

Influence of Short Hill and Mini Hurdles Training on Selected Motor Components and Cardio Respiratory Parameters among College Men Players

SYNOPSIS

Introduction

Competitive or recreative and usually require the exertion of one's mental powers as opposed to bodily strength. To excel in sports and games one should have excellent technique, Training is not recent discovery. In ancient times, people systematically trained for military and Olympic endeavors. Today most of the coaches are searching for effective method of training methods. Better performance can only be possible through scientific, systematic and planned sports training as well as channelizing them into appropriate games and sports by finding out their potentialities. Games are structured activities that have rules, can be tactics, training, skill and etcetera. Many sports are played in front of an audience as a form of entertainment. Soccer is the most popular team game in the world, played and watched by millions of people each year.

In sports, the word training is generally understood to be synonyms doing physical exercises. In a narrow sense, training is doing physical exercise for the improvement of performance. This concept is reflected in words for terms which are gives to a separate component of training or separate methods of procedures of doing physical exercises, sports, medicine and exercise physiologists also understand training to be doing physical exercise for improvement of performance or of separate performance factors. Sports training are an educational process. Training is a systematic process of repetitive progressive exercise of work involving learning and acclimatization. Training is the net summation of adaptations induced by regular

exercise. Students on the exercises with reference to fitness state that it enables to tolerate more effectively, subsequently stresses of similar nature. The process of stressing the sportsman and his adaptation to this stress is called sports training and it is the means by which sports performance is improved. Training programme needs to also include periods of regeneration and recovery between training lessons, which is a necessary factor to ensure continuous improvement in the athlete's performance. Training has been explained as a programme of exercise designed to improve the skills and increase the energy capacities of an athlete's for particular event. The word 'training' means different things in different fields. **(Hardayal Singh, 1991).**

Physical training sessions are divided into three areas to develop aerobic power, aerobic resistance and specific resistance using a variety of training methods. Under this scheme aerobic power sessions describe a range of training to shift lactate threshold, e.g. "fast" and "long intervals" and aerobic power (maximum oxygen uptake) itself, e.g. "short intervals". These sessions could be described as quality sessions with aerobic resistance sessions as quantity **(Canova, 2002)**. The final group of training is specific resistance training to establish and practice race pace sessions. The work is completed with recovery training (slow pace), specific technique work, mobility exercises and strength training. The development of performance in competition is achieved through a training process that is designed to induce automation of motor skills and enhance structural and metabolic functions. Training also promotes self-confidence and a tolerance for higher training levels and competition. In general, there are two broad categories of athletes that perform at the highest level: (i) the genetically talented (the thoroughbred); and (ii) those with a highly developed work ethic (the workhorse) with a system of training guiding their effort. The dynamics of training

involve the manipulation of the training load through the variables: intensity, duration and frequency.

In addition, sport activities are a combination of strength, speed and endurance executed in a coordinated and efficient manner with the development of sport-specific characteristics. Short and long term planning (periodisation) requires alternating periods of training load with recovery for avoiding excessive fatigue that may lead to overtraining.

Short Hill Training

Hill training is one of the pillars of any runner's workout program. Through the course of a season, the type of hill training can vary from short, explosive hills, to longer hill repeats. There are many benefits of including hill training with the most obvious being added strength and power. Running uphill requires increased muscle recruitment from our main movers which improves their muscle endurance and neuromuscular responsiveness. Not only do hills benefit runners from a physiological standpoint, but they can help to improve form, posture, cadence and efficiency. It's difficult to run with poor form on hills as the uphill propulsion requires a runner to be on their toes, with a slight forward lean from the ankles, and a higher cadence to drive up the hill. The less time one spends on the ground, the quicker the feet move, and the faster to get up the hill. Hill provide similar speed and strength benefits as track workouts without too much impact on the body. This is essentially why a lot of programs have hill as an integral part of any off season and start of season training. It helps get the body into shape, increases speed and power, without the risk of injury. Hill running has a strengthening effect as well as boosting the athlete's power and is ideal for those athletes who depend on high running speeds - football, rugby, basketball, cricket players and even runners. To reduce the possibility of injury hill training should be

conducted once the athlete has a good solid base of strength and endurance (Tulloh, 1992).

Mini Hurdles Training

Mini hurdles are a great training tool for developing athletic speed. In sports one thing is certain i.e., speed kills. It can help to beat the opponent, win a race to a ball or cross the finish line first. Many different theories expound on improving speed, most centered on improving components of the stride. One method that's proven effective is performing mini hurdle drills. Using these small hurdles can improve the stride length and lower body power so one can increase acceleration and top speed. Perform the following three drills to reap the benefits of mini hurdle training.

Statement of the Problem

The statement of the problem was to determine the influence of short hill and mini hurdles training on selected motor components namely speed, balance, agility, leg explosive power, co-ordination; cardio respiratory parameters namely vital capacity, systolic blood pressure, diastolic blood pressure, breath holding time and peak expiratory flow rate among college men players.

Significance of the Study

The study was significant in the following ways.

1. The findings of this study would be helpful to college men players to resort to short hill and mini hurdles training not only for its benefits but also for economy in cost and time.
2. The study would indicate the training influence of short hill and mini hurdles training on college men players.

3. It would further provide which of the two training methods enhances efficiency of the college men players on selected motor components and cardio respiratory parameters.
4. Further it may give additional information to the physical education professionals and the society.
5. The results of the study would enhance the awareness of training programmes among the college men players.

Hypotheses

The formulated hypotheses in the present study based on the literatures related to the study are:

1. It was hypothesized that there would be a significant improvement in selected motor components and cardio respiratory parameters due to effect of short hill training.
2. It was hypothesized that there would be a significant improvement in selected motor components and cardio respiratory parameters due to effect of mini hurdles training.
3. It was hypothesized that the experimental groups would show significant improvement in selected motor fitness components and cardio respiratory parameters.

Delimitations

The study was confined to the following aspects.

1. Only sixty college men players from affiliated colleges of Madurai Kamaraj University, Madurai, Tamilnadu, India were chosen as the subjects.
2. The age of the subjects were ranged from 18 to 25 years.

3. The training period was limited to 12 weeks.
4. Two experimental groups were employed in the study.

The study was delimited to the following selected motor components and cardio respiratory parameters.

Motor Components

1. Speed
2. Balance
3. Agility
4. Leg Explosive Power
5. Co-ordination

Cardio Respiratory Parameters

6. Vital Capacity
7. Systolic Blood Pressure
8. Diastolic Blood Pressure
9. Breath Holding Time
10. Peak expiratory flow rate.

Limitations

The study was limited to the following aspects:

1. The effect of unidentified and uncontrollable factors like food habits, life style and health conditions of the subjects during the training as well as testing periods that might have influenced the test items were accepted as a limitation.
2. The change in climatic conditions such as temperature, atmospheric pressure, humidity, etc., during the training as well as testing period could not be controlled. So, their influence on the results of the study was recognised as one of the limitations.

3. No specific motivational techniques were used to encourage the subjects to attain their maximum performance.
4. Since the selected subjects were from different locality the socio-economic status was not taken into consideration.
5. Apart from the training programme the involvement of the subjects in daily routines was not taken into consideration.

Methodology

Research methodology involves the systematic procedure by which the researcher starts from the initial identification of the problem to its final conclusion. The role of the methodology is to carry out the research work in a scientific and valid manner. In this chapter selection of subjects, selection of variables and tests, experimental design, reliability of instruments, pilot study, tester's competency and reliability of the tests, reliability of data, reliability of the tests, subject reliability, orientation of the subjects, administration of tests, administration of training programs, collection of data and statistical techniques adopted for the analysis of data have been described.

Selection of Subjects

The purpose of the study was to find out the influence of short hill and mini hurdles training on selected motor components namely speed, balance, agility, leg explosive power, Co-ordination; cardio respiratory parameters namely vital capacity, systolic blood pressure, diastolic blood pressure, breath holding time and peak expiratory flow rate among college men players. To achieve the purpose of the present study, sixty college men players from affiliated colleges of Madurai Kamaraj University, Madurai, Tamilnadu, India were chosen as the subjects. The subjects were divided into three equal groups of twenty students each.

Selection of Variables and Tests

The research scholar reviewed the available scientific literature pertaining to the problem from books, journals, magazines, websites, and research papers. Based on the consideration of feasibility on criteria and availability the following variables and the tests were selected:

Criterion Variables and Test Items

S.No	Variables	Tests	Units
1	Speed	40 Yard Dash	Seconds
2	Balance	Stork Stand	Seconds
3	Agility	T Shuttle Run	Seconds
4	Leg Explosive Power	Sargent Jump	Centimetres
5	Co-ordination	Alternate Hand Wall Toss Test	Numbers
6	Vital Capacity	Spirometer	Litres
7	Systolic Blood Pressure	Blood Pressure Monitor	mmhg
8	Diastolic Blood Pressure	Blood Pressure Monitor	mmhg
9	Breath Holding Time	Nose Clip Method	Seconds
10	Peak expiratory Flow Rate	Peak Flow Meter	Litres

Experimental Design

The study was formulated as a true random group design, consisting of a pre-test and post-test. The subjects (N=60) were randomly assigned to three equal groups of twenty men students each. The groups were assigned as short hill training, mini hurdles training and control group in an equivalent manner. The group I underwent

short hill training, group II underwent mini hurdles training and group III acted as a control group. The two experimental groups were participated the training for a period of twelve weeks to find out the outcome of the training packages and the control group did not participated in any training programme.

Statistical Techniques and Its Justification

The following statistical techniques were adopted to treat the collected data in connection with established hypothesis and objectives of this study. Initially descriptive statistics and paired 't' test was applied to test the significance of mean gains made in each of the variables by the experimental groups. Analysis of covariance (ANCOVA) was applied because the subjects were selected random, but the groups were not equated in relation to the factors to be examined. Hence the difference between means of the three groups in the pre-test had to be taken into account during the analysis of the post-test differences between the means. This was achieved by the application of the analysis of covariance, where the final means were adjusted for differences in the initial means, and the adjusted means were tested for significance.

When ever the adjusted post-test means were found significant, the scheffe's post-hoc test was administer to find out the paired means difference. To test the obtained results on variables, level of significance 0.05 was chosen and considered as sufficient for the study.

Conclusions

1. The short hills training significantly improved the selected fitness components and cardio respiratory parameters. The 't' values of the selected variables have reached the significant level.

2. The mini hurdles training significantly improved the selected motor fitness components and cardio respiratory parameters. The 't' values of the selected variables have reached the significant level.
3. In the control group the obtained 't' value on all the variables were failed to reach the significant level.
4. The significant mean difference does not exist among all the three groups in the pre test on speed, balance, agility, leg explosive power, co-ordination, vital capacity, systolic blood pressure, diastolic blood pressure, breath holding time and peak expiratory flow rate.
5. In testing post test mean difference among the three groups statistically significant on variables of speed, balance, agility, leg explosive power, co-ordination, vital capacity, systolic blood pressure, diastolic blood pressure, breath holding time and peak expiratory flow rate. In testing the post adjusted mean among the three groups also predicts the above result.
6. In comparing the effect of short hills training and mini hurdles training on motor components and cardio respiratory parameters, from the obtained f-ratios, it was observed that short hills training showed better performance on increasing balance and peak expiratory flow rate than the mini hurdles training and control group.
7. In comparing the effect of mini hurdles training and short hills training on motor components and cardio respiratory parameters, from the obtained f-ratios, it was observed that mini hurdles training showed better performance on increasing agility than the short hills training and control group.