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## Effect of six weeks conditioning workout plan on motor fitness variables of track cyclists

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### Abstract

The present study was designed to determine the effect of six weeks conditioning workout plan on motor fitness variables of track events. Total twenty (N= 20) male track cyclists from Punjabi University Patiala were selected to act as subjects for the present study. The study was conducted on 18- 27 years of age group. To effect of six weeks conditioning workout plan on motor fitness variables of track events samples were taken for every training program, there would be a change in various structure and systems in human body. Further three motor fitness variables i.e. leg muscles endurance, leg muscles speed and Leg muscle power were also selected as dependent variables of the study. The level of significance choose in to test the hypotheses was 0.05,  $P < 0.05$ . Results of the study explicated statistically that there was significant difference in leg muscles endurance, leg muscles speed and Leg muscle power.

**Keywords:** Motor fitness, leg muscles endurance, leg muscles speed and Leg muscle power

### Introduction

Track cycling is a bicycle racing sport usually held on specially built banked tracks or velodromes (but many events are held at older velodromes where the track banking is relatively shallow) using track bicycles. When cycling was in its infancy, wooden indoor tracks were laid which resemble those of modern velodromes, consisting of two straights and slightly banked turns. One appeal of indoor track racing was that spectators could be easily controlled, and hence an entrance fee could be charged, making track racing a lucrative sport. Early track races attracted crowds of up to 2000 people. Indoor tracks also enabled year-round cycling for the first time. The main early centers for track racing in Britain were Birmingham, Sheffield, Liverpool, Manchester and London (Wikipedia The Free Encyclopedia, 2017).

Track cycling events fit into two broad categories: sprint races and endurance races. Riders will typically fall into one category and not compete in the other. Riders with good all round ability in the junior ranks will decide to focus on one area or another before moving up to the senior ranks.

Sprint races are generally between 8 and 10 laps in length and focus on raw sprinting power and race tactics over a small number of laps to defeat opponents. Sprint riders will train specifically to compete in races of this length and will not compete in longer endurance races.

The main sprint events are:

- Sprint
- Team sprint
- Keirin
- Track time trial

Endurance: Endurance races are held over much longer distances. While these primarily test the riders endurance abilities, the ability to sprint effectively is also required in the Madison, points race and scratch race. The length of these races varies from 12–16 laps for the individual and team pursuit races, up to 120 laps for a full length Madison race in World Championships or Olympic Games.

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The main endurance events are:

- Individual pursuit
- Team pursuit
- Scratch race
- Points race
- Madison
- Omnium
- Handicap or Hare and Hounds
- Miss and Out, elimination or "Devil Take the Hindmost"

**Major competitive events**

**Olympic Games**

Held every four years as part of the Summer Olympics. There are currently 10 events in the Olympics, fewer than appear in the World Championships. At the 2008 Summer Olympics, seven of these events were for men while only three were for women. For the 2012 Summer Olympics, there were five events for both men and women. For the 2016 Summer Olympics the events remained the same (Wikipedia The Free Encyclopedia, 2017).

The metabolic demands of a single session of intense aerobic interval training in highly trained competitive endurance cyclists. Seven cyclists (peak O<sub>2</sub> uptake [VO<sub>2</sub> peak] 5.14 +/- 0.23 L x min<sup>-1</sup>, mean +/-SD) performed 8 x 5 min work bouts at 86 +/- 2% of VO<sub>2</sub> peak with 60-s recovery. Muscle biopsies were taken from the vastuslateralis immediately before and after the training session, whereas pulmonary gas

exchange and venous blood were sampled at regular intervals throughout exercise. Highly trained cyclists are able to sustain high steady state aerobic power outputs that are associated with high rates of glycogenolysis and total energy expenditure similar to those experienced during a 60-min competitive ride (Stepto, *et al.* 2016) <sup>[4]</sup>.

**Methodology**

The purpose of present study was to scrutinize the effect of six weeks conditioning workout plan on motor fitness variables of track cyclists. To achieve this purpose total twenty (N=20) male track cyclist between age group of 18- 27 years from Punjabi University Patiala, Punjab were selected as subjects.

Researcher had gone through the available literature and had discussions with various experts and his guide before arriving at a conclusion. The availability of the techniques, feasibility and reliability of the procedure and the outcome were extensively analyzed and on various factors associated with the problem, certain variables were selected to test during the study. Based on the above mentioned concept, the investigator had selected six weeks conditioning workout plan as dependent variables. For every training program, there would be a change in various structure and systems in human body. Further three motor fitness components i.e. leg muscles endurance, leg muscles speed and Leg muscle power were also selected as dependent variables of the study.

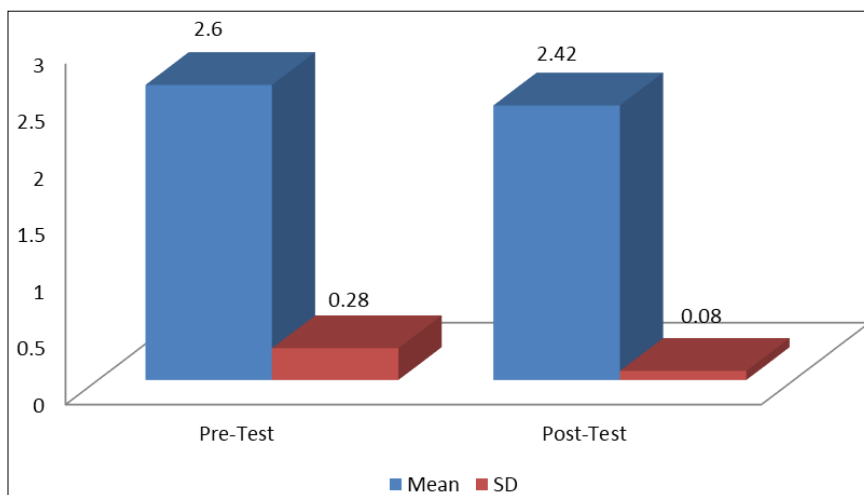
**Table 1:** Comparison of Mean, SD and t-value for Pre and Post Test of Leg Muscles Endurance of Track Cyclists

Motor Fitness Variable	Pre-Test Mean	Pre-Test SD	Post-Test Mean	Post-Test SD	t-Values
Leg Muscles Endurance	2.60	0.28	2.42	0.08	3.60*

t<sub>.05</sub> (19) = 2.09

The findings of pre and post-test namely Mean, SD and t values for leg muscles endurance are shown in table no 1. The table statistically reveals that the calculated t value 3.60 for leg muscles endurance of track cyclists is greater than table

value 2.09. Therefore the values of table shows that, after six – weeks conditioning workout leg muscles endurance improved significantly in track cyclists. The results of table no 1 are also depicted in figure no. 1.



**Fig 1:** Comparison of Mean, SD and t-value for Pre and Post Test of Leg Muscles Endurance of Track Cyclists

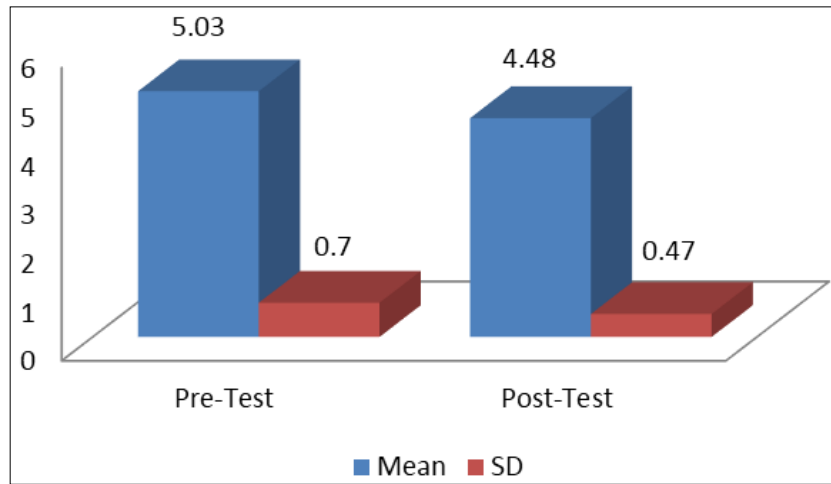
**Table 2:** Comparison of Mean, SD and t-value for Pre and Post Test of Leg Muscles Speed of Track Cyclists

Motor Fitness Variable	Pre-Test Mean	Pre-Test SD	Post-Test Mean	Post-Test SD	t-Values
Leg Muscles Speed	5.03	0.70	4.48	0.47	4.35*

t<sub>.05</sub> (19) = 2.09

The table no. 2 statistically depict that the calculated t value 4.35 for leg muscles speed is greater than table value that is 2.09. Hence, the values of table shows that, after six - weeks

conditioning workout there was significant difference in pre and post leg muscles speed in track cyclists. The results of table no 2 are also illustrated in figure no. 2



**Fig 2:** Comparison of Mean, SD and t-value for Pre and Post Test of Leg Muscles Speed of Track Cyclists

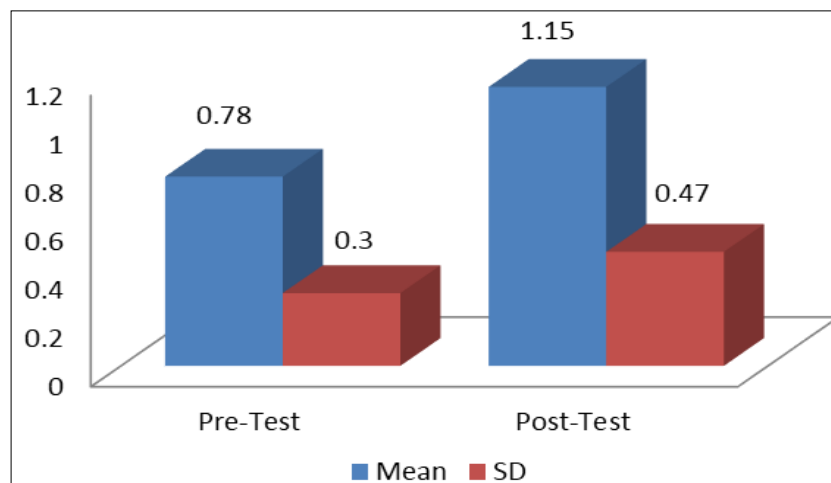
**Table 3:** Comparison of Mean, SD and t-value for Pre and Post Test of Leg Muscles Power of Track Cyclists

Motor Fitness Variable	Pre-Test Mean	Pre-Test SD	Post-Test Mean	Post-Test SD	t-Values
Leg Muscle power	0.78	0.30	1.15	0.47	3.38*

$t_{.05}(19) = 2.09$

The findings of pre and post-test namely Mean, SD and t values for leg muscles power are shown in table no 3. The table statistically reveals that the calculated t value 3.38 for leg muscles power of track cyclists is greater than table value

2.09. Therefore the values of table shows that, after six – weeks conditioning workout leg muscles power improved significantly in track cyclists. The results of table no 3 are also depicted in figure no. 3.



**Fig 3:** Comparison of Mean, SD and t-value for Pre and Post Test of Leg Muscles Power of Track Cyclists

**Discussion of findings**

Based on the statistical analysis of data following findings were drawn by the researcher:

1. The result of the study revealed that leg muscles endurance increase significantly in track cyclists after the application of six - weeks conditioning workout. These results of the study confirmed with the findings of (Brosnan, *et al.* 2000) [1] who reported significant increase in muscles endurance after twelve interval training program.
2. The result of present study proved that leg muscles speed increase significantly in track cyclists due to the application of six weeks conditioning workout. These results of the study confirmed the findings of (Coyle, *et al.* 1991) [2] who also reported that aerobic training induced significant change on muscles speed of track cyclists.
3. The findings showed significant increase in leg muscle power in track cyclists of Punjabi University Patiala.

These results of the study were in line with the findings of who reported significant increase in muscle power of cyclists after conditioning training programs. This is undoubtedly due to variations in training programs employed, population studied, and the analytical methods used.

**Conclusions**

Based on the results of the study the following conclusions were drawn by the investigator:

1. The results substantiate that, leg muscles endurance increase significantly in track cyclists after the application of six - weeks conditioning workout.
2. The result strongly confirm that, after the application of six weeks conditioning workout the leg muscles speed of track cyclists increased significantly.
3. The results validate that, significant change was found in muscle power in track cyclists due to application of six weeks conditioning workout.

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