

# Developing Proper Kinesthetic Force Application in 400m Hurdling Through a Performance Approach

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*This is adapted from an article that appeared in a USA Track & Field publication on Women's 400m Hurdles - the charts here have been extended to include data for male 400 hurdles who use a 13 or 14 stride pattern.*

The traditional approach taken by many coaches and athletes is one where much time is spent on hurdle drills where the athlete walks, skips, or runs over hurdles spaced very close together or at spacings which are > competitive spacings and heights. The results of this approach are more conditioning than technical. There exists an emphasis on limb movement skills which is good from a dynamic mobility standpoint but from a technical view the emphasis is on vertical velocity. This is a poor emphasis as most hurdle athletes already generate too much vertical velocity at takeoff. The result of such training is to teach the athlete to spend greater time on ground contact, which results in longer flight times over the hurdle and in greater ground time on touchdown off the hurdle. All of these factors result in slower performances.

The performance approach uses drills and exercises designed to call into play the same muscles and forces to be used in the actual performance of the event. These exercises involve using hurdles at reduced height and spacing which allow fore speeds to be used which are 90-110% of race speeds. To configure these spacings use the race pattern of the athlete and multiply the stride length used in the race by the number of strides desired.

## 100% Spacing

100% of Normal Spacings for Female 15-17 Step Race Patterns									
No of Steps	9	10	11	12	13	14	15	16	17
15	22.20	24.33	26.47	28.60	30.73	32.87	35.00		
16	21.00	23.00	25.00	27.00	29.00	31.00	33.00	35.00	
17	19.94	21.82	23.71	25.59	27.47	29.35	31.24	33.12	35.00

100% of Normal Spacings for Male 13-15 Step Race Patterns									
No of Steps	9	10	11	12	13	14	15		
13	25.31	27.73	30.15	32.58	35.00				
14	23.75	26.00	28.25	30.50	32.75	35.00			
15	22.40	24.50	26.60	28.70	30.80	32.90	35.00		

Spacings for women's 2'6" barriers based on 3m clearance stride, for men 3'0" hurdles with 3.5m clearance stride

*It is often desirable to progress an athlete up to their race pattern as the training year progresses and therefore spacings just below 100% are often a productive means of achieving performance related hurdling development in early phases of the training year.*

### 98% Spacing

98% of Normal Spacings for Female 15-17 Step Race Patterns									
No of Steps	9	10	11	12	13	14	15	16	17
15	21.76	23.85	25.94	28.03	30.12	32.21	34.30		
16	20.58	22.54	24.60	26.46	28.42	30.38	32.34	34.30	
17	19.54	21.39	23.23	25.08	26.92	28.77	30.61	32.46	34.30

98% of Normal Spacings for Male 13-15 Step Race Patterns									
No of Steps	9	10	11	12	13	14	15		
13	24.80	27.18	29.55	31.93	34.90				
14	23.28	25.48	27.69	29.89	32.10	34.90			
15	21.95	24.01	26.07	28.13	30.18	32.24	34.90		

### 96% Spacing

96% of Normal Spacings for Female 15-17 Step Race Patterns									
No of Steps	9	10	11	12	13	14	15	16	17
15	21.31	23.36	25.41	27.46	29.50	31.55	33.60		
16	20.16	22.08	24.00	25.92	27.84	29.76	31.68	33.60	
17	19.14	20.95	22.76	24.56	26.37	28.18	29.99	31.79	33.60

96% of Normal Spacings for Male 13-15 Step Race Patterns									
No of Steps	9	10	11	12	13	14	15		
13	24.30	26.82	28.95	31.27	33.60				
14	22.80	24.96	27.12	29.28	31.44	33.60			
15	21.50	23.52	25.54	27.55	29.57	31.58	33.60		

### 94% Spacing

94% of Normal Spacings for Female 15-17 Step Race Patterns									
No of Steps	9	10	11	12	13	14	15	16	17
15	20.87	22.87	24.88	26.88	28.89	30.89	32.90		
16	19.74	21.62	23.50	25.38	27.26	29.14	31.02	32.90	
17	18.74	20.51	22.28	24.05	25.82	27.59	29.36	31.13	32.90

94% of Normal Spacings for Male 13-15 Step Race Patterns									
No of Steps	9	10	11	12	13	14	15		
13	23.79	26.07	28.34	30.12	32.90				
14	22.33	24.44	26.56	28.67	30.79	32.90			
15	21.06	23.03	25.00	26.98	28.95	30.93	32.90		

### 90% Spacing

90% of Normal Spacings for Female 15-17 Step Race Patterns									
No of Steps	9	10	11	12	13	14	15	16	17
15	19.98	21.90	23.82	25.74	27.76	29.58	31.50		
16	18.90	20.70	22.50	24.30	26.10	27.90	29.70	31.50	
17	17.95	19.64	21.34	23.03	24.72	26.42	28.11	29.81	31.50

90% of Normal Spacings for Male 13-15 Step Race Patterns									
No of Steps	9	10	11	12	13	14	15		
13	22.78	24.96	27.14	29.32	31.50				
14	21.38	23.40	25.43	27.45	29.48	31.50			
15	20.16	22.05	23.94	25.83	27.72	29.61	31.50		

## 86% Spacing

86% of Normal Spacings for Female 15-17 Step Race Patterns									
No of Steps	9	10	11	12	13	14	15	16	17
15	19.09	20.93	22.76	24.60	26.43	28.27	30.10		
16	18.06	19.78	21.50	23.23	24.94	26.66	28.38	30.10	
17	17.15	18.77	20.39	22.01	23.62	25.24	26.86	28.48	30.10

86% of Normal Spacings for Male 13-15 Step Race Patterns									
No of Steps	9	10	11	12	13	14	15		
13	21.76	23.85	25.93	28.02	30.10				
14	20.43	22.36	24.30	26.23	29.17	30.10			
15	19.26	21.07	22.88	24.68	26.49	28.29	30.10		