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COMPARATIVE EFFECTS OF VARIED BLOCKS SPACING IN CROUCH START ON ACCELERATION SPEED

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ABSTRACT

In the recent year, greater stress has been laid on the quality rather than the quantity of training. The coaches and teachers of Physical Education want their sportsman to extract maximum achievement from their training procedures without causing too much strain on them. This is Possible only if coaches and teachers of physical education apply the most beneficial means of training in the most economical manner for enhancing the performance of their athletes.

The present study was conducted on 5 male University level sprinters in the age group of 19 to 23 years. All the 5 sprinters were tested on varied block spacing in Crouch start on acceleration speed 10m, 20m, 30m and 40 meters.

The distances 10m, 20m, 30m and 40 meters were used from different blocks spacing such as bunch, medium and elongated. The subjects were allowed to take 3 trials on each block spacing and best time on each block spacing was considered for the analysis of data.

The purpose of the study was to determine comparative effects on varied Blocks Spring in crouch start on acceleration speed.

Keywords: Speed, Acceleration and Crouch Start.

Introduction:

The investigator has been of the view that the performance of the athletes has its limit in the matter of efficiency regarding the sports performance standards. There is lot of scope of improvement in athletics if proper techniques and methods can be adopted on athletes that results in continued improvement in their performance. But this belief has been surpassed by the athletes as a result of continued improvement in the technique methods of training and coaching-

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Sigerseth and Grinhan studied that the subjects have not reached maximum speed and sprinting 40 yards from any of the starting position. Although maximum speed may have been reached somewhere between t40 and 50 yards distance from each of the starting position. It was evident that in this study that the subjects were still accelerating after passing the 40 yards distance from the starting line. The maximum average acceleration was reached somewhere between the 10 yards end the 20 yards distance irrespective of the starting position used. Beyond this distance the runners who started from the medium and elongated positioned, continued to accelerate, although at a continuously lover rate, until the 30 yards distance was reached. They decelerated in velocity between 30 and 40 yards and then accelerated again during remaining 10 yards.

The main objective of the present study was to determine the comparative effects of varied blocks spacing in crouch start on acceleration speed.

Definitions of the terms

- **Acceleration running**

Running in which the speed is gradually increased from jogging to striding and finally to sprinting.

Acceleration

Acceleration is concerned with the attainment of the maximum speed within the shortest possible time.

- **Sprint**

It is a short run or burst of activity at top speed.

Procedure for administering the test

All the students were of University level sprinters were selected as subjects were selected randomly. The age of these subjects ranged from 19 to 23 years.

All the subjects were assembled on the Track on one of the evening. They were briefed about the procedures of taking the acceleration timing. They were allowed to take trails on different block spacing and were else allowed practice for acceleration from the different block distances. The research scholar has done herd work to make them to understand positions on different block spacing.

For the collection of data, they were allowed to have sufficient warming up on their own so that they can give their actual performance. The distances 10 m, 20 m, 30 m and 40 m. were used from different blocks spacing such as bunch, medium and elongated. The timing for each acceleration distances were taken 1/100th of a second.

All the five subjects were tested each acceleration phase from one block spacing each day.

Analysis of Data

In order to find out comparative different effects of the different block spacing in crouch start on acceleration speed, analysis of the variance (F-test) was applied. A post-hoc test were applied in cases where F-ratios were significant to find out the differences between different block-spacing

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means were significant. For testing the hypothesis, the level of confidence was at .05 level. The level of significance to the F-ratios obtained by analysis of variance was set at .05 level of confidence, which was recognized as appropriates as the research process adopted did not involve highly sophisticated equipments (automatic – electric timing) demanding the application of more stronger levels of significant.

Findings

For each of the chosen distances of acceleration, 10m, 20m, 30m, and 40m, by different block spacing, the date was subjected to analysis of variance (F-Ratio).

- **10 Meters Distance of Acceleration**

The data was subjected to analysis of variance to find out if any difference on 10 metre acceleration by different block spacing. The analysis of variance is shown in Table No. 1. The means of 1.82 sec. for bunch start, 1.85 sec. for medium start and 1.93 sec. for elongated start yielded an F-ratio of 1.19 sec., which was not significant at .05 level. The F-ratio needed for significant at .05 level of confidence was 3.88.

Table No. 1

An analysis of variance of the different block spacing on 10 meters acceleration distance.

Variances	**as**	**df**	**ms**	**F-Ratio**
Within Sets	.1662	12	.0138	
Between Sets	.033	2	.0165	1.19*

*significant at .05 level of confidence

F value needed for significance at .05 level of confidence = 3.88

- **20 Meters Distance of Acceleration**

The means of 3.10 for bunch start 3.18 sec. for medium start and 3.41 sec. for elongated start yielded the F ratio of 5.94, which was significant .05 level. The analysis of variance as between the block spacing is shown in Table No. 2.

Table No. 2

An analysis of variance of the different block spacing on 20 meters acceleration distance:

Variances	**as**	**df**	**ms**	**F-Ratio**
Within Sets	.2628	12	.0219	
Between Sets	.2605	2	.1302	5.945*

*significant at .05 level of confidence.

F value needed for significance at .05 level of confidence 3.88.

Since the F-ratio was found to be significant the Post-hoc t test was applied to find out which of the difference between the mean were more significant. The differences between the means are shown in the Table No. 3.

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Table No. 3

Differences between means for the different block speeding in 20 meter acceleration distance.

Mean (Time)

Bunch	Medium	Elongated	Difference
3.1	3.18		.08
3.1		3.41	.30
	3.18	3.41	.25

Value needed for significant at .05 level of confidence is .25. It is evident for Table No. 3. The mean difference of group bunch start and medium start were not found significant. Bunch start and elongated start were found significant. Medium start and elongated starts were also not significant.

- **30 Meters Distance for Acceleration**

The mean of 4.2 sec. for bunch start 4.03 sec. for medium start 4.34 sec. for elongated start yielded and F-ratio of 0.45, which was significant at .05 level. The analysis of variance as between shown in Table No. 4

Table No. 4

An analysis of variance of the different block spacing on 30 meters acceleration distance:

Variances	as	df	ms	F-Ratio
Within Sets	.1776	12	.0148	
Between Sets	.2505	2	.1252	8.945*

*Significant et .05 level of confidence

F value needed for significance at .05 level of confidence = 3.88.

Since the F-ratio was found to be significant the Post-hoc test was applied to find out which of the difference between the mean from different block spacing were more significant in 30 metre distance of acceleration. Differences between the means are shown in Table No. 5.

Table No. 5

Differences between means for the different block speeding in 30 meter acceleration distance.

Mean (Time)

Bunch	Medium	Elongated	Difference
4.24	4.03		0.21
4.24		4.34	0.10
	4.03	4.34	0.31

Value needed for significant at .05 level of confidence is 0.31.

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It is evident on Table No. 5 that the mean difference of bunch start and medium start was just significant. Bunch start and elongated start was not significant but medium start and elongated start it is founded more significant.

- **40 Meters Distance of Acceleration**

The mean of 5.33 sec. for bunch start, 5.12 sec. for medium start end 5.51 sec. for elongated start yielded an F-ratio of 8.65 which was significant at .05 level. The data on analysis of variance has been presented in Table No. 6.

Table No. 6

An analysis of variance of the different blocks spacing on 40 meters acceleration distance:

Variances	**as**	**df**	**ms**	**F-Ratio**
Within Sets	.2644	12	.0220	
Between Sets	.3810	2		8.659*

*Significant at .05 level of confidence

F value needed for significance at .05 level of confidence=3.88

since the F-ratio was found to be significant et .05 level of confidence, the Post-hoc t test was applied to find out which of the differences between the means from the different block spacing were more significant in 40 meter of acceleration. Differences between the means are shown a Table No. 7.

Table No. 7

Differences between means for the different block speeding in 40 meter acceleration distance.

Mean (Time)

Bunch	**Medium**	**Elongated**	**Difference**
5.33	5.12	5.51	0.21
5.33			0.18
	5.12	5.51	0.39

Value needed for significant at .05 level of confidence is .39.

As shown in the above Table the mean difference of group bunch start end group medium start were found significant. Group bunch start end elongated start were not found to be significant but medium start and group medium start and group elongated start were much higher in significance.

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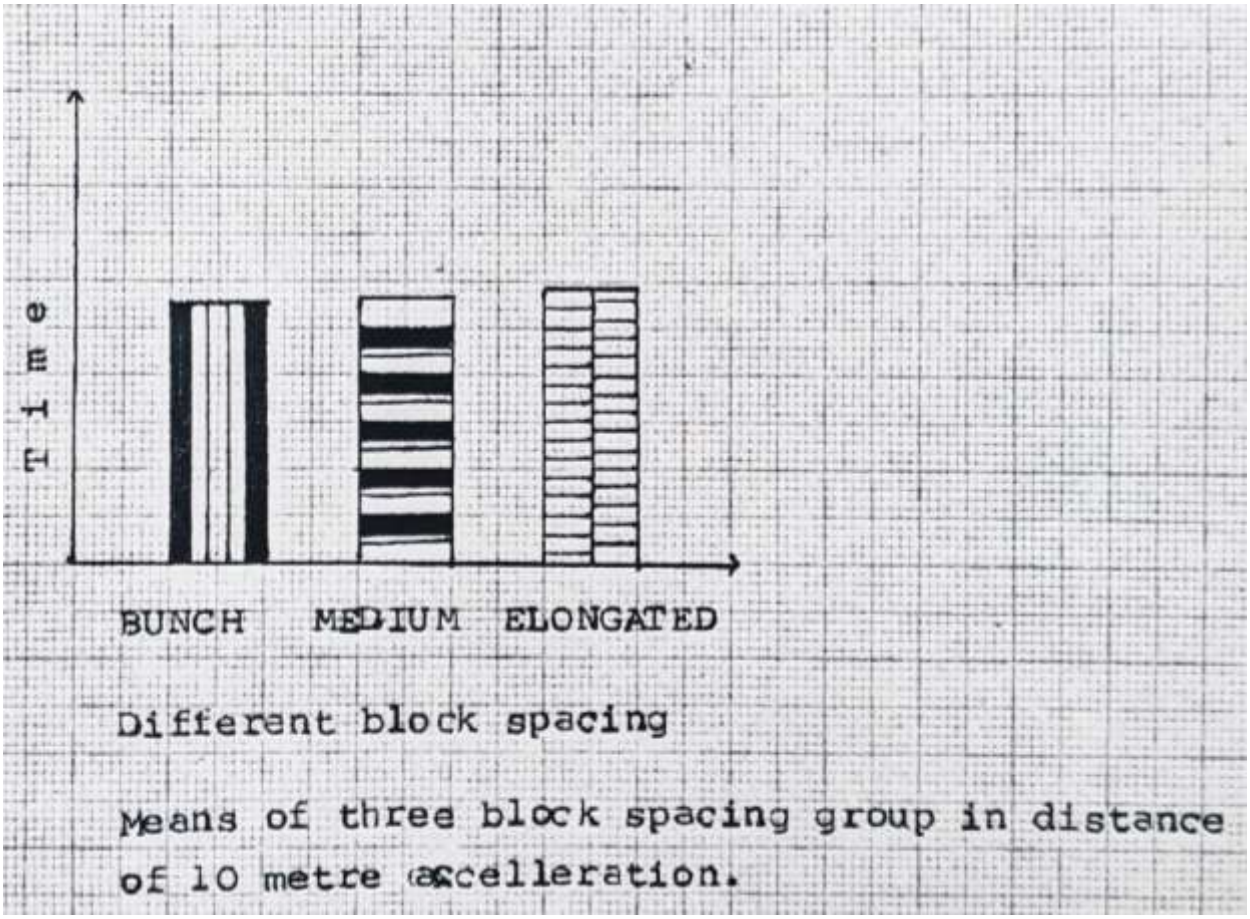
Discussion of Findings

- **10 metre distance for acceleration**.

Analyses of the data reveal that there was no significant difference in acceleration for 10 metre distance when it was taken from different block spacing such as group bunch, group medium and group elongated. The group has not shown any significant difference, this may be because of less distance on which high acceleration is not possible.



- **20 meter distance for acceleration**

Data reveal that there will be significant difference among the groups. It was observed that there is no significant difference on 20 m. distance for acceleration when it was taken from both bunch and medium block spacing. But there were much more difference between bunch and elongated block spacing. It shows that bunch block spacing is much better then elongated block spacing up to the distance of 20 m. for acceleration, Medium and elongated block spacing is having very less difference. It shows up to 20 m. and distance acceleration is same with both block spacing.

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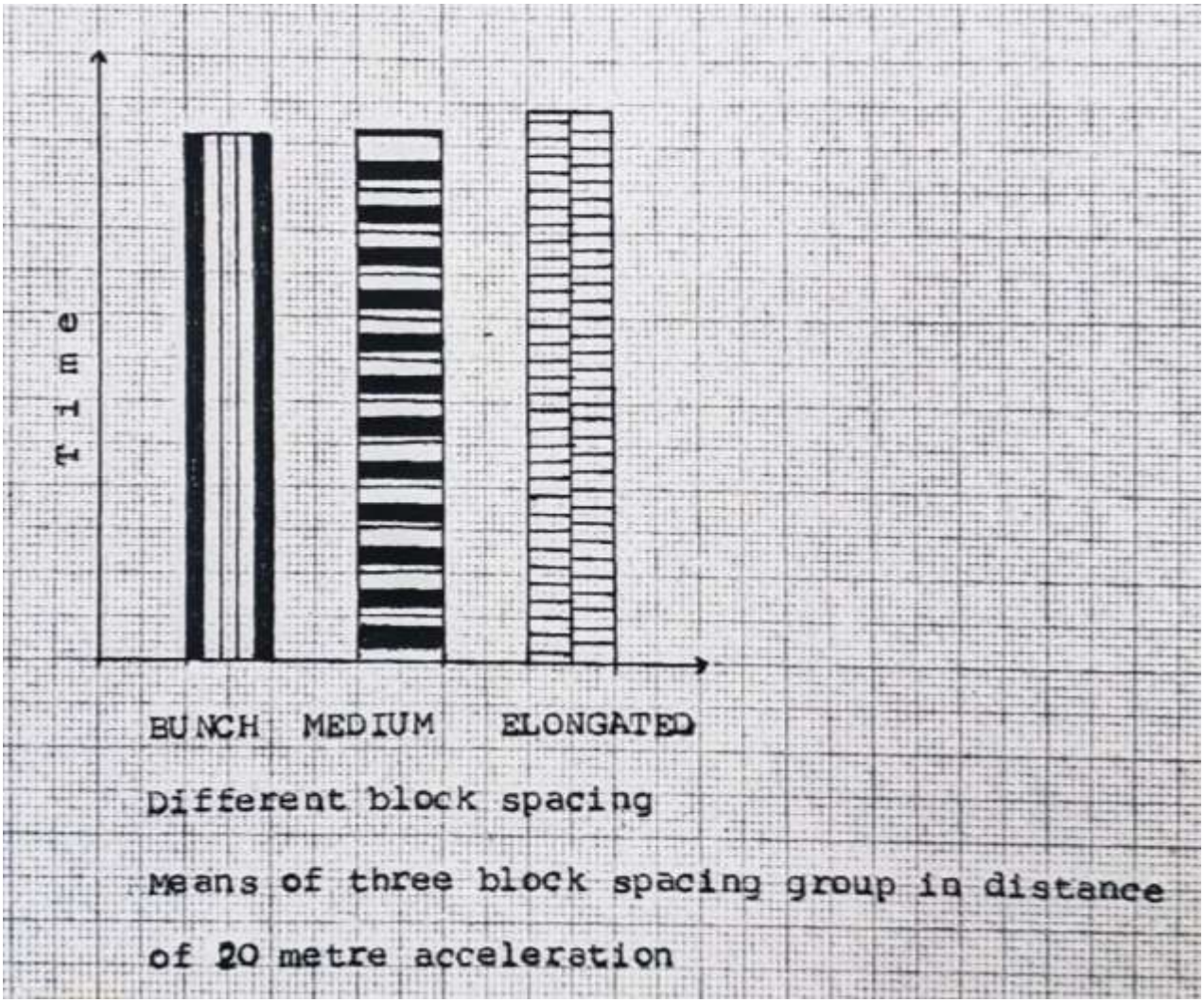

Different block spacing

Means of three block spacing group in distance of 20 metre acceleration

- **30 metre distance for acceleration**

Data on Table No. 4 reveals that there is significant difference on acceleration for a distance of 30 m. from different blocks spacing. It was also observed from the Table No. 5 that there is a difference on the acceleration of 30 m. from bunch end medium block spacing which shows that the medium block spacing is better than the bunch block spacing. But there is no difference in acceleration from bunch end elongated block spacing. Again medium block spacing is much better than the elongated block spacing on acceleration up to 30 m. distance.

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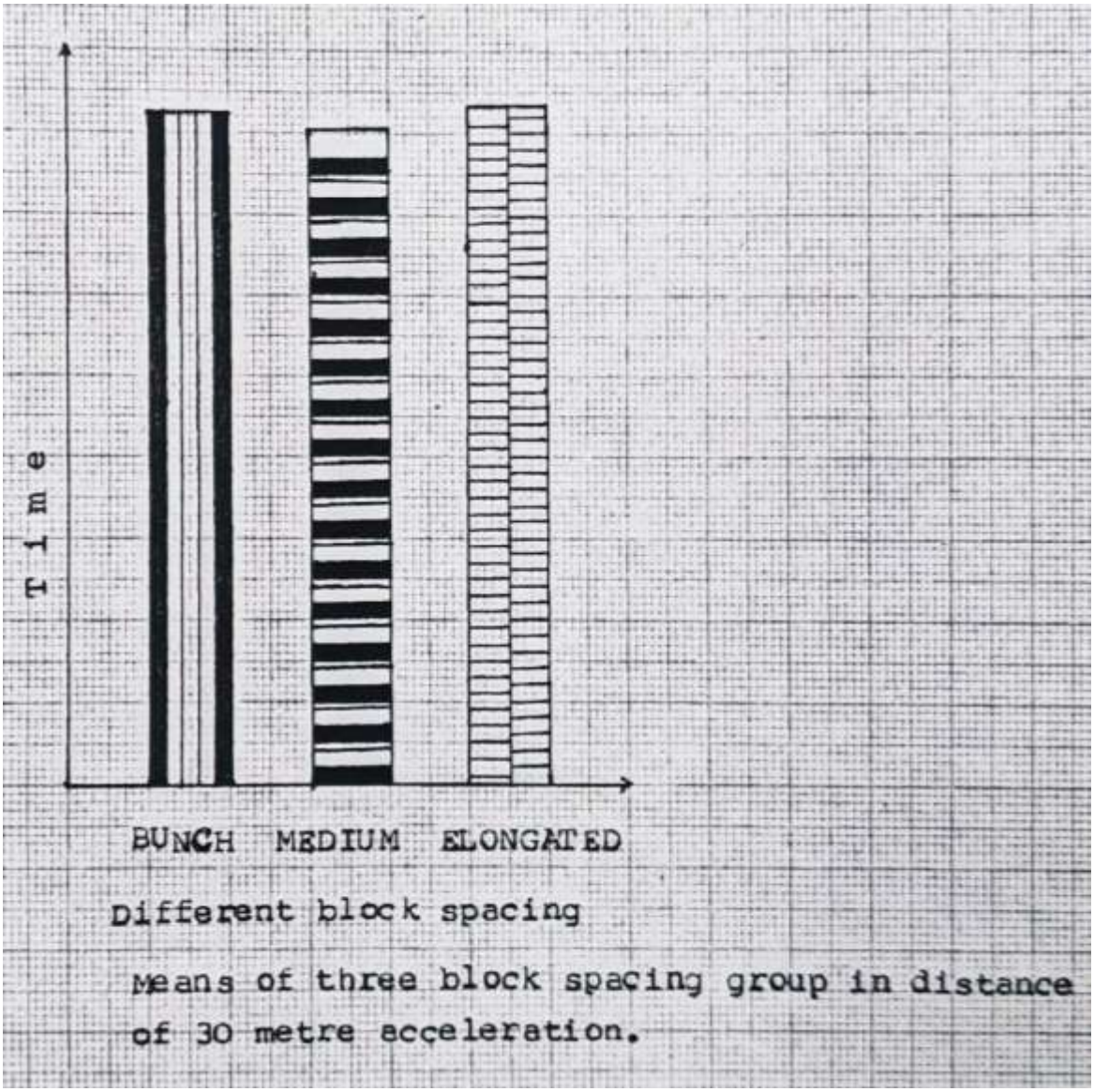

Different block spacing

Means of three block spacing group in distance of 30 metre acceleration.

- **40 metre distance for Acceleration**

Analysis of data on table No. 6 reveals that there is a significant difference among the different block spacing on acceleration for a distance of 40 m.

It is also observed from Table No. 7 that medium block spacing is much better then bunch block spacing. There is no difference between bunch and elongated block spacing but there is much more difference in medium end elongated block spacing for acceleration which shows that to have acceleration up to a distance of 40 m. medium block spacing is the best block spacing.

Sigerseth and Grinahar studied that the athletes were still accelerating after passing the 40 yards distance from the starting line. The maximum average acceleration was reached somewhere between the 10 yards and the 20 yards distances irrespective of the starting position used.

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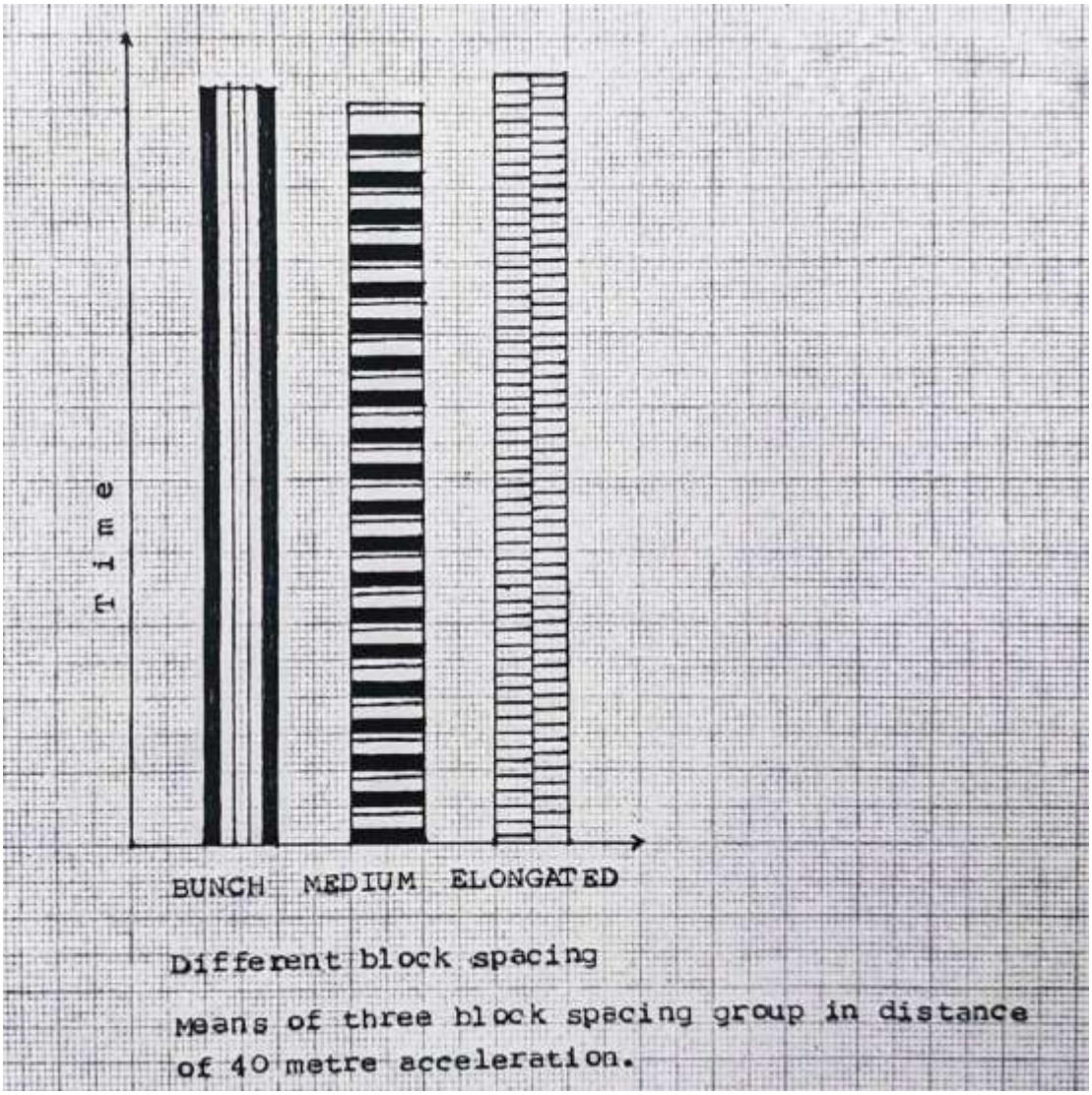
Beyond this distance the runners who started from medium and elongated positioned, continued to accelerate, although at a continuously lower rate, until the 30 yards distance was reached.



Different block spacing

Means of three block spacing group in distance of 40 metre acceleration.

Conclusions

Within the study of the following study the following conclusions are be derived.

1. Medium block spacing start is superior than other two block spacing (bunch and elongated) for acceleration. Thus the null hypothesis of the present study is not accepted.

2. Up to 20 m. distance acceleration is much better from bunch block spacing. It may be attributed in bunch block spacing that clearance is faster which help to keep the athlete in better position for short distance.

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3. Medium start is much better for acceleration then other two blocks spacing on 20 m and 30 m. distances because medium block spacing keep the athlete in more comfortable position from where the best velocity is produced.

4. Medium block spacing of 10-21 inches between the blocks was found to place the front leg in better position from which force time can be applied against the blocks and thereby increase the velocity.

5. It is also attributed in medium block spacing athlete is able to put his front foot in such a way that force time is better which effect on velocity due to optimum angle of force leg and the front leg is achieved.

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