THE STUDY OF THE MODEL INTERVAL TIME IN 400m HURDLE RACE FOR MEN

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INTRODUCTION

We often carriy out evaluations with lap time in running events of track & field. The model lap time in relation with performance is widely used in practice. In hurdle events, we often use the time from starting point to the touchdown after each hurdle . Such time is known as touchdown time. It is important to analyze the time of fixed intervals (the distance from start to 1th hurdle is 45m,the distance from 2th hurdle to 10th hurdle is 35m each other,the distance from 10th hurdle to goal is 40m) in a 400m hurdle race. However there has been very little examination of the model interval time. The purpose of this study was to calculate and evaluate the equations for the model interval time for 400m hurdle race of men.

METHODS

We taped races in 1994 and 1995 with video tape recorders (60f/ sec). The video tape was dubbed with a digital timer and each interval time was calculated and analyzed.The total number of races were 116 and the total number of samples were 651. Interval time was defined as the time from starting point to the first touchdown after hurdling, and between each touchdown there-after. The samples were divided into 8 groups according

to performance time. The performance ranged from 48.79sec to 59.45sec. 11 equations for all samples and for each group were calculated. Each group were compared and examined.

RESULTS

High correlation between each interval time and performance time was obtained. The correlation coefficient between 8th interval time and performance was the highest in particular.

Tab 1 The Equations of Model Interval Time in all samples

| INTERVAL	EQUATION	CORRELATION COEFFICIENT	
Int.1	Y=11.422+6.572X	0.448	***
Int.2	Y=16.833+8.801X	0.503	***
Int.3	Y=16.675+8.647X	0.569	***
Int.4	Y=17.235+8.363X	0.579	***
Int.5	Y=16.33+8.375X	0.625	***
Int.6	Y=17.896+7.813X	0.685	***
Int.7	Y=20.572+7.034X	0.720	***
Int.8	Y=20.981+6.77X	0.750	***
Int.9	Y=24.194+5.932X	0.737	***
Int.10	Y=26.623+5.335X	0.646	***
Int.11	Y=36.465+3.009X	0.359	***

*** $p<0.001$

Performance time correlated with the 2-9th interval time in group A (48.48-50.99,n=41). Performance time correlated with the 2,3,5th interval time in group B (51.13-51.97,n=55). Performance time correlated with the 5-8th interval time in group C (52.00-52.99,n=114). Performance time correlated with the 3th,8-10th interval time in group D(53.00-53.99,n=143). Performance time correlated with the 5-8th interval time in group E (54.00-54.98,n=126). Performance time correlated with the 6-8th interval time in group F (55.00-55.99,n=82). Performance time correlated with the 7-8th

interval time in group G (56.02-56.94,n=32). Performance time correlated with the 8-10th interval time in group H(57.08- 59.45,n=48).

Fig1 Averaged Interval Speed in each group
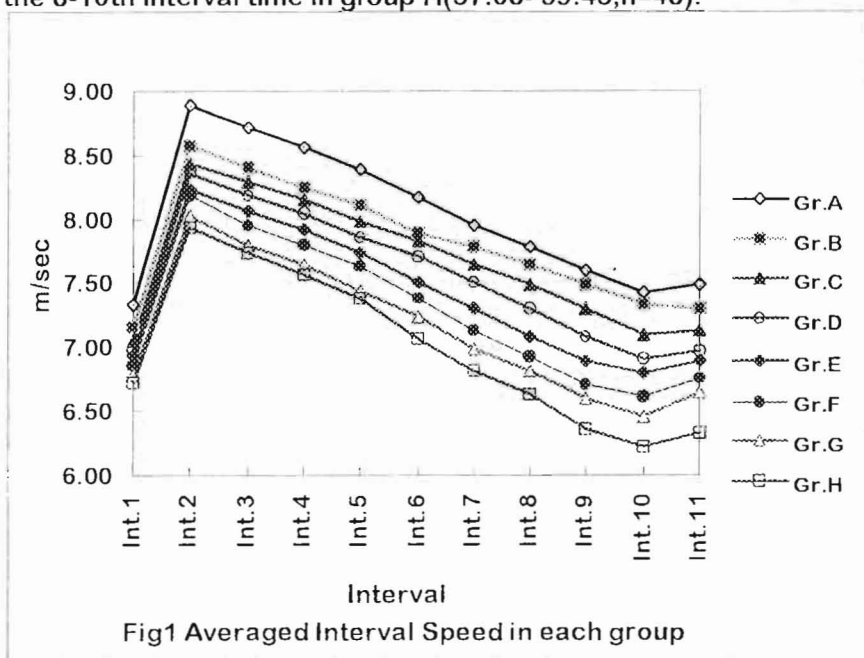
Furthermore we compared each interval time for groups that performance level was similar. All interval times for group A was significantly different from those of group B. It was especially different in the first half of the race. The relationship between group F and group G had a similar inclination.

Fig 2 The Relationship of 2th Interval time between Group A and B
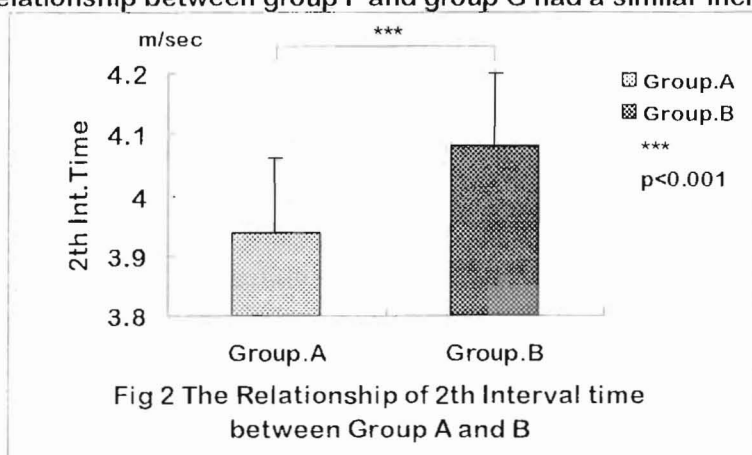
In the other groups ,there were significant difference in interval times among each groups. However they were mostly different in the latter half of
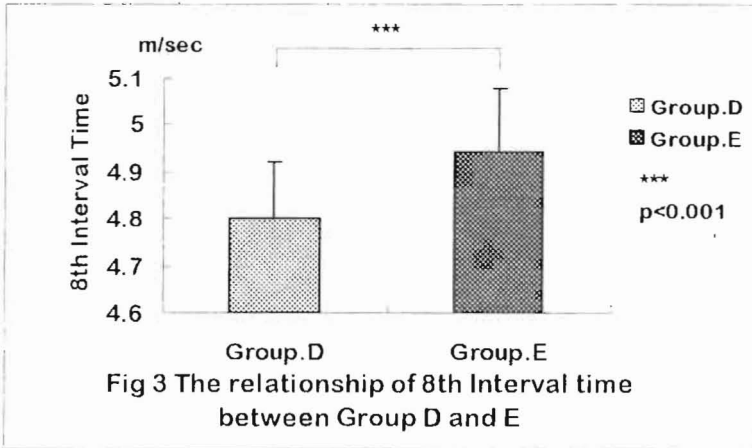
the race.

Fig 3 The relationship of 8th Interval time between Group D and E

CONCLUSION

Performance time correlated significantly with the 8th interval time in 7 groups(A,C,D,E,F,G,H). Furthermore, performance time corelated with the 7th and 9th interval in 5 groups. Therefore, it is suggested that performance correlates highly with the latter half of the race,especially the 8th interval.

In conclusion, in order to improve overall performance, it is important to improve the performance between the 7th and the 9th interval.

Also there were significant difference in interval times among each groups, especially in the latter half of the race. We observe the importance of the ability to sprint in the latter half of the race.

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