Effect of sand running training on speed among school boys

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Abstract
Introduction: The main purpose of this study was to find out the effect of Sand running training, its outcome variables among school boys. To enhance the sports performance it needs to have systemic training and follow the training principles. Start from a stationary standing position (hands cannot touch the grounds), with one foot in front of the other. The front foot must be behind the starting line. Athletes can use sand surface to improve performance without worrying about recovery or performance issues. The hypothesis is that whether the training under stable position will improve the sports performance.
Intervention: Eight week of Sand running training were formulated. For the purpose of this study 20 school boys at the age group of 17 to 19 years are experimental group. Initial data were collected on selected variables and after eight weeks training the final data were also collected 50 meter dash test. The data's were statistically processed and analyzed.
Result: The Sand running training improves the speed in school boys. The pre and post test values were assessed by 50 meter dash test to the experimental group. By analyzing the mean values and also standard deviation values show the school boys who received the sand running training increases the maximum speed for school boys due to lower limb muscles specifically calf muscles.
Conclusion: The Sand running training is one of the effective training methods to improve the speed among the school boys.

Keywords: Sand running, speed, strength

Introduction

The trained muscle increases its tolerance to exercise (Houston, 1986). Muscular speed and endurance are specific to each muscle or muscle group. That is, different muscles in the body can have different levels of speed and endurance.
Endurance is the ability of an organism to exert itself and remain active for a long period of time, as well as its ability to resist, withstand, recover from, and have immunity to trauma, wounds, or fatigue. Physiotherapist use different types of training methods and training surfaces to improve performance.
Walking or running on sand requires far greater effort than on firm ground and previous studies have measured the increase in energy expenditure in humans carrying or pushing loads on different surfaces (Heinonen *et al*. 1959; Strydom *et al*. 1966; Haisman and Goldman, 1974) or when walking and running on a beach (Zamparo *et al*. 1992).
Sand running results in positive changes in physiological and performance related factors (Yigit *et al*., 1998) and studies has found that you burn more calories running on sand than running on asphalt (Zamparo *et al*., 1992). Other studies have measured the change in energy cost due to different surfaces in reindeer Rangifer tarandus sibiricus (White and Yousef, 1978), goats and sheep (Dailey and Hobbs, 1989) and Caribou Rangifer tarandus granti (Fancy and White, 1987). The softness of the sand, like the trampoline mat, absorbs and disperses the downward force which takes away any plyometric advantages of the stretch shortening cycle. Secondly, and this is the beneficial bit, unlike the trampoline, the sand makes the muscles work that much harder to actually get any height on the jump.
Athletes can use sand surfaces to improve performance without worrying about recovery or performance issues. Sand training requires less stability and energy returned

ideal training field to develop biomotor abilities which can reflect in improved performance level in sports and games. But less information is available on this area of research regarding training in sand on biomotor variables. Hence the investigator was interested to find out the effects of sand running training on selected speed and endurance related variables among school boys.

Sand Running

- Running in the sand is best done in bare feet.
- This activity can be used for a warm-up or as a workout.
- Run in the harder sand for the warm up, and move to the soft sand which will increase the effort required for the workout.
- Running on loose, dry sand takes 20 to 60 percent more energy than running on grass
- Plus, soft sand absorbs some of the energy from your foot strike instead of pushing you forward, and forces you to

activate more lower-leg muscles to stay upright.

Sand running training

The characteristics of a sand training surface and a grass training surface are quite different. For the athlete there are distinct physiological as well as biomechanical differences when performing on one or the other.

The sand running training program is continuous jogging, striding, and bounding, galloping, short sprints. Every session started with a warm-up and stretching session for five minutes and a warm-down session for five minutes.

Sand running offers the following benefits.

a) Helps develop power and elasticity.
b) Improves stride frequency and length.
c) Promotes strength endurance.
d) Develop maximum speed and strength.
e) Improves lactate tolerance.

Operational definition Speed

It is measurement the ability to move all or part of body as quickly as possible.

Strength

Strength training increased muscle fiber size. Increased the athletic speed in sand running training.

Power

Power is the rate of doing work. It is equivalent to an amount of energy.

Power = Speed + Strength.

Need for the study

Athletes need speed and endurance throughout the event. Through this study I would like to find out the effect of sand running training on speed among school boys.

Aim of the study

To find out the effect of sand running training on speed among school boys.

Objective of the study

To determine the effect of sand running training on speed among school boys.Hypothesis Null hypothesis
There is no significant difference in the effect of sand running training on speed among school boys.

Alternate hypothesis

There is a significant difference in the effect of sand running training on speed among school boys.

Projected outcome

Based on the review of literature the outcome of my study shows the effect of Sand running training on speed among school boys.

Materials and Methodology Materials

- Sand Material (river sand)
- Cones
- Stop watch
- Measurement tape
- Scoring sheets
- First aid kit

Methodology Study Design

The design that is used for this study is Quasi Experimental Study Design. Pre and post experimental study.

Source of data

Pre-and Post-Experimental Study Design

- Cheran Higher Secondary School, Karur
- Government Higher Secondary School, Karur
- UGR Sports Club, Karur
- AKC Sports Club, Karur

Sampling Method

Subjects were selected by Convenient Sampling Method

Study Population
20 subjects were selected with age group of 17-19 years.

Sample Sizes
Sample size is 20 subjects Experimental group

Study Duration
Study was conducted for a period 10 Months

Treatment Duration
Study was carried out for 3 sessions/week for 8weeks.

Outcome Measures

50 Meters dash test.

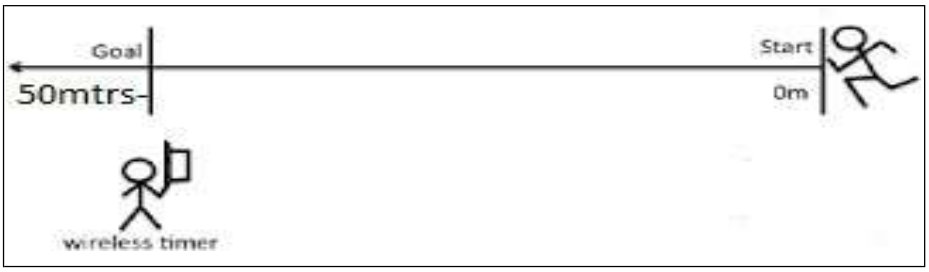


Fig 1: 50 Meter dash test

Criteria for sample selection Inclusion criteria
- Only boys from schools
- Age group between 17 to 19 years
- School boys who were not trained in sand running program earlier

Exclusion criteria
- Female students
- Any recent injury and fracture
- Systematic illness like fever
- Students who are already being trained in sand running program
- Any sports injuries Eg: shin pain
- Procedure
- Subjects were selected by convenient sampling method. 20 subjects who fulfilled inclusion and exclusion criteria were selected by convenient sampling method.
- Subjects were clearly explained about the study and written informed consent was obtained from the subjects who fulfilled the criteria.
- Experimental group subjects were involved for Pre-test and Post-test assessment.
- Speed Training program was given for 20 subjects (50 minutes \ session, 3 sessions per week for 8 weeks,).
- All exercise programs conducted in Sand Ground.
- Every session started with a 5 minutes warm-up and ended with 5 minutes warm-down.
- Total training duration is 50 minutes per session.

(a) Speed training Protocol for Experimental Group

Protocol for experimental group

S. No	Exercise name	Duration	Repetition	Distance	Recovery period
1	Continuous Jogging	20 Minutes	-	50 Meters	-
2	Striding	3 Minutes	2 to 3 Repetitions	50 Meters	1 Minute
3	Bounding	3 Minutes	2 to 3 Repetitions	30 Meters	1 Minute
4	Galloping	3 Minutes	2 to 3 Repetitions	30 Meters	1 Minute
5	Short sprints	6 Minutes	3 to 5 Repetitions	25 Meters	2 Minute

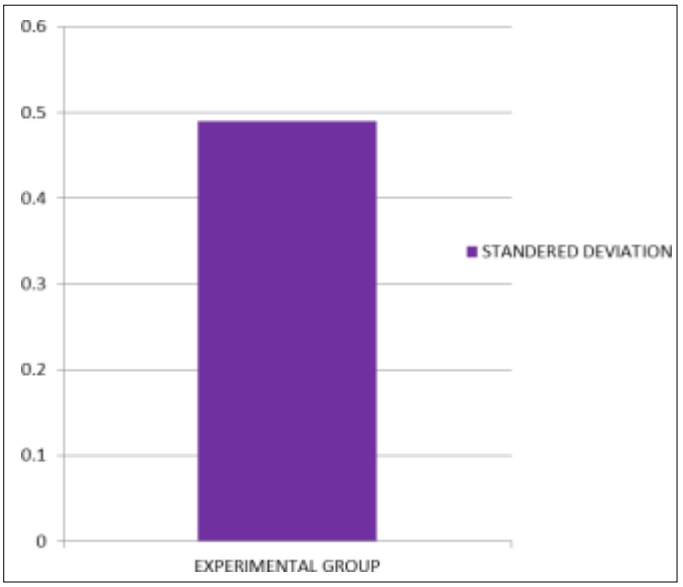
Continuous Jogging

Bounding

Striding

Galloping

Short Sprints



Statistical analysis and data presentation Statistical tools
The statistical tools used in the study are paired t-test.

(a) Paired 't' – Test
The paired t-test was used to find out the statistical significance t-test values of 50 Meter dash Test before and after training for Experimental Group.

Formula for paired t-test,

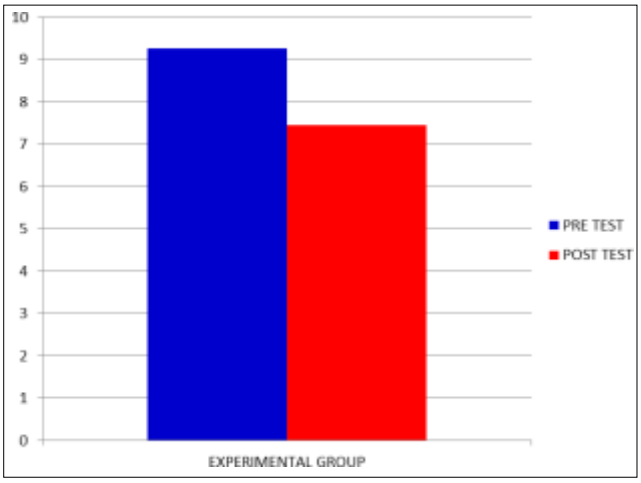
$$S=\sqrt{\frac{\sum(d-\bar{d})^2}{n-1}}$$

$$t = \frac{\bar{d}\sqrt{n}}{s}$$

d = difference between the pre-test V_s post-test
$\bar{d}$ = Mean difference
N = Total number of subjects S = Standard deviation

Pre and post test mean difference for 50 meter dash test

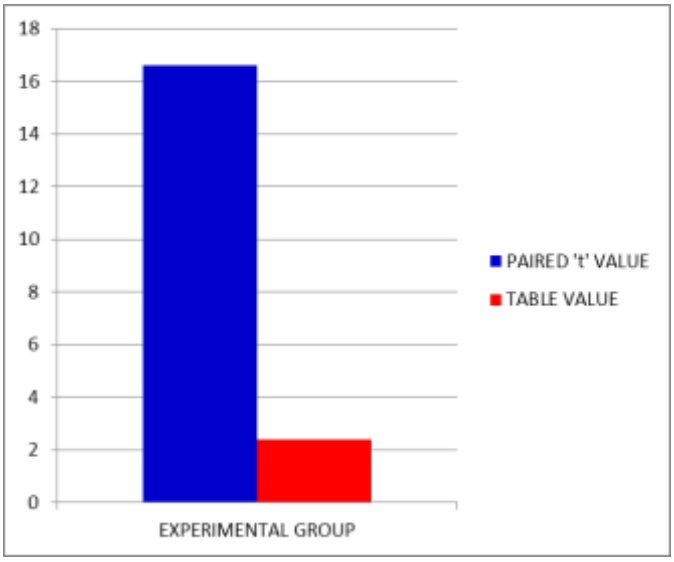
Experimental group	Mean difference 50 meter dash test	
20 Subjects	Pre test	Post test
	9.25	7.44



Mean difference for 50 meter dash test Standard deviation for 50 meter dash test

Standard deviation for 50 meter dash test Paired ‘t’ value for 50 meter dash test

Experimental group	Paired ‘t’ value	Table value	Significance
20 Subjects	16.6	2.15	Significant



Paired ‘t’ value for 50 meter dash test

Results and Discussion Results

- The study sample of 20 school boys in a group. The mean age of subjects was 17 to 19 years.
- The pre and post test values were assessed by 50 meter dash test to the experimental group.
- The mean difference for experimental group is 1.815.
- The standard deviation for experimental group is 0.49.
- The paired‘t’ test value for experimental group 16.6.
- The sand training improves the speed in school boys.
- By analyzing the mean values and also standard deviation values show the school boys who received the sand running training increases the maximum speed for school boys due to lower limb muscles specifically calf muscles.
- Through the results alternative hypothesis is accepted and also there is a significant result in the sand running training which improves the maximum speed for school boys due to lower limb muscles specifically calf muscles.

Experimental group	Standard deviation value
20 Subjects	0.49

Discussion

- While consideration of improving quality of life in healthy individuals the study shows it was effective and good improvement has present.
- The purpose of the study was to increase the lower limb muscles specifically calf muscles on school boys the speed was assessed by the parameter of 50 meter dash test and assess the sand running training which improves the speed.
- The reports provided were documented and it is finally statistical analyzed. The results of statistical analysis revealed that the sand running training improves in the speed and lower limb muscles strength especially in calf muscles.

Limitations and Recommendations Limitations

- The study has been conducted on small sample only.
- This study took shorter duration to complete.
- This study is not extended more than 10 months for a student's due to time constraint.
- A study confined to a small number of school boys which limits generalization.
- This study conducted for the healthy individual age of 17-19 years.

Recommendations

- A similar study may be extended with larger sample.
- The future study can be entitled to a longer period of time.
- The Sand running training program may be applied to all sports players.
- The study can be conducted for other age groups also.
- Sand running is recommended for more in off season and less in season.

Summary and Conclusion

Aim of this study was to improve the speed in healthy individuals by Sand running training techniques. The experimental group consists of 20 players who were assigned by purposive sampling technique accordingly. The total study duration was 10 months. The paired t test was used to assess the pre and post training scores.

Based on the statistical analysis there was a significant difference in the training efficacy in Sand running training. Here we are accepting hypothesis which states that there was significant effects obtained by the training technique.

So, it was concluded that, Sand running training is effective in improving the speed.

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