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Effect of exercise on shoulder and leg muscles for cricket players

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Abstract

The Purpose of my study is to find out the Muscular Strength and Speed of leg and shoulder muscles for the Ranji Trophy cricket players of Bihar and Jharkhand by the help of given training plan. To facilitate this study there were six (N=6) cricketers and their age ranged between 19 to 26 years have been selected randomly. Pre-training data of JCR test, and post training data were recorded respectively after completion of six-week successful training schedule. The Muscular strength and Speed of the Players were tested for statistical significance by the computation of dependent t-test ratios. The analysis was showing that the Muscular strength and speed were significant among them at 0.05 level of confidence. Based on the findings of this study the following conclusion was drawn that the muscular strength and speed has increased by following the same training methodology for the same variables. In this study also found that there is partial effect of six weeks implemented training plan on the subject. The effect of muscular strength on leg muscles are only visible. Effect of speed training and muscular strength training on shoulder muscles haven't seen.

Keywords: Muscular strength, speed, cricket players, dependent 't-test'

Introduction

The first reference to cricket being played as an adult sport was in 1611, and in the same year, a dictionary defined cricket as a boys' game. There is also the thought that cricket may have derived from bowls, by the intervention of a batsman trying to stop the ball from reaching its target by hitting it away. While playing cricket muscular strength and speed is require for the successful implementation of skill and in score. Major muscle group involvement is shoulder and leg.

Leg Muscles

- **Vastus lateralis:** Also known as the Vastus Externus. It is the largest and most powerful leg muscle in the quadriceps group and is found on the side of the thigh.
- **Vastus medialis:** This is a teardrop-shaped muscle in the thigh that extends to the knee.
- **Vastus intermedius:** This is the deepest among all the muscles in this group. It is located on the lateral upper surface of the femur.
- **Rectus femoris:** This muscle attaches at the hip and reaches the kneecap

Hamstrings

- **Biceps femoris:** Two parts make up this muscle: the long head and the short head.
- **Semimembranosus:** This muscle is characterized by its flat tendon of origin. It is located deep into the semitendinosus and originates from the ischial tuberosity on the inferior pelvis.
- **Semitendinosus:** This muscle is located in between the biceps femoris and semimembranosus. It is a long tendon of insertion.

Lower Legs Calf Muscles

- **Gastrocnemius:** This is also known as the calf muscle. This is one of the largest muscles of the leg and helps the foot, ankle, and toes to extend and flex.
- **Soleus:** Just below the gastrocnemius, connected by the Achilles tendon is the soleus. It is located from below the knee to the heel and helps in stabilizing the legs while standing or walking.

- **Plantaris:** This is a small muscle found at the back of the lower leg. Like the first two muscles mentioned, it's involved in plantar flexion.
- **Extensor Digitorum Longus:** This is a long, thin muscle that extends down the front of the shin, across the ankle joint, and into the toes.
- **Tibialis Muscles:** Located at the front and back sides of the lower leg.
- **Peroneus Muscles:** These are found on the lower leg's front side. They also help in dorsiflexion.

Shoulder Muscles

- The muscles of the shoulder either connect the scapula and clavicle to the trunk, or connect the clavicle, scapula and body wall to the proximal (top) end of the humerus. The *trapezius*, *levator scapulae*, and *rhomboids* originate from the base of the skull and/or spine and connect the scapula and clavicle to the trunk of the body.
- The pectoralis major, pectoralis minor, latissimus dorsi, teres major and deltoid connect to the proximal end of the humerus and anchor it to the body.
- The most important shoulder muscles are the four rotator cuff muscles - the subscapularis, supraspinatus, infraspinatus and teres minor muscles - which connect the scapula to the humerus and provide support for the glenohumeral joint. Muscles of the arm that enter into the shoulder complex are separated into anterior (flexor) and posterior (extensor) compartments. These include biceps brachii, triceps brachii and coracobrachialis.

Speed

It is the performance prerequisite to do motor action under given conditions in minimum of time. -Theiss and Schnabel (1987)

Strength

Strength is a conditional ability i.e.; it depends largely on the

energy liberation process in muscles. Strength is the ability to overcome resistance or to act against resistance. It is a product of voluntary muscle contraction caused by neuro-muscular system.

Muscular Strength

The Amount of force that a muscle can produce in a one single contraction.

Methodology

The above test has been administered by self and in the supervision of guide. Pre training data has been recorded of all the Players through the tools mentioned in above test methods. After successful execution of training plan for six weeks again post training data has been recorded

Table 1: Pre-Training JCR Data of the Player

Name	Vertical Jump (in inches)	Chin-UP	RUN (in Seconds)
Subject 1	14	9	13.04
Subject 2	12	9	12.46
Subject 3	13	9	13.15
Subject 4	14	21	13
Subject 5	16	11	12.78
Subject 6	13	6	12.99

Table 2: Post-Training JCR Data of the Player

Name	Vertical Jump (in inches)	Chin-UP	Run (in Seconds)
Subject 1	14	11	13.25
Subject 2	11	10	12.69
Subject 3	13	8	13.28
Subject 4	13	17	13.1
Subject 5	16	10	13
Subject 6	12	10	13.03

Analysis of statistical data

For the Result of above Research, the data analysis is based on Dependent t-test.

Table-3: Dependent t-test Data for Pre and Post Training of the Players

Variables	SD	D̄ (Difference of Mean)	N (Number of Students)	S (Deviation)	T (Calculated)	T (Tabulated)
Jump	3	0.5	6	0.54	2.25	2.01
Chin-up	5	0.83	6	2.6	1.9	2.01
Run	-1.16	-0.19	6	-3.88	0.11	2.01

Level of Significance Is (in two tail) 0.05

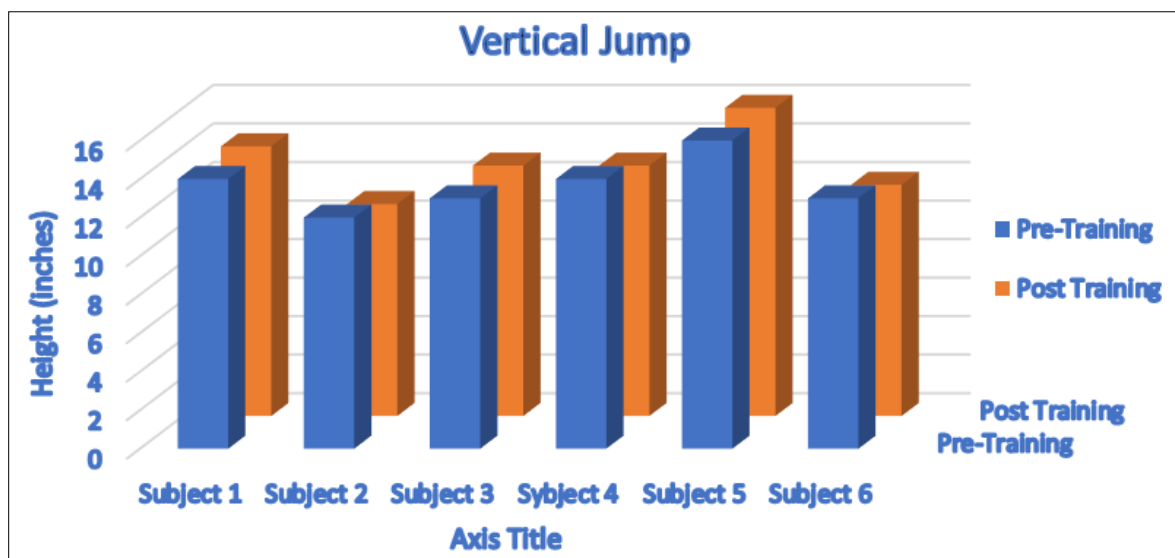


Fig 1: Bar Diagram Representation

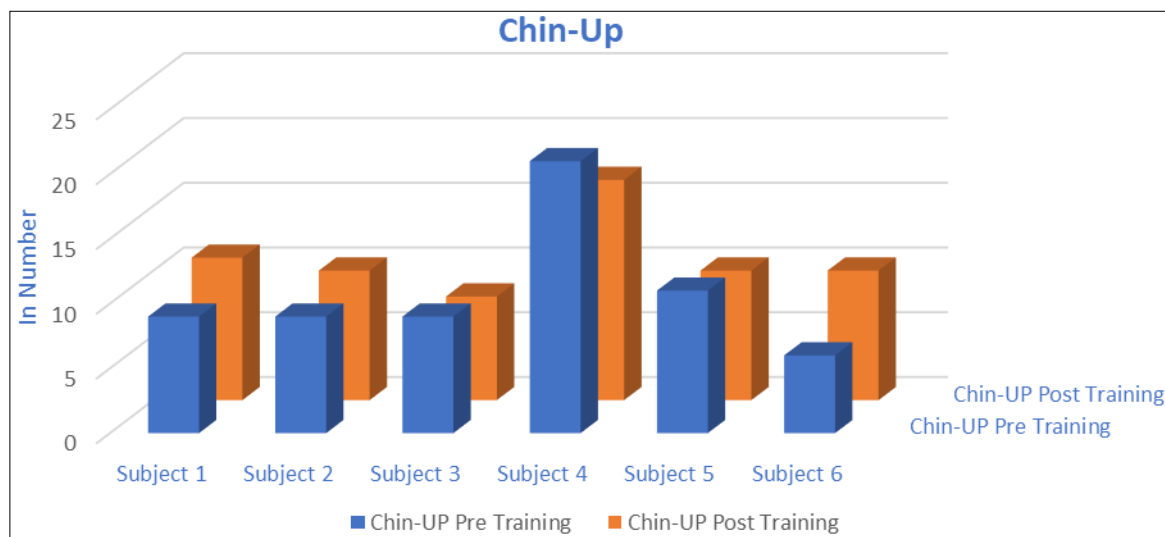


Fig 2: Bar Diagram Representation

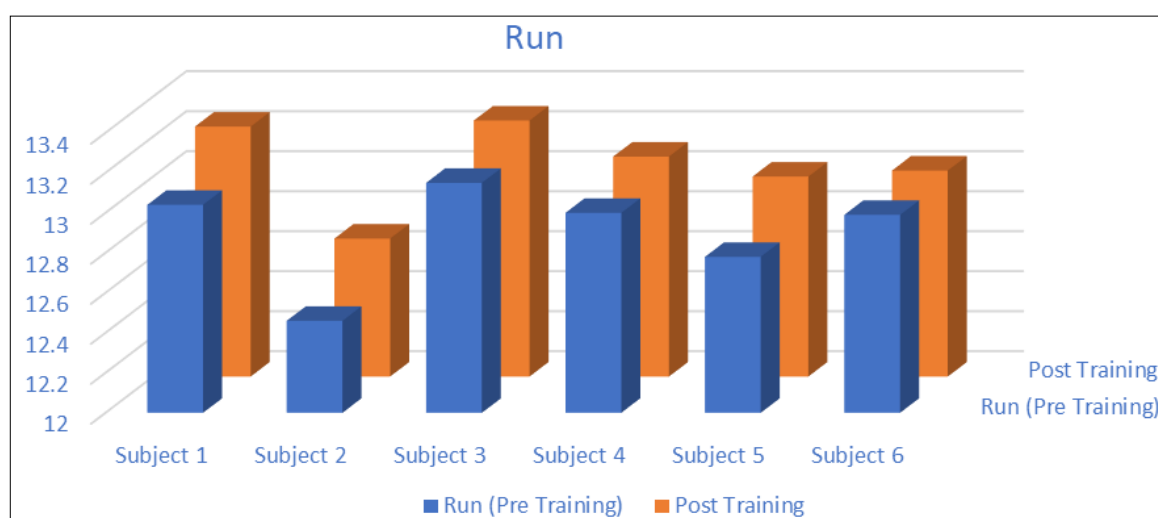


Fig 3: Bar Diagram Representation

Findings

In the reference of above table (Table 3) it is found that the calculated values of one variable jump is greater than ($2.25 > 2.01$) the tabulated value in regards of dependent t-test analysis, and values of other variables chin ups ($1.9 < 2.01$), run ($0.11 < 2.01$) are less then tabulated value.

Discussion on Findings

On the analysis of above findings, found in his study that the muscular strength and speed has increased by following the same training methodology for the same variables. In this study also found that there is partial effect of six weeks implemented training plan on the subject.

Conclusion

The effect of muscular strength on leg muscles are only visible. Effect of speed training and muscular strength training on shoulder muscles doesn't seen. From the above reference and with the help of this study the same training plan can be also used by the coach as well as athletes also for the development of muscular strength and speed. the longer period of training will show the optimal result.

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