-19	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	Official Time	Lane / Place	H1-H4	H4-H7	H7-H10	
Muhammad, Dalilah (USA) (1990)	time		6.25	10.15	14.27	18.48	22.79	27.19	31.66	36.39	41.26	46.32		52.20	4 / 1				
	reaction time	0.287	interval	3.90	4.12	4.21	4.31	4.40	4.47	4.73	4.87	5.06	5.88	WR		12.23	13.18	14.66	
			velocity	7.20	8.97	8.50	8.31	8.12	7.95	7.83	7.40	7.19	6.92	6.80	7.66		8.59	7.97	7.16
	H1 lead leg	R	strides	23	15	15	15	15	15	16	16	16	20	181					

Heat 2

Heat 2		date	Henson (2020) - Athlete First: 2019 year end hurdle report															
		27-Jul-19	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	Official Time	Lane / Place	H1-H4	H4-H7	H7-H10
Muhammad, Dalilah (USA) (1990)	time													54.22	7 / 1			
	reaction time	0.381	interval	No Information Available														
			velocity															
	H1 lead leg		strides															

2019 Bislett Games (Oslo, NOR) (TV Analysis)

FINAL		date	Henson (2020) - Athlete First: 2019 year end hurdle report																
		13-Jun-19	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	Official Time	Lane / Place	H1-H4	H4-H7	H7-H10	
Muhammad, Dalilah (USA) (1990)	time		6.10	10.04	14.20	18.58	23.12	27.72	32.40	37.28	42.44	47.88		54.35	5 / 2				
	reaction time	0.205	interval	3.94	4.16	4.38	4.54	4.60	4.68	4.88	5.16	5.44	6.47			12.48	13.82	15.48	
			velocity	7.38	8.88	8.41	7.99	7.71	7.61	7.48	7.17	6.78	6.43	6.18	7.36		8.41	7.60	6.78
	H1 lead leg	R	strides	23	15	15	15	15	15	15	16	17	20.5	181.5					

2019 Golden Gala Pietro Mennea (Rome, ITA) (TV Analysis)

FINAL		date	Henson (2020) - Athlete First: 2019 year end hurdle report															
		06-Jun-19	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	Official Time	Lane / Place	H1-H4	H4-H7	H7-H10
Muhammad, Dalilah (USA) (1990)	time		6.24	10.26	14.58	19.10	23.76	28.40	33.00	37.68	42.58	47.70		53.67	5 / 1			
	reaction time	0.147	interval	4.02	4.32	4.52	4.66	4.64	4.60	4.68	4.90	5.12	5.97			12.86	13.90	14.70
			velocity	7.21	8.71	8.10	7.74	7.51	7.54	7.61	7.14	6.84	6.70	7.45		8.16	7.55	7.14
	H1 lead leg	R	strides	23	15	15	15	15	15	15	15	16	19.5	178.5				

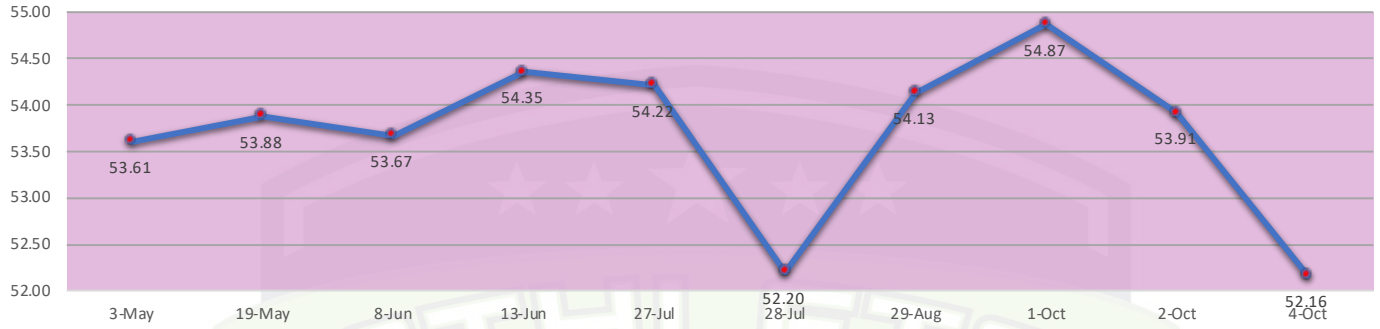
2019 Seiko Golden Grand Prix (Osaka, JPN) (TV Analysis)

FINAL		date	Hirokawa (2019) - research on athlete performance and technique- 2019 data book																
		19-May-19	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	Official Time	Lane / Place	H1-H4	H4-H7	H7-H10	
Muhammad, Dalilah (USA) (1990)	time		6.21	10.23	14.51	18.94	23.47	28.16	32.75	37.49	42.46	47.80		53.88	5 / 1				
	reaction time	0.181	interval	4.02	4.28	4.43	4.53	4.69	4.59	4.74	4.97	5.34	6.08			12.73	13.81	15.05	
			velocity	7.25	8.71	8.18	7.90	7.73	7.46	7.63	7.38	7.04	6.55	6.58	7.42		8.25	7.60	6.98
	H1 lead leg	R	strides	23	15	15	15	15	15	15	16	16	20	180					

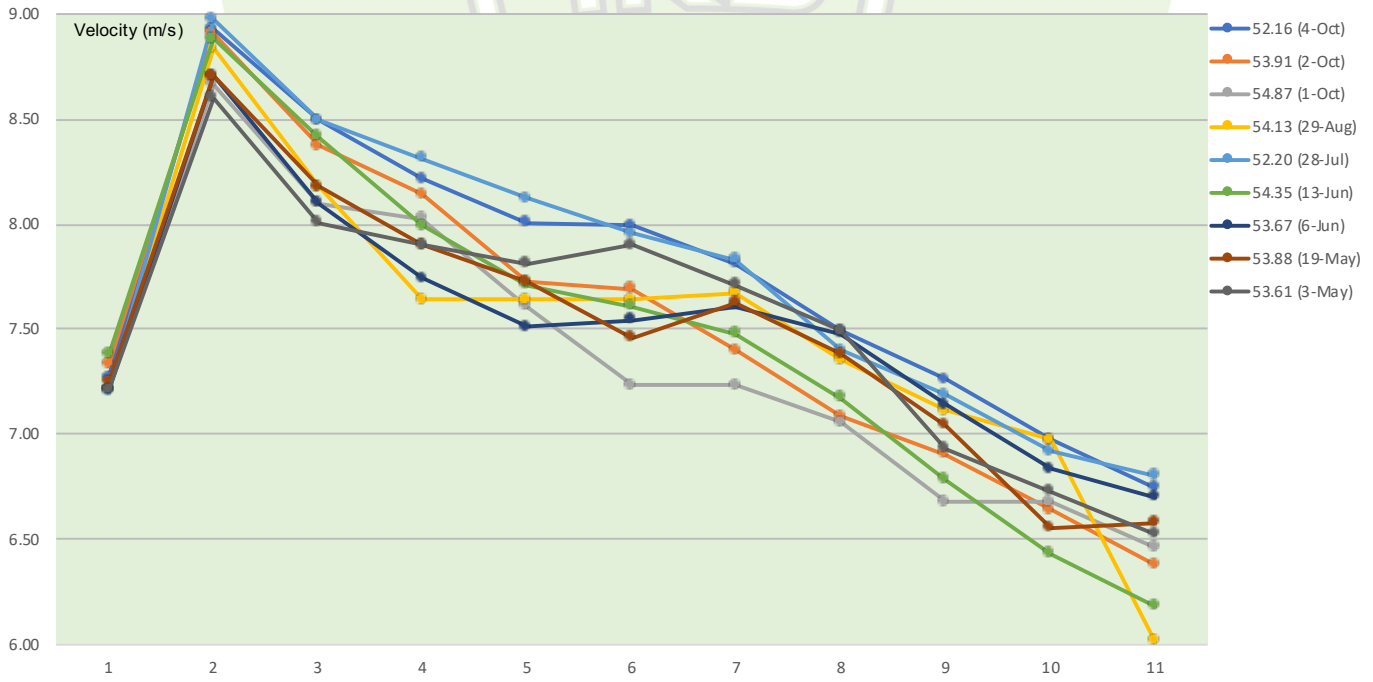
2019 Doha Diamond League (Doha, QAT) (TV Analysis)

FINAL		date	Henson (2020) - Athlete First: 2019 year end hurdle report																
		03-May-19	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	Official Time	Lane / Place	H1-H4	H4-H7	H7-H10	
Muhammad, Dalilah (USA) (1990)	time		6.24	10.31	14.68	19.11	23.59	28.02	32.56	37.23	42.28	47.48		53.61	5 / 1				
	reaction time	0.147	interval	4.07	4.37	4.43	4.48	4.43	4.54	4.67	5.05	5.20	6.13			12.87	13.45	14.92	
			velocity	7.21	8.60	8.01	7.90	7.81	7.90	7.71	7.49	6.93	6.73	6.53	7.46		8.16	7.81	7.04
	H1 lead leg	R	strides	23	15	15	15	15	15	15	16	16	20	180					

Dalilah Muhammad 2019

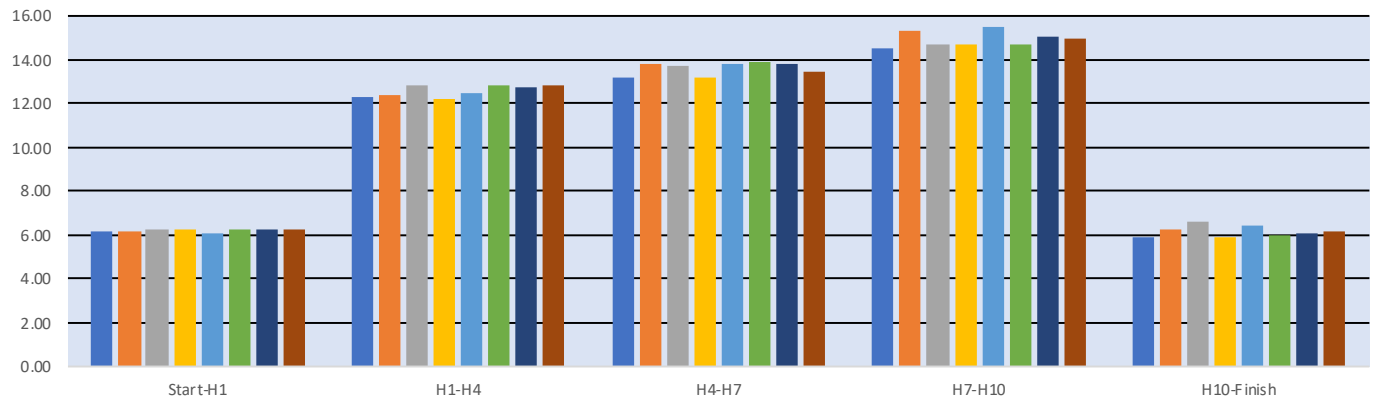


Hurdle Rhythmic Units



Time Intervals (s)

Hurdle Phases



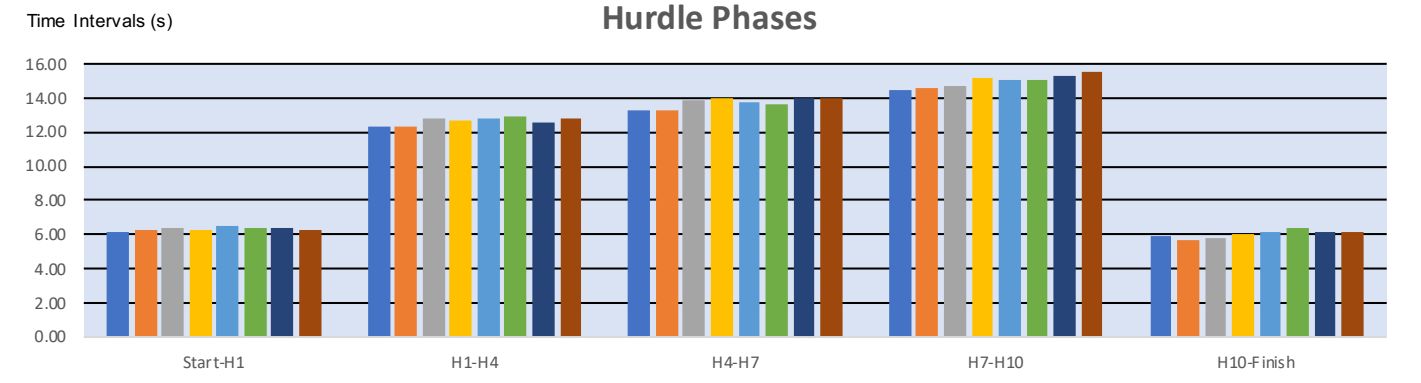
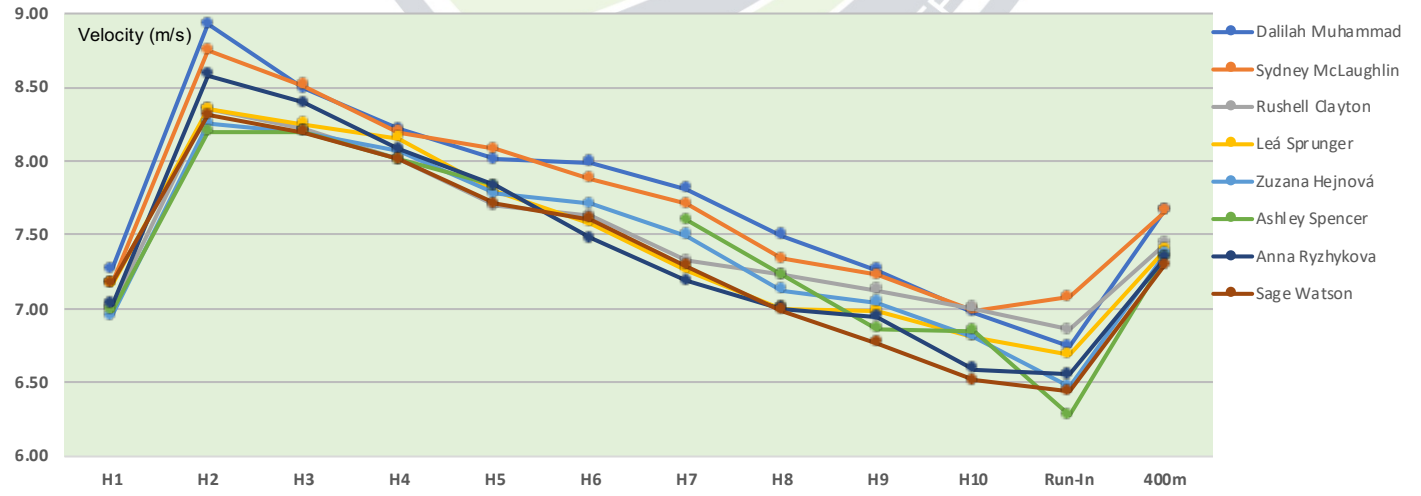
2019 IAAF World Championships (Doha, QAT)

Women's 400m Hurdles

Date 2019.10.04

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	6.19	10.11	14.23	18.49	22.86	27.24	31.72	36.39	41.21	46.23	52.16	52.16	6 / 1			
	reaction time	0.200															
	interval velocity	7.27	8.93	8.50	8.22	8.01	7.99	8.01	7.49	7.26	6.97	6.97	6.75	6.75	12.30	13.23	14.51
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	52.23	4 / 2			
	reaction time	0.161															
	interval 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	7.66	12.38	13.31	14.62
Clayton, Rushell (JAM) (1992)	time	6.42	10.61	14.87	19.24	23.79	28.38	33.16	38.00	42.91	47.91	53.74	53.74	5 / 3			
	reaction time	0.137															
	interval velocity	7.01	8.35	8.22	8.01	7.69	7.63	7.32	7.23	7.13	7.00	6.86	7.44	7.44	12.82	13.92	14.75
Sprunger, Leá (SUI) (1990)	time	6.28	10.47	14.71	19.00	23.49	28.11	32.93	37.93	42.94	48.08	54.06	54.06	9 / 4			
	reaction time	0.199															
	interval velocity	7.17	8.35	8.25	8.16	7.80	7.58	7.26	7.00	6.99	6.81	6.69	7.40	7.40	12.72	13.93	15.15
Hejnová, Zuzana (CZE) (1986)	time	6.47	10.71	14.98	19.32	23.82	28.36	33.03	37.94	42.91	48.05	54.23	54.23	8 / 5			
	reaction time	0.141															
	interval velocity	6.96	8.25	8.20	8.06	7.78	7.71	7.49	7.13	7.04	6.81	6.47	7.38	7.38	12.85	13.71	15.02
Spencer, Ashley (USA) (1993)	time	6.44	10.71	14.98	19.35	23.82	28.36	33.03	37.87	42.97	48.08	54.45	54.45	2 / 6			
	reaction time	0.163															
	interval velocity	6.99	8.20	8.20	8.01	7.83	7.60	7.23	6.86	6.85	6.28	7.35	7.35	7.35	12.91	13.68	15.05
Ryzhykova, Anna (UKR) (1989)	time	6.40	10.48	14.65	18.98	23.45	28.13	33.00	38.00	43.04	48.35	54.45	54.45	3 / 7			
	reaction time	0.173															
	interval velocity	7.03	8.58	8.39	8.08	7.83	7.48	7.19	7.00	6.94	6.59	6.56	7.35	7.35	12.58	14.02	15.35
Watson, Sage (CAN) (1994)	time	6.27	10.48	14.75	19.12	23.66	28.26	33.06	38.07	43.24	48.61	54.82	54.82	7 / 8			
	reaction time	0.186															
	interval velocity	7.18	8.31	8.20	8.01	7.71	7.61	7.29	6.99	6.77	6.52	6.44	7.30	7.30	12.85	13.94	15.55



Dalilah Muhammad
 Source: Sugimoto, K. (2019). World championship competition performance analysis: Women's hurdles. Bulletin of Studies in Athletics of JAAF, 15, p 19.
 (in Japanese)
https://www.iaaf.or.jp/pdf/about/publish/2019/2019_2-4.pdf

2nd - 8th Places (TV Analysis)
 Evaluated with: ObjectusVideo
 Quality & Frame Rate: 1920 x 1080 @ 30fps
 Timing From: First Movement
 Source: https://www.youtube.com/watch?v=ZAz0GS_40TY

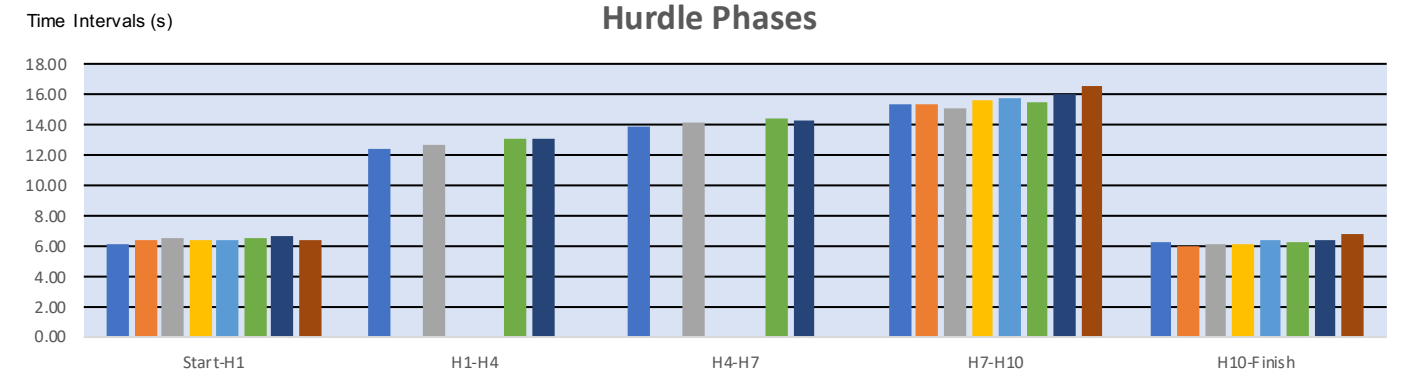
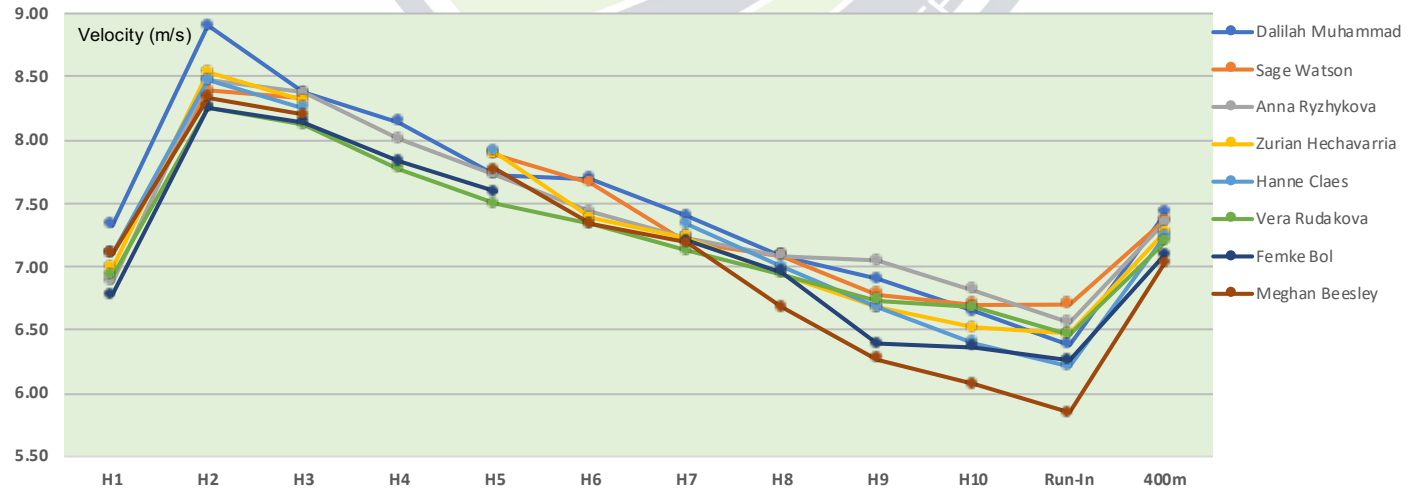
2019 IAAF World Championships (Doha, QAT) (TV Analysis)

Women's 400m Hurdles

Date 2019.10.02

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	6.14	10.07	14.25	18.55	23.08	27.63	32.36	37.30	42.37	47.64	53.91	53.91	5 / 1			
	reaction time	0.167													12.41	13.81	15.28
	interval velocity	7.33	8.91	8.37	8.14	7.73	7.69	7.40	7.09	6.90	6.64	6.38	7.42		8.46	7.60	6.87
H1 lead leg	R																
Watson, Sage (CAN) (1994)	time	6.34	10.51	14.71	19.22	23.75	28.16	33.03	37.97	43.13	48.35	54.32	54.32	4 / 2			
	reaction time	0.183															15.32
	interval velocity	7.10	8.39	8.33	8.14	7.88	7.66	7.19	7.09	6.78	6.70	7.36	7.36				6.85
H1 lead leg	R																
Ryzhykova, Anna (UKR) (1989)	time	6.54	10.67	14.85	19.22	23.75	28.46	33.30	38.24	43.21	48.35	54.45	54.45	6 / 3			
	reaction time	0.171													12.68	14.08	15.05
	interval velocity	6.88	8.47	8.37	8.01	7.73	7.43	7.23	7.09	7.04	6.81	6.56	7.35		8.28	7.46	6.98
H1 lead leg	R																
Hechavarria, Zurian (CUB) (1995)	time	6.44	10.54	14.75	19.22	23.62	28.36	33.20	38.24	43.48	48.85	55.03	55.03	7 / 4			
	reaction time	0.216															15.65
	interval velocity	6.99	8.54	8.31	8.14	7.89	7.38	7.23	6.94	6.68	6.52	6.47	7.27				6.71
H1 lead leg	L																
Claes, Hanne (BEL) (1991)	time	6.34	10.47	14.71	19.22	23.56	28.99	33.10	38.10	43.34	48.81	55.25	55.25	3 / 5			
	reaction time	0.159															15.71
	interval velocity	7.10	8.47	8.25	8.14	7.91	7.49	7.34	7.00	6.68	6.40	6.21	7.24				6.68
H1 lead leg	R																
Rudakova, Vera (ANA) (1992)	time	6.50	10.74	15.05	19.55	24.22	28.99	33.90	38.94	44.14	49.38	55.57	55.57	8 / 6			
	reaction time	0.246													13.05	14.35	15.48
	interval velocity	6.92	8.25	8.12	7.78	7.49	7.34	7.13	6.94	6.73	6.68	6.46	7.20		8.05	7.32	6.78
H1 lead leg	L																
Bol, Femke (NED) (2000)	time	6.64	10.88	15.18	19.65	24.26	29.11	33.97	39.00	44.48	49.98	56.37	56.37	2 / 7			
	reaction time	0.219													13.01	14.32	16.01
	interval velocity	6.78	8.25	8.14	7.83	7.59	7.21	6.96	6.39	6.36	6.26	7.10	7.10		8.07	7.33	6.56
H1 lead leg	L																
Beesley, Meghan (GBR) (1989)	time	6.34	10.54	14.81	19.22	23.82	28.59	33.46	38.70	44.28	50.05	56.89	56.89	9 / 8			
	reaction time	0.173															16.59
	interval velocity	7.10	8.33	8.20	8.14	7.77	7.34	7.19	6.68	6.27	6.07	5.85	7.03				6.33
H1 lead leg	L																



Evaluated with: ObjectusVideo
 Quality & Frame Rate: 1920 x 1080 @ 30fps
 Timing From: First Movement
 Source: <https://www.youtube.com/watch?v=vJCe4ANu-0>

2019 IAAF World Championships (Doha, QAT) (TV Analysis)

Women's 400m Hurdles

Date 2019.10.01

Heat 5

		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	6.60	10.76	15.04	19.36	23.88		33.60	38.68	43.88	49.16		55.23	7 / 1				
	reaction time	0.176	interval	4.16	4.28	4.32	4.52	9.72	5.08	5.20	5.28	6.07			12.76	14.24	15.56	
		velocity	6.82	8.41	8.18	8.10	7.74		7.20	6.89	6.73	6.63	6.59	7.24		8.23	7.37	6.75
	H1 lead leg	L	strides	23	1'5	15	15	15		16	16	16	19	135				

Date 2019.10.01

Heat 4

		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Run-In	400m	Lane / Place	H1-H4	H4-H7	H7-H10	
Iuel, Amalie (NOR) (1994)	time	6.32	10.48	14.76	19.08	23.72	28.40	33.18	38.16	43.20	48.56		54.72	5 / 1				
	reaction time	0.157	interval	4.16	4.28	4.32	4.64	4.68	4.78	4.98	5.04	5.36	6.16		12.76	14.10	15.38	
		velocity	7.12	8.41	8.18	8.10	7.54	7.48	7.32	7.03	6.94	6.53	6.49	7.31		8.23	7.45	6.83
	H1 lead leg	L	strides	23	15	15	15	15	15	15	16	16	19	164				

Date 2019.10.01

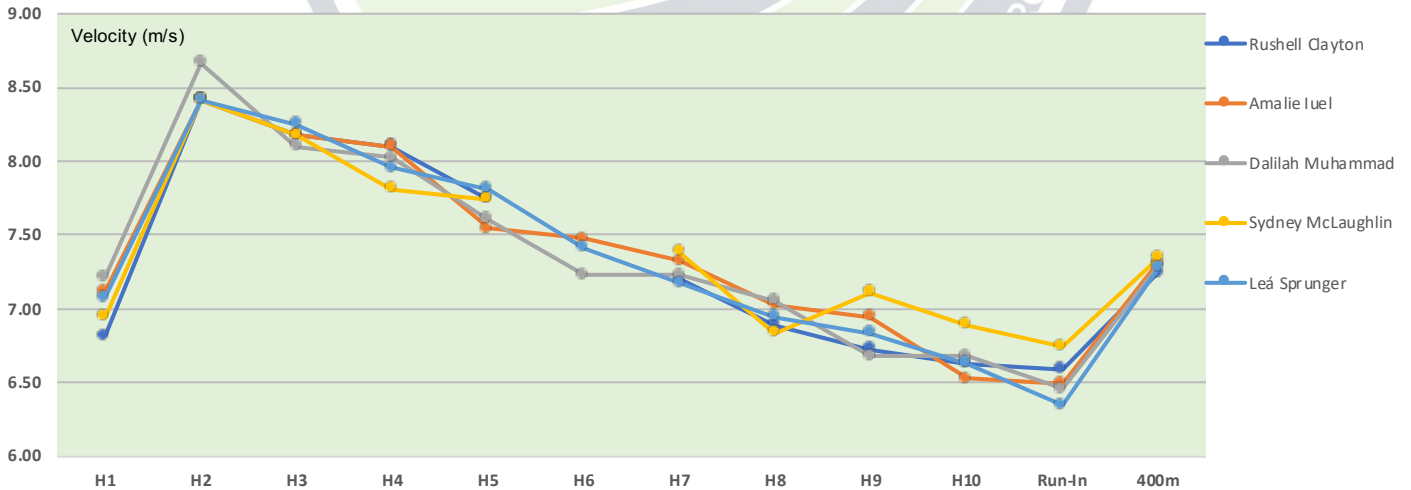
Heat 3

		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	6.24	10.28	14.60	18.96	23.56	28.40	33.24	38.20	43.44	48.68		54.87	5 / 1				
	reaction time	0.194	interval	4.04	4.32	4.36	4.60	4.84	4.84	4.96	5.24	5.24	6.19		12.72	14.28	15.44	
		velocity	7.21	8.66	8.10	8.03	7.61	7.23	7.23	7.06	6.68	6.68	6.46	7.29		8.25	7.35	6.80
	H1 lead leg	R	strides	23	15	15	15	15	15	15	16	16	19.2	179.2				

Date 2019.10.01

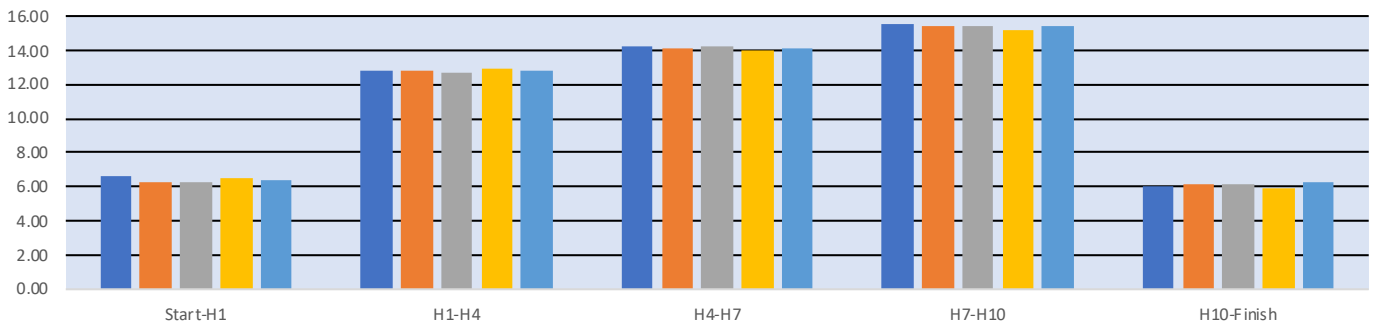
Heat 1

		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	6.48	10.64	14.92	19.40	23.92		33.40	38.52	43.44	48.52		54.45	8 / 1				
	reaction time	0.176	interval	4.16	4.28	4.48	4.52	9.48	5.12	4.92	5.08	5.93			12.92	14.00	15.12	
		velocity	6.94	8.41	8.18	7.81	7.74		7.38	6.84	7.11	6.89	6.75	7.35		8.13	7.50	6.94
	H1 lead leg	R	strides	23	15	15	15		16	16	16	18.2	149.2					
Sprunger, Leá (SUI) (1990)	time	6.36	10.52	14.76	19.16	23.64	28.36	33.24	38.28	43.40	48.68		54.98	4 / 2				
	reaction time	0.182	interval	4.16	4.24	4.40	4.48	4.72	4.88	5.04	5.12	5.28	6.30		12.80	14.08	15.44	
		velocity	7.08	8.41	8.25	7.95	7.81	7.42	7.17	6.94	6.84	6.63	6.35	7.28		8.20	7.46	6.80
	H1 lead leg	R	strides	21	14	14	14	15	15	15	15	15	19	157				



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=U3vPCocLU8E>

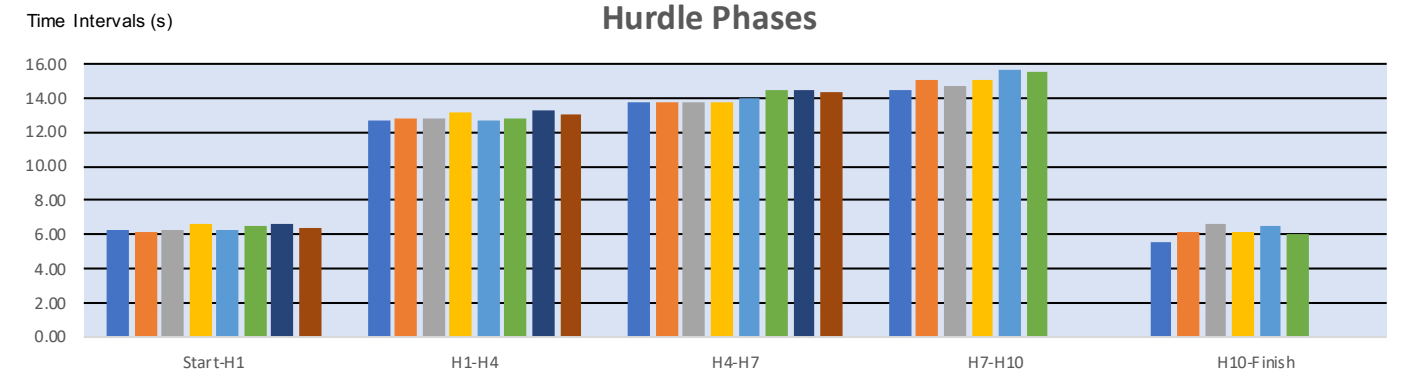
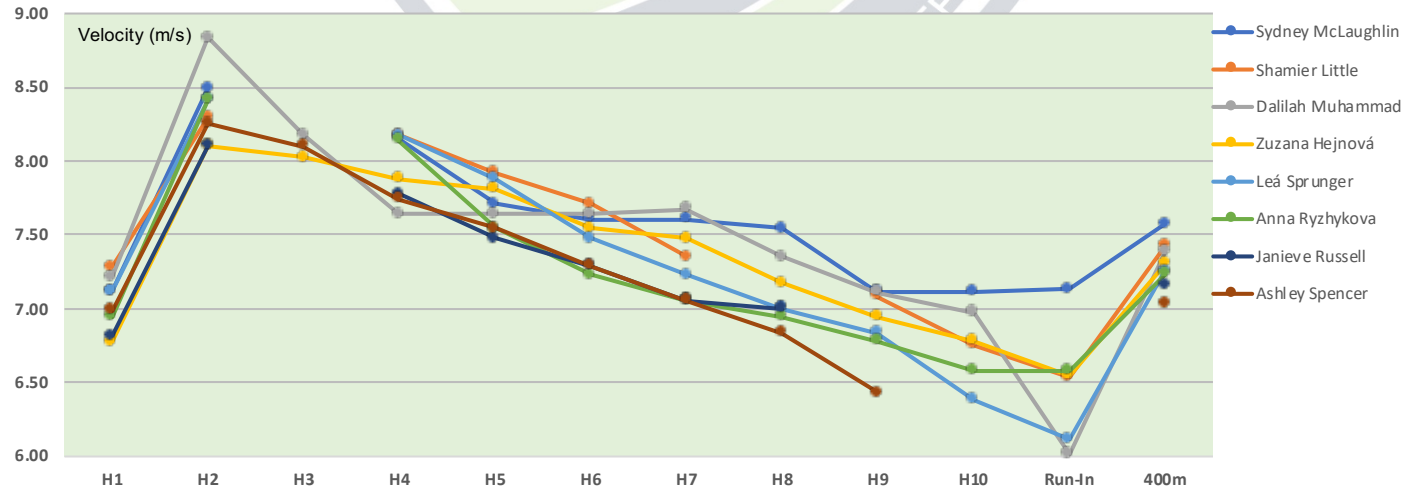
2019 Weltklasse (Zürich, SUI) (TV Analysis)

Women's 400m Hurdles

Date 2019.08.29

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	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					15	15	15	15	16	16	19	149				
Little, Shamier (USA) (1995)	time	6.18	10.40		18.96	23.38	27.92	32.68		42.56	47.74		53.86	2 / 2			
	reaction time	0.202															
	interval		4.22		8.56	4.42	4.54	4.76		9.88	5.18	6.12			12.78	13.72	15.06
	velocity	7.28	8.29		8.18	7.92	7.71	7.35	7.09	6.76	6.54	7.43			8.22	7.65	6.97
H1 lead leg	L					15	15	15		16	20	118					
Muhammad, Dalilah (USA) (1990)	time	6.24	10.20	14.48	19.06	23.64	28.22	32.78	37.54	42.46	47.48		54.13	4 / 3			
	reaction time	0.193															
	interval		3.96	4.28	4.58	4.58	4.58	4.56	4.76	4.92	5.02	6.65			12.82	13.72	14.70
	velocity	7.21	8.84	8.18	7.64	7.64	7.64	7.68	7.35	7.11	6.97	6.02	7.39		8.19	7.65	7.14
H1 lead leg	R			15	15	15	15	15	16	16	16	19.5	180.5				
Hejnová, Zuzana (CZE) (1986)	time	6.64	10.96	15.32	19.76	24.24	28.88	33.56	38.44	43.48	48.64		54.75	6 / 4			
	reaction time	0.144															
	interval		4.32	4.36	4.44	4.48	4.64	4.68	4.88	5.04	5.16	6.11			13.12	13.80	15.08
	velocity	6.78	8.10	8.03	7.88	7.81	7.54	7.48	7.17	6.94	6.78	6.55	7.31		8.00	7.61	6.96
H1 lead leg	R			15	15	15	15	15	16	16	20	180					
Sprunger, Leá (SUI) (1990)	time	6.32	10.48		19.04	23.48	28.16	33.00	38.00	43.12	48.60		55.14	7 / 5			
	reaction time	0.140															
	interval		4.16		8.56	4.44	4.68	4.84	5.00	5.12	5.48	6.54			12.72	13.96	15.60
	velocity	7.12	8.41		8.18	7.88	7.48	7.23	7.00	6.84	6.39	6.12	7.25		8.25	7.52	6.73
H1 lead leg	R					14	15	15		15	16	20	130				
Ryzhykova, Anna (UKR) (1989)	time	6.48	10.64		19.24	23.88	28.72	33.68	38.72	43.88	49.20		55.28	1 / 6			
	reaction time	0.149															
	interval		4.16		8.60	4.64	4.84	4.96	5.04	5.16	5.32	6.08			12.76	14.44	15.52
	velocity	6.94	8.41		8.14	7.54	7.23	7.06	6.94	6.78	6.58	6.58	7.24		8.23	7.27	6.77
H1 lead leg	R					15	15	15		15	16	19.7	131.7				
Russell, Janieve (JAM) (1993)	time	6.60	10.92		19.92	24.60	29.40	34.36	39.36				55.87	8 / 7			
	reaction time	0.144															
	interval		4.32		9.00	4.68	4.80	4.96	5.00						13.32	14.44	
	velocity	6.82	8.10		7.78	7.48	7.29	7.06	7.00				7.16		7.88	7.27	
H1 lead leg	R					15	16	16	16			101					
Spencer, Ashley (USA) (1993)	time	6.44	10.68	15.00	19.52	24.16	28.96	33.92	39.04	44.48			56.90	5 / 8			
	reaction time	0.132															
	interval		4.24	4.32	4.52	4.64	4.80	4.96	5.12	5.44					13.08	14.40	
	velocity	6.99	8.25	8.10	7.74	7.54	7.29	7.06	6.84	6.43			7.03		8.03	7.29	
H1 lead leg	L			15	15	15	15	15	16	16		144					



Evaluated with: ObjectusVideo
 Quality & Frame Rate: 1280 x 720 @ 25fps
 Timing From: First Movement
 Source: <https://www.youtube.com/watch?v=poseZDX--3Q>

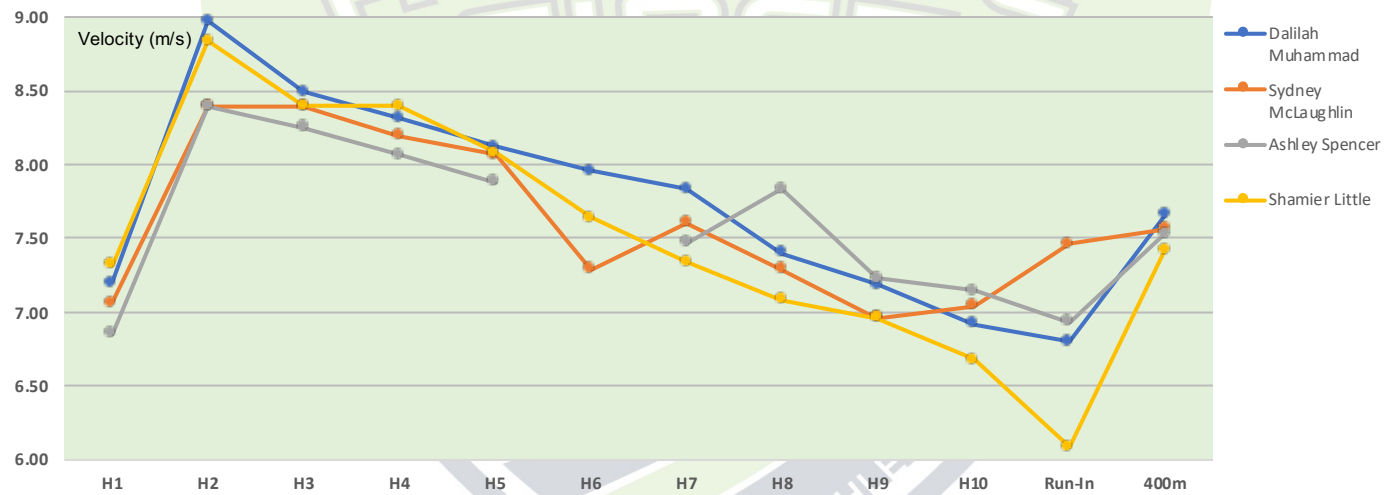
2019 USATF National Championships (Des Moines, IA)

Women's 400m Hurdles

Date 2019.07.28

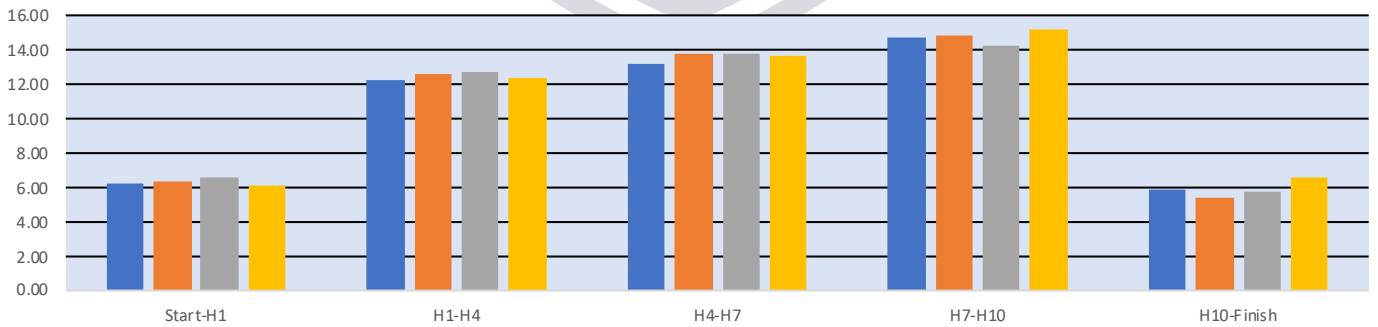
FINAL

		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	6.25	10.15	14.27	18.48	22.79	27.19	31.66	36.39	41.26	46.32	52.20	52.20	4 / 1			
	reaction time	0.287															
	interval		3.90	4.12	4.21	4.31	4.40	4.47	4.73	4.87	5.06	5.88	WR		12.23	13.18	14.66
	velocity		7.20	8.97	8.50	8.31	8.12	7.95	7.83	7.40	7.19	6.92	6.80	7.66		8.59	7.97
H1 lead leg	R																
	strides	23	15	15	15	15	15	15	16	16	16	20	181				
McLaughlin, Sydney (USA) (1999)	time	6.37	10.54	14.71	18.98	23.32	28.12	32.72	37.52	42.55	47.52		52.88	6 / 2			
	reaction time	0.198															
	interval		4.17	4.17	4.27	4.34	4.80	4.60	4.80	5.03	4.97	5.36			12.61	13.74	14.80
	velocity		7.06	8.39	8.39	8.20	8.06	7.29	7.61	7.29	6.96	7.04	7.46	7.56		8.33	7.64
H1 lead leg	R																
	strides	23	15	15	15	15	15	15	15	16	16	18.5	178.5				
Spencer, Ashley (USA) (1993)	time	6.57	10.74	14.98	19.32	23.76		33.13	37.60	42.44	47.34		53.11	3 / 3			
	reaction time	0.202															
	interval		4.17	4.24	4.34	4.44		9.37	4.47	4.84	4.90	5.77	-PB		12.75	13.81	14.21
	velocity		6.85	8.39	8.25	8.06	7.88		7.47	7.83	7.23	7.14	6.93	7.53		8.24	7.60
H1 lead leg	L																
	strides	22	15	15	15	15			15	15	15	18.2	145.2				
Little, Shamier (USA) (1995)	time	6.15	10.11	14.28	18.45	22.78	27.36	32.13	37.07	42.10	47.34		53.91	5 / 4			
	reaction time	0.198															
	interval		3.96	4.17	4.17	4.33	4.58	4.77	4.94	5.03	5.24	6.57			12.30	13.68	15.21
	velocity		7.32	8.84	8.39	8.39	8.08	7.64	7.34	7.09	6.96	6.68	6.09	7.42		8.54	7.68
H1 lead leg	L																
	strides	23	14	14	14	14	15	16	16	16	17	21	180				



Time Intervals (s)

Hurdle Phases



Dalilah Muhammad

Source: Vazel, P.J. (2019). Statistical analysis and historical context of the new 400H world record.

<https://altis.world/articles/statistical-analysis-and-historical-context-of-the-new-400h-world-record/>

2nd - 4th Place (TV Analysis)

Evaluated with: ObjectusVideo

Quality & Frame Rate: 1920 x 1080 @ 30fps

Timing From: Gun Flash

Source: <https://www.youtube.com/watch?v=ZdfDjN4sPbl>

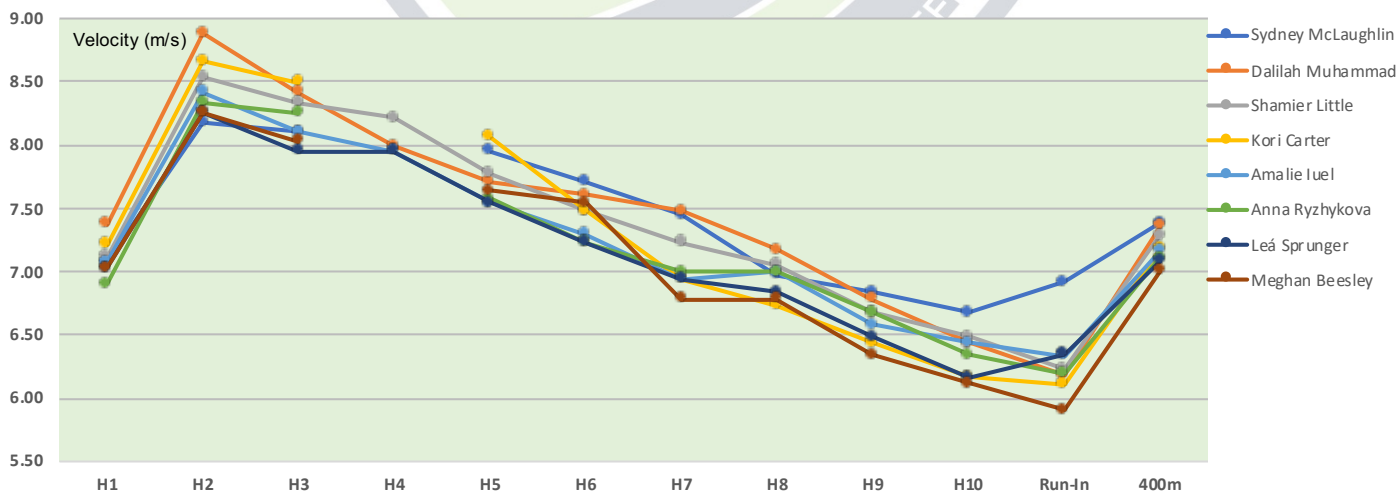
2019 Bislett Games (Oslo, NOR) (TV Analysis)

Women's 400m Hurdles

Date 2019.06.13

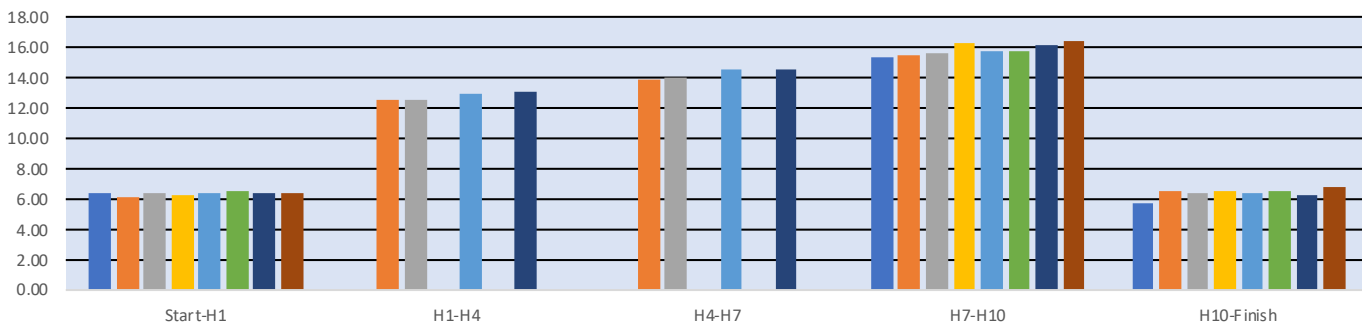
FINAL

		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	6.36	10.64	14.96		23.76	28.30	33.00	38.02	43.14	48.38		54.16	4 / 1			
	reaction time	0.213															15.38
	interval		4.28	4.32		8.80	4.54	4.70	5.02	5.12	5.24	5.78					6.83
	velocity	7.08	8.18	8.10		7.95	7.71	7.45	6.97	6.84	6.68	6.92	7.39				
H1 lead leg	R		23	15	15		15	15	16	16	16	19	150				
Muhammad, Dalilah (USA) (1990)	time	6.10	10.04	14.20	18.58	23.12	27.72	32.40	37.28	42.44	47.88		54.35	5 / 2			
	reaction time	0.205													12.48	13.82	15.48
	interval		3.94	4.16	4.38	4.54	4.60	4.68	4.88	5.16	5.44	6.47			8.41	7.60	6.78
	velocity	7.38	8.88	8.41	7.99	7.71	7.61	7.48	7.17	6.78	6.43	6.18	7.36				
H1 lead leg	R		23	15	15	15	15	15	15	16	17	20.5	181.5				
Little, Shamier (USA) (1995)	time	6.32	10.42	14.62	18.88	23.38	28.06	32.90	37.86	43.10	48.50		54.92	6 / 3			
	reaction time	0.273													12.56	14.02	15.60
	interval		4.10	4.20	4.26	4.50	4.68	4.84	4.96	5.24	5.40	6.42			8.36	7.49	6.73
	velocity	7.12	8.54	8.33	8.22	7.78	7.48	7.23	7.06	6.68	6.48	6.23	7.28				
H1 lead leg	R		24	15	15	15	16	16	16	17	17	20	186				
Carter, Kori (USA) (1992)	time	6.24	10.28	14.40		23.08	27.76	32.80	38.00	43.44	49.12		55.67	3 / 4			
	reaction time	0.137															16.32
	interval		4.04	4.12		8.68	4.68	5.04	5.20	5.44	5.68	6.55					
	velocity	7.21	8.66	8.50		8.06	7.48	6.94	6.73	6.43	6.16	6.11	7.19				
H1 lead leg	L		23	15	15		16	17	17	18	18	20.7	159.7				6.43
luel, Amalie (NOR) (1994)	time	6.36	10.52	14.84	19.24	23.88	28.68	33.72	38.72	44.04	49.48		55.80	8 / 5			
	reaction time	0.169													12.88	14.48	15.76
	interval		4.16	4.32	4.40	4.64	4.80	5.04	5.00	5.32	5.44	6.32			8.15	7.25	6.66
	velocity	7.08	8.41	8.10	7.95	7.54	7.29	6.94	7.00	6.58	6.43	6.33	7.17				
H1 lead leg	L		23	15	15	15	15	16	16	16	16	19.2	181.2				
Rzyhykova, Anna (UKR) (1989)	time	6.52	10.72	14.96		24.20	29.04	34.04	39.04	44.28	49.80		56.26	2 / 6			
	reaction time	0.178															15.76
	interval		4.20	4.24		9.24	4.84	5.00	5.00	5.24	5.52	6.46					
	velocity	6.90	8.33	8.25		7.58	7.23	7.00	7.00	6.68	6.34	6.19	7.11				
H1 lead leg	R		22	14	14		15	15	15	15	16	21	147				6.66
Sprunger, Leá (SUI) (1990)	time	6.40	10.64	15.04	19.44	24.08	28.92	33.96	39.08	44.48	50.16		56.46	7 / 7			
	reaction time	0.179													13.04	14.52	16.20
	interval		4.24	4.40	4.40	4.64	4.84	5.04	5.12	5.40	5.68	6.30			8.05	7.23	6.48
	velocity	7.03	8.25	7.95	7.95	7.54	7.23	6.94	6.84	6.48	6.16	6.35	7.08				
H1 lead leg	R		21	14	14	14	14	15	15	15	16	16	19.2	173.2			
Beesley, Meghan (GBR) (1989)	time	6.40	10.64	15.00		24.16	28.80	33.96	39.12	44.64	50.36		57.13	1 / 8			
	reaction time	0.166															16.40
	interval		4.24	4.36		9.16	4.64	5.16	5.16	5.52	5.72	6.77					
	velocity	7.03	8.25	8.03		7.64	7.54	6.78	6.78	6.34	6.12	5.91	7.00				
H1 lead leg	R		24	16	16		16	17	17	18	19	23.5	166.5				6.40



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=763wZ-vc8Bk>

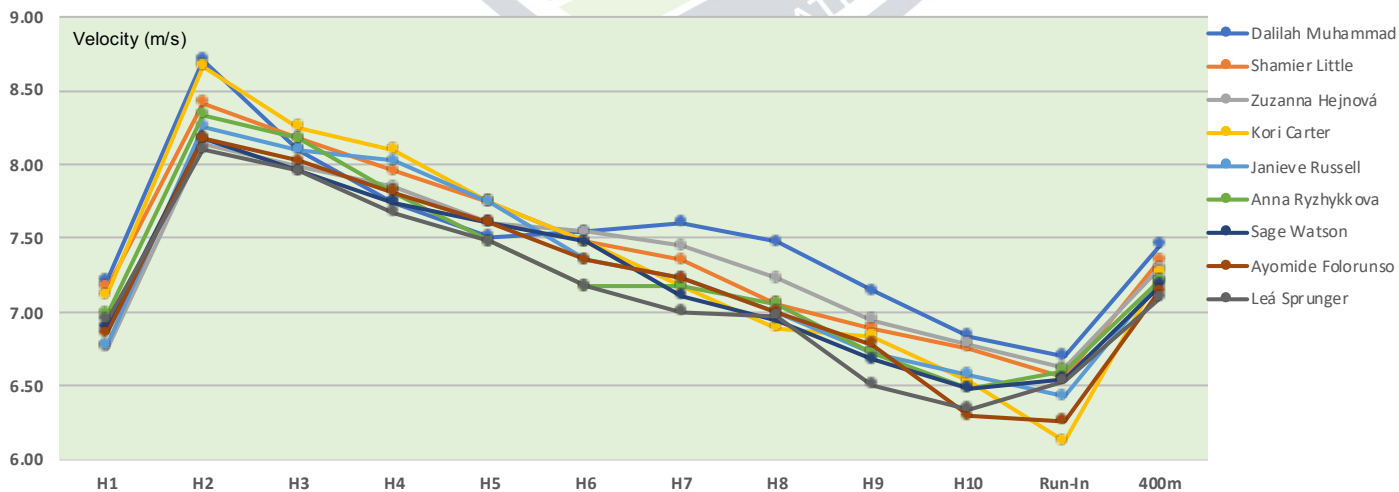
2019 Golden Gala Pietro Mennea (Rome, ITA) (TV Analysis)

Women's 400m Hurdles

Date 2019.06.06

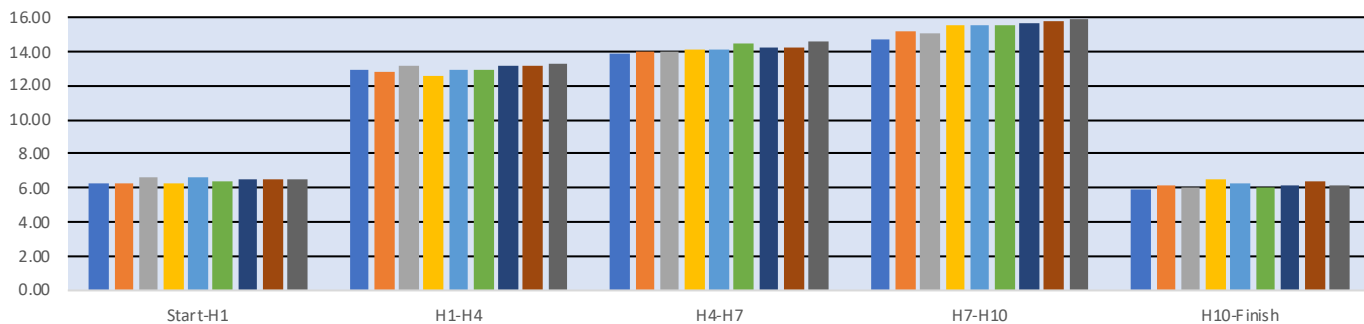
FINAL

		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	6.24	10.26	14.58	19.10	23.76	28.40	33.00	37.68	42.58	47.70		53.67	5 / 1			
	reaction time	0.147															
	interval		4.02	4.32	4.52	4.66	4.64	4.60	4.68	4.90	5.12	5.97			12.86	13.90	14.70
	velocity		7.21	8.71	8.10	7.74	7.51	7.54	7.61	7.48	7.14	6.84	6.70	7.45		8.16	7.55
H1 lead leg	R																
Little, Shamier (USA) (1995)	time	6.28	10.44	14.72	19.12	23.64	28.32	33.08	38.04	43.12	48.30		54.40	4 / 2			
	reaction time	0.215															
	interval		4.16	4.28	4.40	4.52	4.68	4.76	4.96	5.08	5.18	6.10			12.84	13.96	15.22
	velocity		7.17	8.41	8.18	7.95	7.74	7.48	7.35	7.06	6.89	6.76	6.56	7.35		8.18	7.52
H1 lead leg	R																
Hejnová, Zuzana (CZE) (1986)	time	6.66	10.96	15.34	19.80	24.40	29.04	33.74	38.58	43.62	48.78		54.82	7 / 3			
	reaction time	0.162															
	interval		4.30	4.38	4.46	4.60	4.64	4.70	4.84	5.04	5.16	6.04			13.14	13.94	15.04
	velocity		6.76	8.14	7.99	7.85	7.61	7.54	7.45	7.23	6.94	6.78	6.62	7.30		7.99	7.53
H1 lead leg	R																
Carter, Kori (USA) (1992)	time	6.32	10.36	14.60	18.92	23.44	28.12	33.00	38.08	43.20	48.56		55.09	2 / 4			
	reaction time	0.153															
	interval		4.04	4.24	4.32	4.52	4.68	4.88	5.08	5.12	5.36	6.53			12.60	14.08	15.56
	velocity		7.12	8.66	8.25	8.10	7.74	7.48	7.17	6.89	6.84	6.53	6.13	7.26		8.33	7.46
H1 lead leg	L																
Russell, Janieve (JAM) (1993)	time	6.64	10.88	15.20	19.56	24.08	28.84	33.68	38.68	43.88	49.20		55.42	3 / 5			
	reaction time	0.173															
	interval		4.24	4.32	4.36	4.52	4.76	4.84	5.00	5.20	5.32	6.22			12.92	14.12	15.52
	velocity		6.78	8.25	8.10	8.03	7.74	7.35	7.23	7.00	6.73	6.58	6.43	7.22		8.13	7.44
H1 lead leg	L																
Ryzhykova, Anna (UKR) (1989)	time	6.44	10.64	14.92	19.40	24.08	28.96	33.84	38.80	44.00	49.40		55.46	8 / 6			
	reaction time	0.157															
	interval		4.20	4.28	4.48	4.68	4.88	4.88	4.96	5.20	5.40	6.06			12.96	14.44	15.56
	velocity		6.99	8.33	8.18	7.81	7.48	7.17	7.17	7.06	6.73	6.48	6.60	7.21		8.10	7.27
H1 lead leg	R																
Watson, Sage (CAN) (1994)	time	6.52	10.80	15.20	19.72	24.32	29.00	33.92	38.96	44.20	49.60		55.71	1 / 7			
	reaction time	0.171															
	interval		4.28	4.40	4.52	4.60	4.68	4.92	5.04	5.24	5.40	6.11			13.20	14.20	15.68
	velocity		6.90	8.18	7.95	7.74	7.61	7.48	7.11	6.94	6.68	6.48	6.55	7.18		7.95	7.39
H1 lead leg	R																
Folorunso, Ayomide (IRA) (1996)	time	6.56	10.84	15.20	19.68	24.28	29.04	33.88	38.88	44.04	49.60		55.99	9 / 8			
	reaction time	0.194															
	interval		4.28	4.36	4.48	4.60	4.76	4.84	5.00	5.16	5.56	6.39			13.12	14.20	15.72
	velocity		6.86	8.18	8.03	7.81	7.61	7.35	7.23	7.00	6.78	6.29	6.26	7.14		8.00	7.39
H1 lead leg	R																
Sprunger, Leá (SUI) (1990)	time	6.48	10.80	15.20	19.76	24.44	29.32	34.32	39.34	44.72	50.24		56.36	6 / 9			
	reaction time	0.143															
	interval		4.32	4.40	4.56	4.68	4.88	5.00	5.02	5.38	5.52	6.12			13.28	14.56	15.92
	velocity		6.94	8.10	7.95	7.68	7.48	7.17	7.00	6.97	6.51	6.34	6.54	7.10		7.91	7.21
H1 lead leg	R																



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=LzAyiONcl3U>

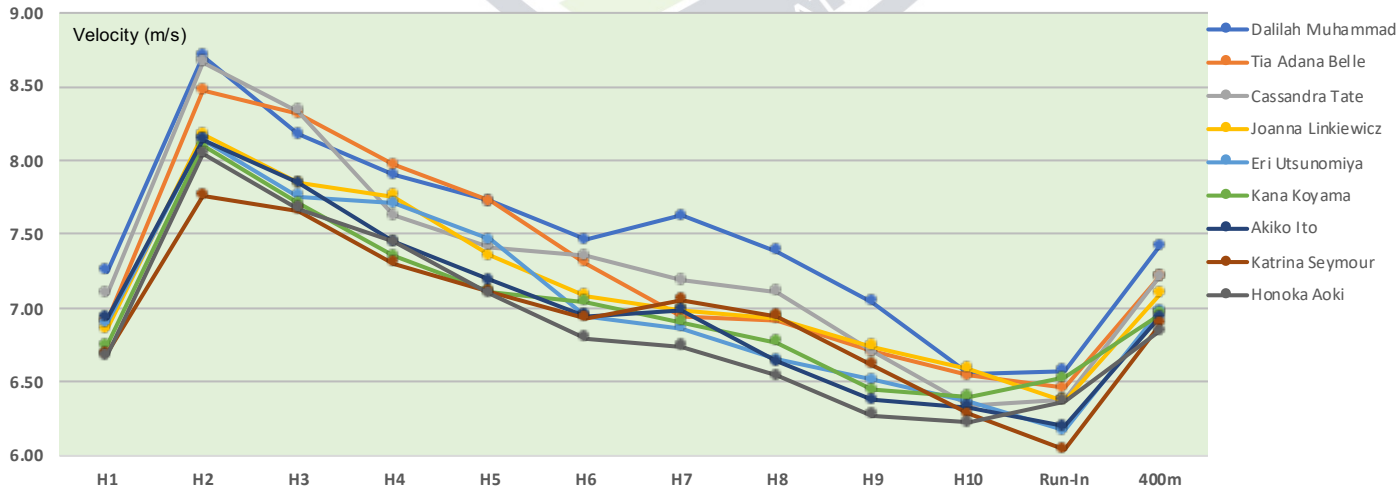
2019 Seiko Golden Grand Prix (Osaka, JPN)

Women's 400m Hurdles

Date 2019.05.19

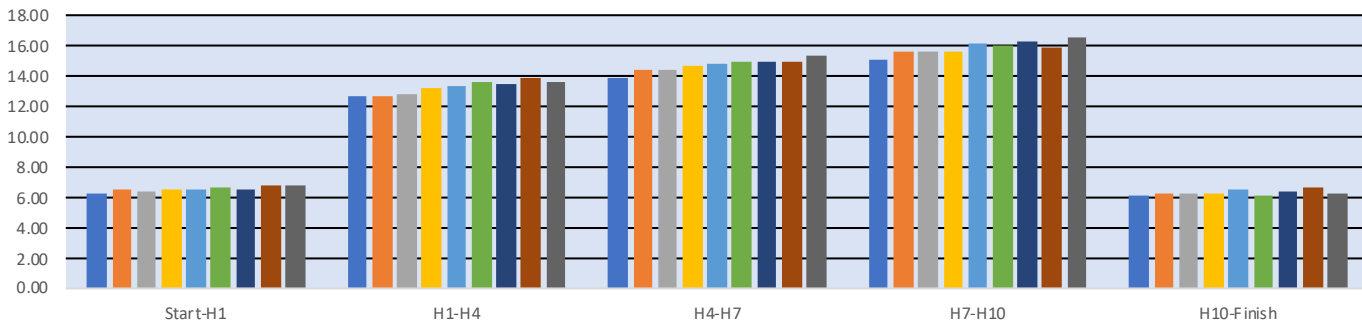
FINAL

		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	6.21	10.23	14.51	18.94	23.47	28.16	32.75	37.49	42.46	47.80	53.88	53.88	5 / 1			
	reaction time	0.181															
	interval	□	4.02	4.28	4.43	4.53	4.69	4.59	4.74	4.97	5.34	6.08			12.73	13.81	15.05
	velocity		7.25	8.71	8.18	7.90	7.73	7.46	7.63	7.38	7.04	6.55	6.58	7.42		8.25	7.60
H1 lead leg	R																
Belle, Tia Adana (BAR)	time	6.51	10.64	14.85	19.24	23.77	28.56	33.60	38.66	43.88	49.23		55.42	6 / 2			
	reaction time	0.177															
	interval		4.13	4.21	4.39	4.53	4.79	5.04	5.06	5.22	5.35	6.19			12.73	14.36	15.63
	velocity		6.91	8.47	8.31	7.97	7.73	7.31	6.94	6.92	6.70	6.54	6.46	7.22		8.25	7.31
H1 lead leg			15	15	15	15	15	16	16	16	16	139					
Tate, Cassandra (USA) (1990)	time	6.34	10.38	14.58	19.17	23.89	28.65	33.52	38.44	43.66	49.18		55.45	8 / 3			
	reaction time	0.233															
	interval		4.04	4.20	4.59	4.72	4.76	4.87	4.92	5.22	5.52	6.27			12.83	14.35	15.66
	velocity		7.10	8.66	8.33	7.63	7.42	7.35	7.19	7.11	6.70	6.34	6.38	7.21		8.18	7.32
H1 lead leg			15	15	15	15	15	15	15	16	16	137					
Linkiewicz, Joanna (POL) (1993)	time	6.56	10.84	15.30	19.81	24.57	29.51	34.52	39.57	44.76	50.07		56.35	7 / 4			
	reaction time	0.112															
	interval		4.28	4.46	4.51	4.76	4.94	5.01	5.05	5.19	5.31	6.28			13.25	14.71	15.55
	velocity		6.86	8.18	7.85	7.76	7.35	7.09	6.99	6.93	6.74	6.59	6.37	7.10		7.92	7.14
H1 lead leg			16	16	16	16	17	17	17	17	17	149					
Utsunomiya, Eri (JPN) (1993)	time	6.52	10.82	15.33	19.87	24.56	29.60	34.70	39.96	45.33	50.83		57.31	9 / 5			
	reaction time	0.167															
	interval		4.30	4.51	4.54	4.69	5.04	5.10	5.26	5.37	5.50	6.48			13.35	14.83	16.13
	velocity		6.90	8.14	7.76	7.71	7.46	6.94	6.86	6.65	6.52	6.36	6.17	6.98		7.87	7.08
H1 lead leg			15	15	15	15	16	16	17	17	17	143					
Koyama, Kana (JPN) (1998)	time	6.67	10.99	15.53	20.29	25.21	30.18	35.25	40.42	45.85	51.32		57.45	3 / 6			
	reaction time	0.173															
	interval		4.32	4.54	4.76	4.92	4.97	5.07	5.17	5.43	5.47	6.13			13.62	14.96	16.07
	velocity		6.75	8.10	7.71	7.35	7.11	7.04	6.90	6.77	6.45	6.40	6.53	6.96		7.71	7.02
H1 lead leg			15	15	15	16	16	17	17	17	17	145					
Ito, Akiko (JPN) (1995)	time	6.49	10.79	15.25	19.95	24.82	29.86	34.87	40.14	45.63	51.16		57.61	2 / 7			
	reaction time	0.141															
	interval		4.30	4.46	4.70	4.87	5.04	5.01	5.27	5.49	5.53	6.45			13.46	14.92	16.29
	velocity		6.93	8.14	7.85	7.45	7.19	6.94	6.99	6.64	6.38	6.33	6.20	6.94		7.80	7.04
H1 lead leg			15	15	16	16	16	16	17	17	17	145					
Seymour, Katrina (BAH) (1993)	time	6.72	11.23	15.80	20.59	25.51	30.56	35.52	40.56	45.85	51.42		58.04	4 / 8			
	reaction time	0.163															
	interval		4.51	4.57	4.79	4.92	5.05	4.96	5.04	5.29	5.57	6.62			13.87	14.93	15.90
	velocity		6.70	7.76	7.66	7.31	7.11	6.93	7.06	6.94	6.62	6.28	6.04	6.89		7.57	7.03
H1 lead leg			15	15	15	15	16	16	16	16	17	141					
Aoki, Honoka (JPN) (2001)	time	6.74	11.09	15.65	20.35	25.28	30.43	35.62	40.97	46.55	52.17		58.45	1 / 9			
	reaction time	0.167															
	interval		4.35	4.56	4.70	4.93	5.15	5.19	5.35	5.58	5.62	6.28			13.61	15.27	16.55
	velocity		6.68	8.05	7.68	7.45	7.10	6.80	6.74	6.54	6.27	6.23	6.37	6.84		7.71	6.88
H1 lead leg			16	17	17	17	17	17	18	18	19	156					



Time Intervals (s)

Hurdle Phases



Source: Hirokawa (2019) - research on athlete performance and technique- 2019 data book. Masaaki, S., & Miura, K. (Eds.). p. 74, 75. (in Japanese)
<https://www.jaaf.or.jp/pdf/about/resistn-f2019/07.pdf>

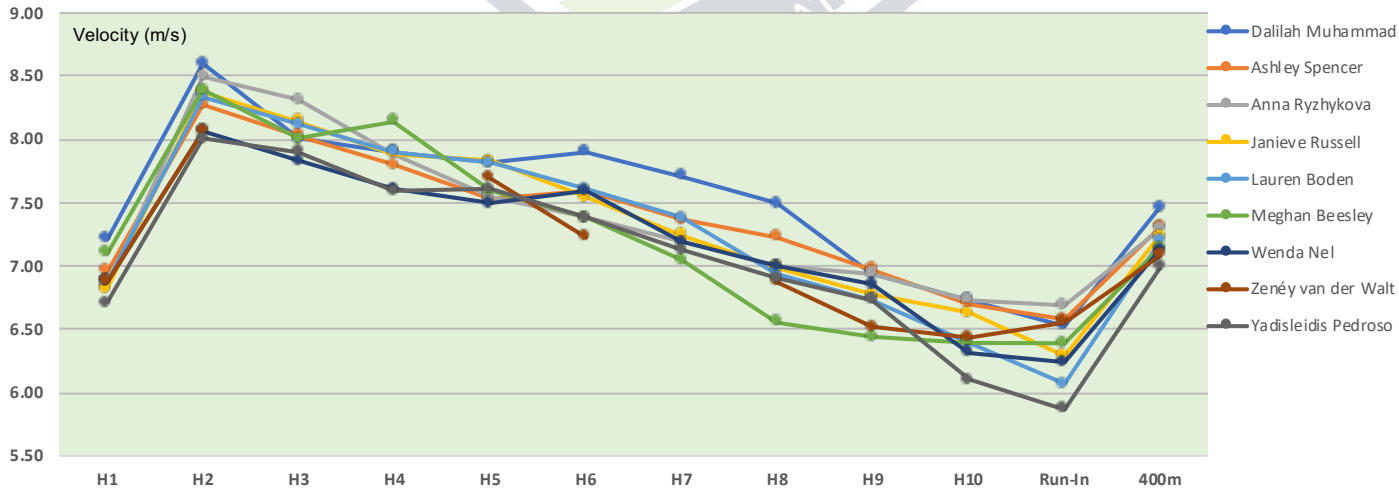
2019 Doha Diamond League (Doha, QAT) (TV Analysis)

Women's 400m Hurdles

Date 2019.05.03

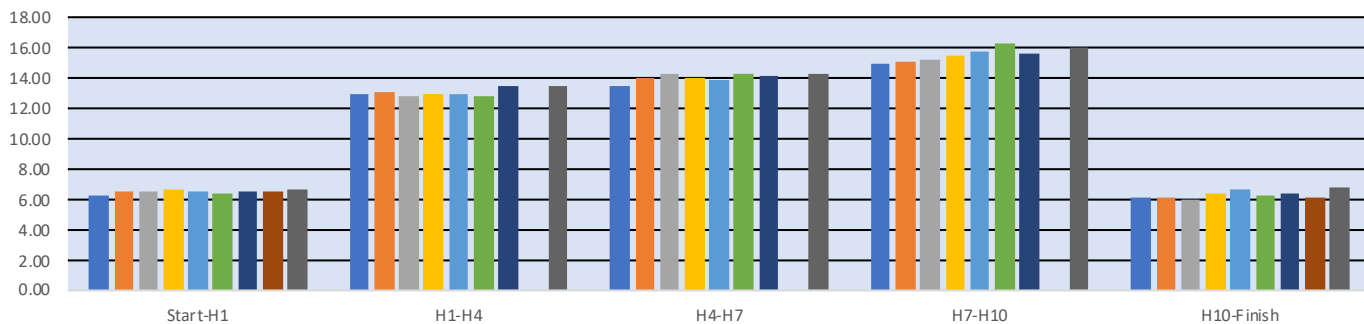
FINAL

		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	6.24	10.31	14.68	19.11	23.59	28.02	32.56	37.23	42.28	47.48		53.61	5 / 1			
	reaction time	0.179															
	interval velocity	7.21	8.07	4.37	4.43	4.48	4.43	4.54	4.67	5.05	5.20	6.13			12.87	13.45	14.92
	H1 lead leg R strides	23	15	15	15	15	15	15	15	16	16	20	180		8.16	7.81	7.04
Spencer, Ashley (USA) (1993)	time	6.47	10.70	15.06	19.55	24.20	28.81	33.56	38.40	43.42	48.64		54.72	2 / 2			
	reaction time	0.156															
	interval velocity	6.96	8.27	4.36	4.49	4.65	4.61	4.75	4.84	5.02	5.22	6.08			13.08	14.01	15.08
	H1 lead leg L strides	22	15	15	15	15	15	15	15	15	15	19	176		8.03	7.49	6.96
Ryzhykova, Anna (UKR) (1989)	time	6.58	10.70	14.91	19.35	23.99	28.73	33.60	38.60	43.64	48.84		54.82	4 / 3			
	reaction time	0.149															
	interval velocity	6.84	8.50	8.31	7.88	7.54	7.38	7.19	7.00	6.94	6.73	6.69			12.77	14.25	15.24
	H1 lead leg R strides	22	14	14	14	15	15	15	15	15	16	19.2	174.2		8.22	7.37	6.89
Russell, Janieve (JAM) (1993)	time	6.60	10.78	15.08	19.52	23.99	28.63	33.46	38.47	43.64	48.92		55.28	6 / 4			
	reaction time	0.131															
	interval velocity	6.82	8.37	8.14	7.88	7.83	7.54	7.25	6.99	6.77	6.63	6.29	7.24		12.92	13.94	15.46
	H1 lead leg L strides	23	15	15	15	15	16	16	16	17	17	20	185		8.13	7.53	6.79
Boden, Lauren (AUS) (1988)	time	6.54	10.74	15.05	19.48	23.96	28.56	33.30	38.34	43.54	49.01		55.60	9 / 5			
	reaction time	0.147															
	interval velocity	6.88	8.33	8.12	7.90	7.81	7.61	7.38	6.94	6.73	6.40	6.07	7.19		12.94	13.82	15.71
	H1 lead leg L strides	22	15	15	15	15	15	15	16	16	17	21	182		8.11	7.60	6.68
Beesley, Meghan (GBR) (1989)	time	6.34	10.51	14.88	19.18	23.79	28.53	33.50	38.84	44.28	49.75		56.01	3 / 6			
	reaction time	0.157															
	interval velocity	7.10	8.39	8.01	8.14	7.59	7.38	7.04	6.55	6.43	6.40	6.39	7.14		12.84	14.32	16.25
	H1 lead leg L strides	24	16	16	16	16	17	17	18	18	18	22.7	198.7		8.18	7.33	6.46
Nel, Wenda (RSA) (1988)	time	6.54	10.88	15.35	19.95	24.62	29.23	34.10	39.10	44.21	49.75		56.16	7 / 7			
	reaction time	0.206															
	interval velocity	6.88	8.06	7.83	7.61	7.49	7.59	7.19	7.00	6.85	6.32	6.24	7.12		13.41	14.15	15.65
	H1 lead leg L strides	23	16	16	16	16	16	17	17	17	18	22	194		7.83	7.42	6.71
van der Walt, Zenéy (RSA) (2000)	time	6.54	10.88			24.52	29.36		39.54	44.91	50.35		56.45	1 / 8			
	reaction time	0.167															
	interval velocity	6.88	8.06			7.70	7.23		6.88	6.52	6.43	6.56	7.09				
	H1 lead leg L strides	23	15				16			17	17	20.5	108.5				
Pedroso, Yadisleidis (ITA) (1987)	time	6.71	11.08	15.51	20.12	24.72	29.46	34.37	39.44	44.64	50.38		57.20	8 / 9			
	reaction time	0.257															
	interval velocity	6.71	8.01	7.90	7.59	7.61	7.38	7.13	6.90	6.73	6.10	5.87	6.99		13.41	14.25	16.01
	H1 lead leg R strides	24	16	16	16	16	16	16	17	17	18	22	194		7.83	7.37	6.56



Time Intervals (s)

Hurdle Phases



Evaluated with: ObjectusVideo
 Quality & Frame Rate: 1920 x 1080 @ 30fps
 Timing From: First Movement
 Source: <https://www.youtube.com/watch?v=cJPqr53A0v0>