

Efficacy Of Kinesio Taping On The Functional Performance In Healthy Cricketers.

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Abstract

Background: Performance is considered to be the completion of a duty, in away the performer from all obligations under the bond. Sport performance is a compound blend of biomechanical purpose, emotive aspects, and drill methods. The KT taping method has been used for a long time for the inhibition and treatment of sports injuries, even for supporting the joint or muscle throughout movement. Cricket is a gentleman's game. It is an endurance sport with intermitted bursts of speed and power and balance.

Purpose: The main goal of this study was to determine efficacy of KT taping on the performance in the normal healthy cricketers.

Design: A randomized control trail

Methodology: 30 subjects aged between 18-24 years meeting selection criteria and after 2 subjects were dropout, others were assigned randomly into two equal groups. Each group had 14 equal subjects. Kinesio taping was applied on one group and in another group Kinesio taping was not applied to check improvement of functional performance.

Outcome Measure: Vertical jump test, Y balance test, Yo-Yo test.

Result: The significant result showed in within group comparison but non-significant in between group comparison.

Conclusion: The study concluded that application of with Kinesio tape group was better than without Kinesio tape group in improvement of functional performance.

Key word: Kinesio Tape, Functional performance, Vertical Jump, Y-balance test, Yo-yo intermittent recovery test and Healthy Cricketer.

INTRODUCTION

Performance is the achievement of a given chore estimated contrary to pre-set known values of precision, fullness, price and rapidity. ^[1] In a bond, performance is considered to be the completion of a duty, in away the performer from all obligations under the bond. ^[1] Performance of sport is the way in which sport participation is measured and a compound blend of biomechanical purpose, emotional aspects, and training methods. ^[2] Performance in a sports framework has a popular implication of representing the search of brilliance, where an athlete measures his or her performance as a headway to fineness or accomplishment. ^[2] Performance includes **speed & agility (yo-yo test)**, **balance (y-bt)**, reaction, coordination and **power (vertical jump test)**. ^[12]

Kinesio taping is slightly new taping method in which Kinesio Tape (KT) is used. ^[1, 2, 3, 4] It was firstly formed by a chiropractor from Japan, Kenzo Kase in 1980 and has added recognition in the clinical set up. ^[3, 4, 5, 6] The tape has nearly the same thickness as of the epidermis, made of polymer elastic strand enclosed by cent percent cotton fibres, that permits for reckless loss of body moisture and drying. ^[3, 4, 5, 6] The tape practices no latex and the adhesive properties are cent percent acrylic which has heat-activated glue. ^[3, 4, 5, 6] The Kinesio taping method has been used for a long time for the inhibition and treatment of sports injuries, even for supporting the joint or muscle throughout movement. ^[3, 4, 5, 6]

Cricket is a bat and-ball game played among two teams of **eleven players** on an arena at the centre of which should be 20-metres (22-yard) pitch with a wicket at both ends, each with a bail balanced over the three stumps. The players of this game are called **cricketers**. **Cricket** is a very old, widespread and uncomplicated pastime game. ^[7] This game is also known as a gentleman's game which is originated in the late 16th century at southeast England. ^[7] In the 18th century, it

became a national sport of England and has developed most craze in the world from the 19th century to till now. [15] It is a game of uncertainty. [7] So, no one can predict the result at last moment of the game. [15] It is played in some standard formats. [7] For 5 days of long period format is called **test match**, 50-50 over format is called **one day international (ODI) match**, the craziest format of this game is **T-20 match**, which is played by 20-20 overs and the newest format is played by 10-10 overs, which is known as **T-10 match**. [7] It is an endurance sport with intermitted bursts of speed and power. [13] Most game changing scenarios have an element of speed or explosive action to it at the physical demands. [13] The literature has noted the importance of performance justifying the requirements for anaerobic qualities such as lower body power and upper body rotational power. [13] What is clear is variation of positional demands in **cricket**, which strength and conditioning coaches required to be aware of when planning physical preparation programs. [13]

Need for the study

This study has not been done on Indian cricketers (professional, amateur or semi-professional). This kind of study was done in very less amount on healthy cricketers. So, this study will be beneficial for them. This study will focus to manage the improvement of the performance.

Aims and objectives

The aim of my study was to determine efficacy of Kinesio taping on the performance in the normal healthy cricketers.

- To determine
- The efficacy of KT taping on the leg power by vertical jump test in cricketers.
- The efficacy of KT taping on the dynamic balance by y-balance test in cricketers.
- The efficacy of Kinesio- taping on the endurance by the yo- yo test in cricketers.

Hypothesis

- The null hypothesis - no statistically significant efficacy of Kinesio tapping on the functional performance in healthy cricketers.
- The alternate hypothesis - statistically significant efficacy of Kinesio tapping on the functional performance in healthy cricketers.

METHODOLOGY

This study is a randomized control trail, which provide the opportunity to examine the healthy cricket players and this study was conducted in Harbhajan Singh Cricket Academy, Punjab. The study design reported trends in Kinesio tapping to collect data during performance. It was a randomized control trail among the 30 healthy male cricketers.

Sampling will be done based on inclusion and exclusion criteria. After then 30 subjects was selected. The selected subjects were undergoing baseline measurements i.e.: vertical jump test, y balance test and yo-yo test. After signing consent form 2 subjects did not meet again to complete the other steps of study. The subjects were randomly divided equal into two groups by using chits, one experimental group and another control group. Kinesio taping was applied (according to the mentioned protocol) for experimental group and the control group was continued their daily routine. After 48hrs again the measurements were taken, and difference was compared in experimental and control group.

Duration of the study: - 14 months

Calculation: Sample Size Calculated by the formula of,

$$N = \{(Z_{\alpha/2} + Z_{\beta})^2\} \times \sigma^2 / d^2.$$

Where, $Z_{\alpha/2} = 1.96$, $Z_{\beta} = 0.84$, $\sigma = 7$ and $d = 5$.

Formula of YBT to get composite score is

$$\{(Ant + PM + PL) \times 100\} / 3 \times \text{Limb length.}$$

Description of protocol to be followed

Groups/Protocol	Experimental Group	Control Group
Day 1	Pre-test (according to outcome measures)	Pre-test (according to outcome measures)
	Kinesio taping with daily activities for 48 hours.	daily activities for 48 hours
After 48 hours	Post-test (with same outcome measures)	Post-test (with same outcome measures)

SELECTION CRITERIA

Inclusion criteria

- 18 to 24 years old only male healthy cricketers
- Included by PAR-Q questionnaire. ^[14, 15]

Exclusion criteria

- Musculoskeletal injuries
- Deformities
- Cardio-pulmonary problem
- Neurological deficits
- Subject excluded who do not meet inclusion criteria

OUTCOME MEASURES

- Vertical jump test ^[6, 11] = Power
- Y balance test ^[8, 12] = Balance and coordination
- Yo-Yo test ^[10, 13] = Speed & Agility

INSTRUMENTATION AND TOOLS

- Kinesio tape, athletic tape, measuring tape, goniometer, yo-yo intermittent test phone application, BMI android phone application, Sony Bluetooth audio speaker.



Fig 1: Instrumentation used for this study

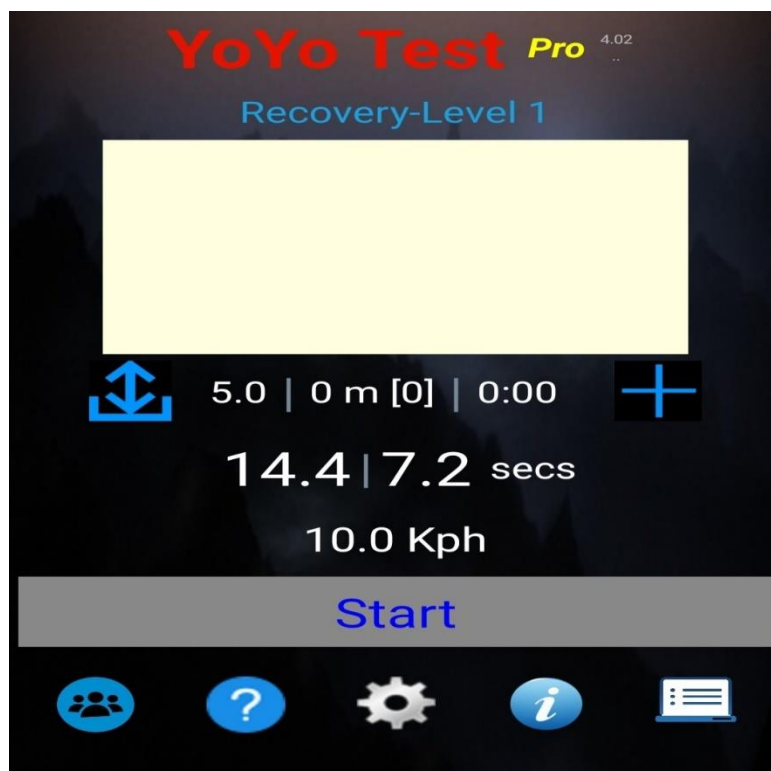


Fig 2: Yo-Yo test pro v4.02 application

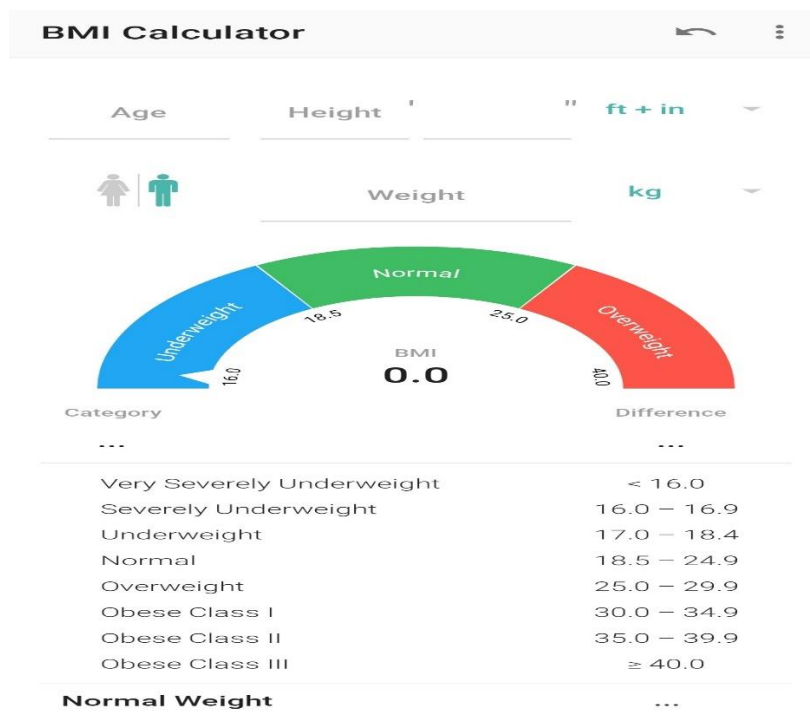
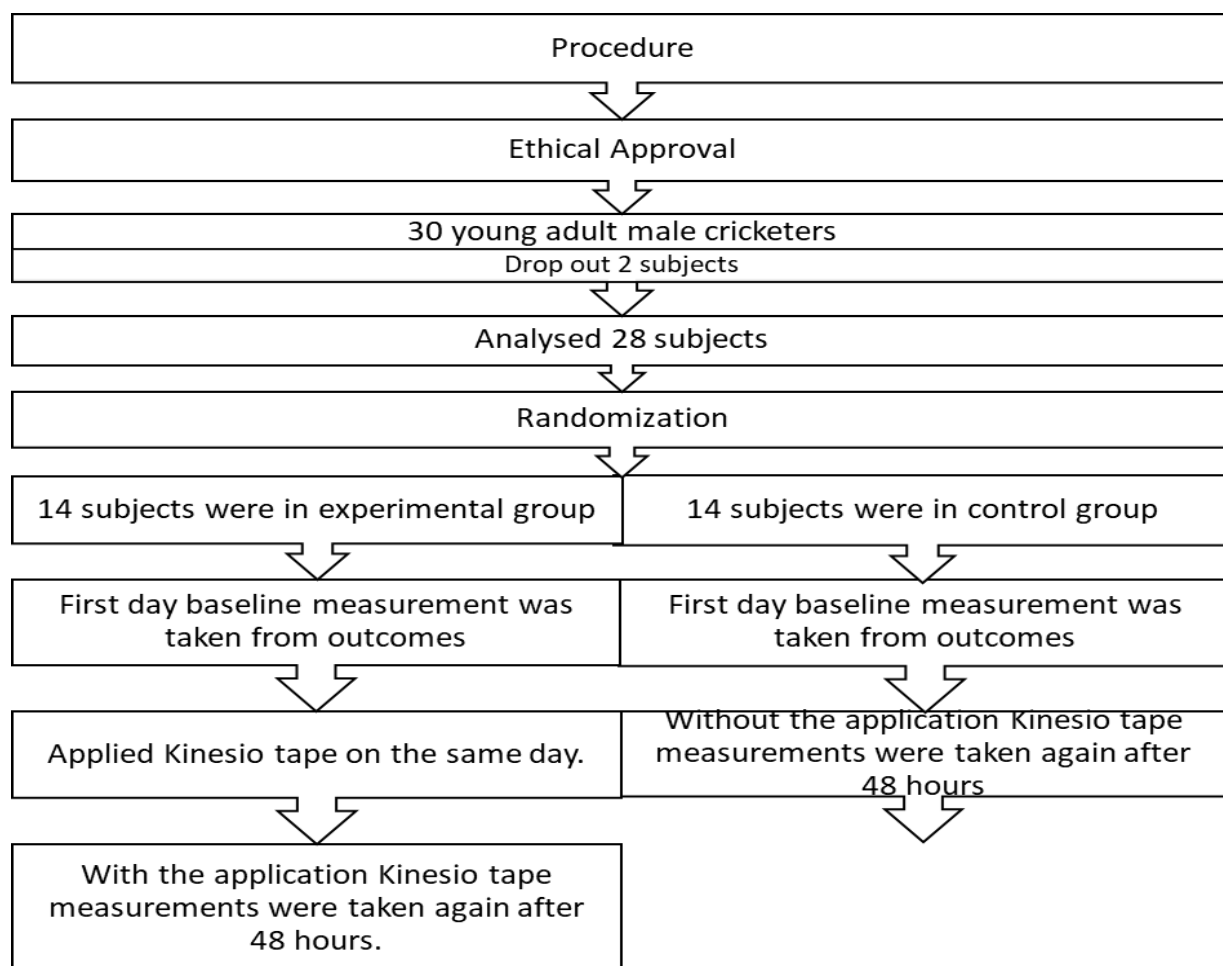


Fig 3: BMI Calculator application

STUDY PROCEDURE AND DATA ANALYSIS

After obtaining Institutional research and institutional Ethics committee approval for the proposed study. All participants were screened by inclusion/exclusion criteria and outcome measures was checked or measured by the expertise. The design of the study was structured by experimental program on healthy cricketers using Kinesio tape on lower limb. After that data was collected and descriptive analysis was done to check the normality of the data and it was done by using SPSS v.20 Software.



Flow Chart: 1



Fig 4: Randomization



Fig 5: KT application



Fig 6: KT on Quadricep Muscles



Fig 7: KT on Hamstring and Gastrocnemius



Fig 8: Yo-Yo test (Control Group)



Fig 9: Yo-Yo test (Experimental Group)

RESULTS

Twenty-eight healthy cricket individuals were voluntarily participated in this study. The mean age \pm standard deviation (SD) of age was 18.7 ± 1.2 years, height was 5.55 ± 0.36 ft., weight was 61.03 ± 9.26 kg and BMI 20.01 ± 2.79 height/weight². The results from within group paired comparison and paired t test indicated that study was significant (Table 1 and Table 2) but between group independent t-test shows that study was not significant (Table 3).

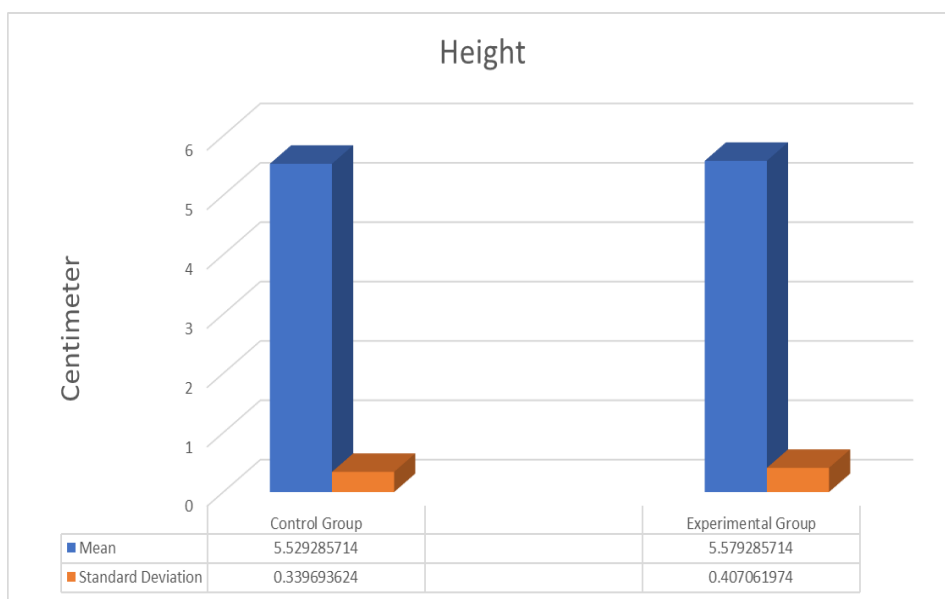
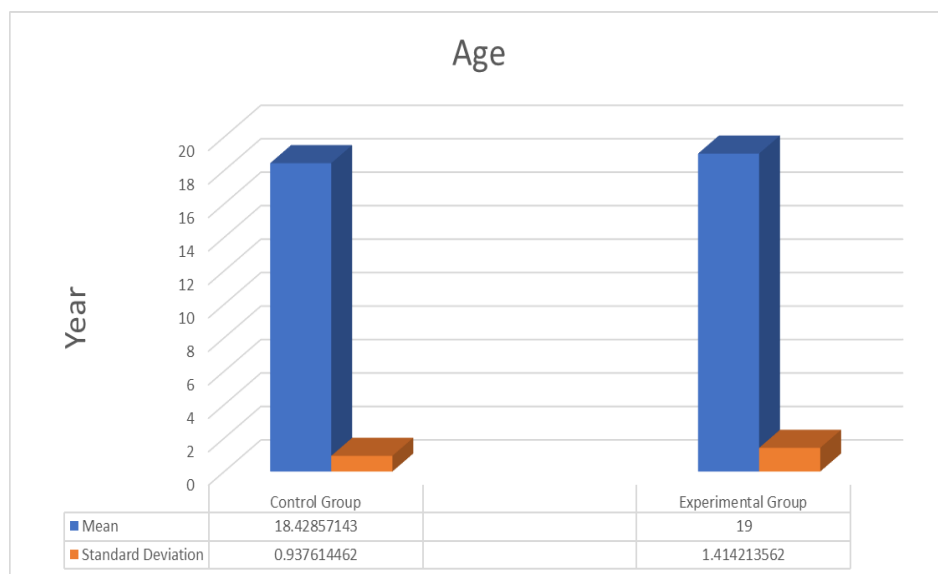
Within group comparison

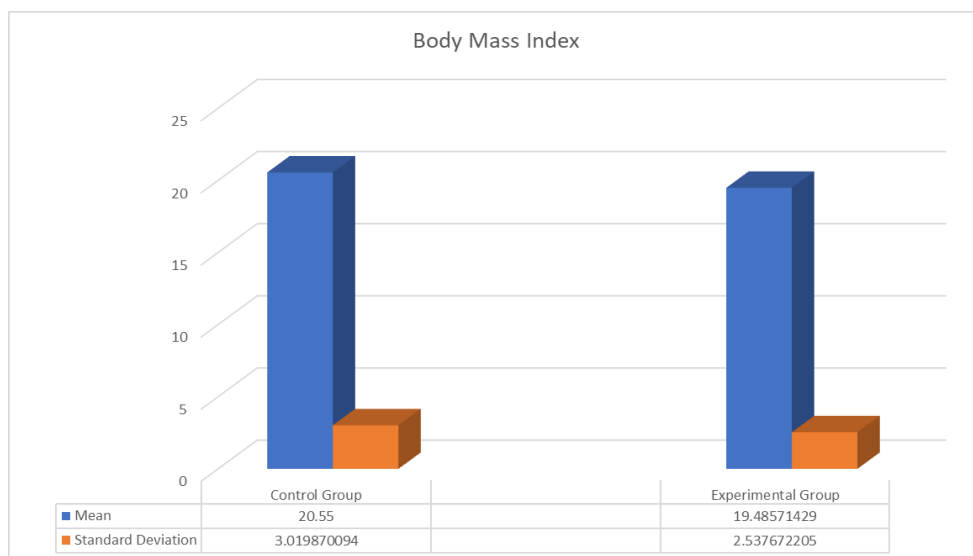
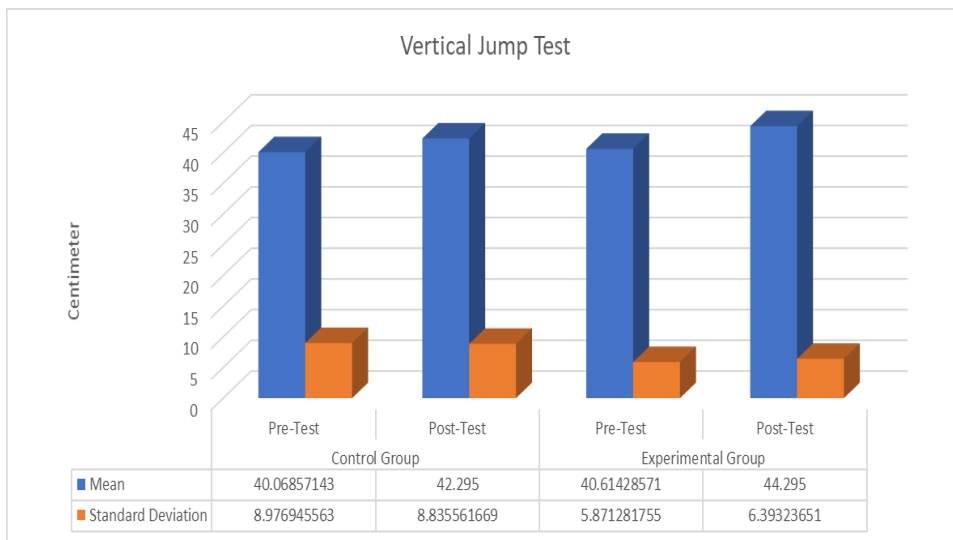
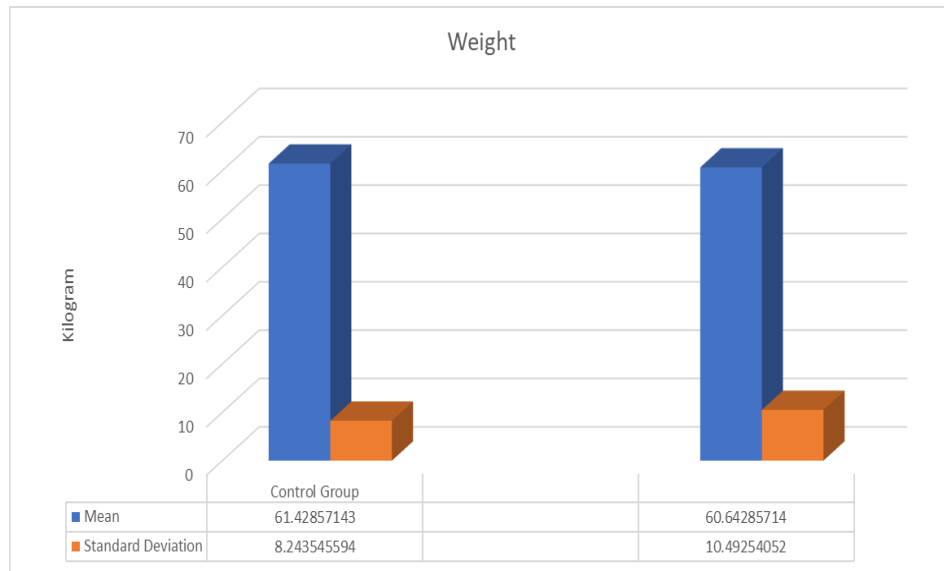
Table 1		
Experimental Group (Paired Correlation)		
Vertical Jump		
	Mean \pm Standard deviation	Significant (p >0.05)
Pre-Test	40.61 \pm 5.87	0.000
Post-Test	44.30 \pm 6.39	
YBT-Right		
Pre-Test	98.16 \pm 15.64	0.000
Post-Test	103.12 \pm 12.7	
YBT-Left		
Pre-Test	98.05 \pm 17.35	0.000
Post-Test	102.73 \pm 15.4	
Yo-Yo test		
Pre-Test	16.33 \pm 0.955	0.000
Post-Test	16.9 \pm 0.958	
Experimental Group (Paired t-test)		
Vertical Jump		
Pre-Test	-3.681 \pm 2.996	0.001
Post-Test		
YBT-Right		
Pre-Test	-4.954 \pm 5.864	0.008
Post-Test		
YBT-Left		
Pre-Test	-4.678 \pm 5.434	0.007
Post-Test		
Yo-Yo test		
Pre-Test	-0.571 \pm 0.276	0.000
Post-Test		

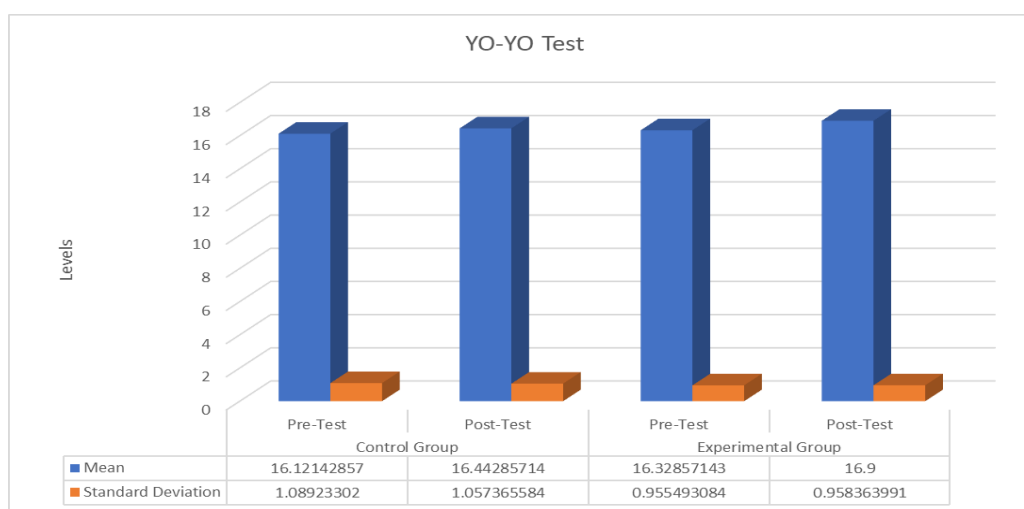
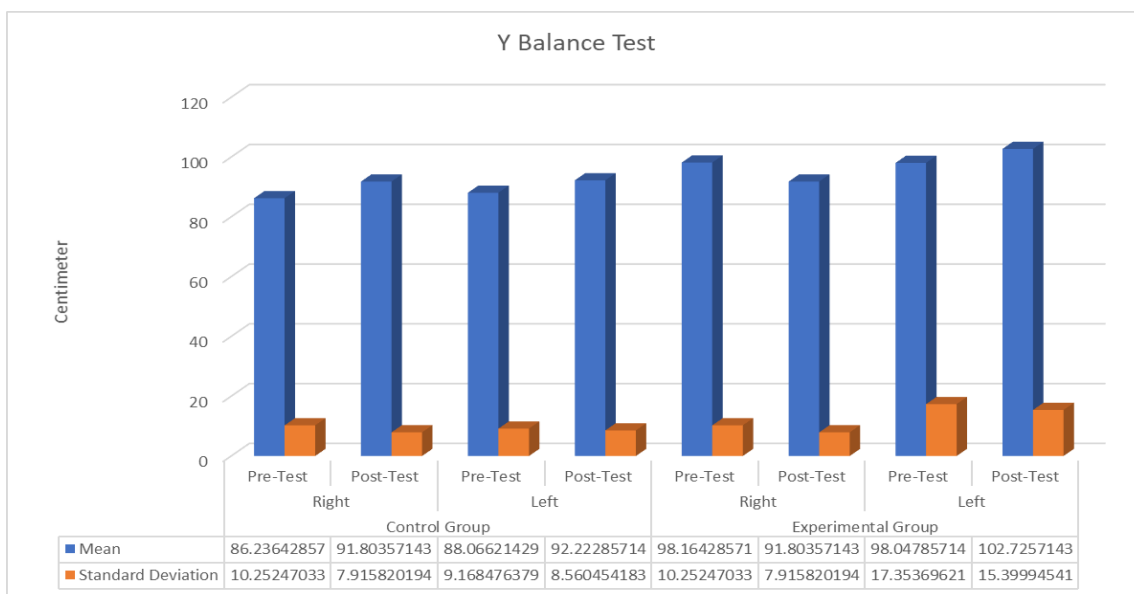
Table 2		
Control Group (Paired Correlation)		
Vertical Jump		
	Mean \pm Standard deviation	Significant (p <0.05)
Pre-Test	40.07 \pm 8.97	0.000
Post-Test	42.30 \pm 8.83	
YBT-Right		
Pre-Test	86.24 \pm 10.25	0.295
Post-Test	91.80 \pm 7.91	
YBT-Left		
Pre-Test	88.07 \pm 9.168	0.004
Post-Test	92.22 \pm 8.56	
Yo-Yo test		
Pre-Test	16.12 \pm 1.089	0.000
Post-Test	16.44 \pm 1.057	
Control Group (Paired t-test)		
Vertical Jump		
	Mean \pm Standard deviation	Significant (p <0.05)
Pre-Test	-2.226 \pm 3.711	0.043
Post-Test		
YBT-Right		
Pre-Test	-5.567 \pm 10.901	0.078
Post-Test		
YBT-Left		
Pre-Test	-4.157 \pm 6.633	0.036
Post-Test		
Yo-Yo test		
Pre-Test	-0.321 \pm 0.556	0.050
Post-Test		

Independent T test between groups

Table 3			
	Groups	Mean ± Standard deviation	Significant (p <0.05)
Vertical Jump	Experimental	40.61 ± 5.871	0.044
	Control	40.07 ± 8.977	
YBT-Right	Experimental	98.16 ± 15.642	0.149
	Control	86.24 ± 10.252	
YBT-Left	Experimental	98.05 ± 17.354	0.054
	Control	88.07 ± 9.168	
Yo-Yo test	Experimental	16.33 ± 0.955	0.401
	Control	16.12 ± 1.089	
Vertical Jump	Experimental	44.30 ± 6.393	0.131
	Control	42.30 ± 8.836	
YBT-Right	Experimental	103.12 ± 12.701	0.232
	Control	91.80 ± 7.916	
YBT-Left	Experimental	102.73 ± 15.400	0.051
	Control	92.22 ± 8.560	
Yo-Yo test	Experimental	16.90 ± 0.958	0.779
	Control	16.44 ± 1.057	







DISCUSSION

The present study shows that the significant result showed in within group comparison but non-significant in between group comparison.

Kinesio-taping has gained its popularity since the decades several studies have found an increase in muscle strength during the eccentric isokinetic muscle contraction (VethouIkaet al., 2010; Fratochhiet al., 2013) after the application of KT and these studies suggest that the KT Could plays a major role during that the junction contraction which result in the effect on muscle performance. There is huge literature available to prove the effectiveness of Kinesio taping in improving the various parameters in normal as well as the injured population.

One of the review articles describe the mechanism of action regarding the Kinesio taping (I smailSaracogla Kinesio taping: Fact or Myth? 2017). This review present that the Dr.Kase stated that the muscular dysfunction & imbalance is one of the reasons for musularsketal problem and he has also claimed that KT is more effective method then mobilze the muscle as it also enhances the circulation and movement because it lifts the skin and increase the subcutaneous interstitial space, Kinesio taping has also proved to reduce the pain and improve performance. So, this forms the main background for our study as the Kinesiotaping help in improving pain and muscle activation in injured people so it can also enhance the performance in already healthy athletics.

In one of the previous studies (Gerda Sledzanberger et al, 20) the result suggested that there was performance enhancement for 20m spent time in resting situation after the application of KT on the gluteal muscle.

One of the previous literatures has been conducted to for the effectiveness of Kinesio taping on healthy & active athletes for the performance in healthy (Jelliam. Drouin et al 2013) but the study suggests the lack of support the use of Kinesio taping for improving athletic based performance so it gives as the path to conduct our research in this area.

Previous studies have proved to improve the muscular endurance head posture after the application of Kinesio taping on the deep neck flexors for the subjects with forward head posture (Chia-Ning Chill, et al. 2013)

Kinesio taping has also proved to be effective in improving the balance and functional performance in the dominant lower extremity of healthy individual (Victoria Wilson et. al, 2016) after the application of Kinesio taping on the Gastrocnemius. The aim of the study was to test the hypothesis that the application of KT enhance the performance of cricketers. We observed that there was significant changes in the performance after the 48 years of application of Kinesio taping but as we compared it with the same outcome measure of control group. The study findings concluded not to be significant in terms of improving the performance healthy cricketers.

The athletes in this study from the cricket sport as the cricketers need to have high performance accuracy throughout season so our attempt was to experiment that apart from the normal conditioning program what else can be the alternative intervention which can results in improving the performance level in the athletes.

LIMITATIONS AND FUTURE SCOPES

- The sample taken for the study is only male member of the society as the females were not include in the study. This type of study should be done in females also.
- There was no follow up after the post assessment.
- The taping time should be increased in order to see the maximum effect of Kinesio taping.
- There can be involvement of different parameters of the performance other then which are included in the study.
- The study was performed in one sport. There can be involvement of different sports also.
- This study has been conducted in 18-24 years of age group, we can conduct this study in different age groups.

CONCLUSION

The findings of the study have determined that there were significant changes within the control group and the experimental group but on comparing between the control, and the experimental group there was no significant difference on improve the functional performance in healthy cricketers. The result also suggests that the Kinesio-taping proved to improve certain parameters of functional performance.

ABREBIATION

KT: - Kinesio Tape

YBT: - Y-Balance Test

BMI: - Body Mass Index

PAR-Q: - Physical Activity Readiness Questionnaire

Ant.: - Anterior

PM: - Posteromedial

PL: - Posterolateral

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