

## Effect Of Plyometric Training On Selected Motor Fitness Variables Of Long Jumpers

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### ABSTRACT

The Study's Goal Was To Determine The Influence Of Plyometric Exercise On Specified Motor Fitness Measures In Junior Level Long Jumpers. Thirty (N=30) Long Jumpers From The Chennai District Were Chosen At Random As Subjects For This Study. The Subjects Ranged In Age From 12 To 14 Years. The Subjects Were Separated Into Two Groups: Experimental And Control. Each Group Had Fifteen (N=15) Subjects. For Eight Weeks On Three Different Days, The Experimental Group Received Plyometric Exercise. The Control Group Did Not Participate In Any Activities Other Than Their Normal Routine. The Standardised Test Was Used To Examine The Selected Criteria Factors Such As Speed And Agility. For This Investigation, A Random Group Experimental Design Was Adopted. The Before And Post Test Results Were Obtained Prior To And Immediately Following The Eight Weeks Of Training. The Dependent "T" Test And Analysis Of Covariance Were Used To Statistically Examine The Data (Ancova). In All Cases, Level Of Significances Was Set At 0.05. The Study Found That Eight Weeks Of Plyometric Training Improved The Speed And Agility Of Junior Level Long Jumpers Significantly. According To The Findings, There Were Substantial Changes Between The Experimental And Control Groups Following The Training Programme.

**Keywords:** Plyometric Training, Speed And Agility

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### Introduction

Plyometrics Are Training Tactics Used To Increase Speed And Explosivity In All Sports By Athletes. A Fast Muscle Stretch (Excentration) And A Concentration Or Reducing Effect Of The Same Muscle And Connective Tissue Are Part Of The Plyometrics. The Accumulated Elastic Energy In The Muscle Produces More Power Than Concentrated Action Can Generate. Researchers Have Showed That Plyometric Training Can Help Enhance Speed, Agility, Vertical Jump Performances, Accelerations, Leg Strength, Muscle Power, Greater Joint Awareness And General Propriation When Utilised Alongside A Periodic Strength Training Programme (Eskander Et Al., 2014). Stopping, Starting, And Changing Directions In An Explosive Manner Are Typical Plyometric Drills. These

Movements Are Components That Can Help You Improve Your Speed And Agility. Speed Is Possibly The Most Exciting Aspect In Sports. It Necessitates Quick Acceleration, Which Necessitates The Contraction Of Fast-Twitch Muscle Fibres. The Reaction Time And Movement Time Are Both Factored Into The Movement Speed. A Nervous System Function Is Reaction Time (The Time Between A Stimulus, Such As A Starting Gun, And The Onset Of A Movement). We Have No Influence Over How Quickly Nerve Impulses Move Along A Neuron. Agility Is Defined As The Ability To Maintain Or Manage Body Posture While Swiftly Changing Direction Through A Series Of Motions. It Is Hypothesised That Agility Training Reinforces Motor Programming Through Neuromuscular Conditioning And Neural Adaptation Of Muscle Spindles, Golgi-Tendon Organs, And Joint

Proprioceptors. Agility May Be Improved Through Improving Balance And Control Of Body Positions During Movement (Michael Et Al., 2006).

**1.1 Statement Of The Problem**

The Goal Of The Study Was To Determine The Effect Of Plyometric Exercise On The Speed And Agility Of Jumpers At A Junior Level.

**1.2 Objectives Of The Study**

1. To Assess The Effect Of Plyometric Training On Speed And Agility Of Junior Level Long Jumpers.
2. To Find Out The Differences Between Experimental And Control Groups On Selected Motor Fitness Variables Of Long Jumpers.
3. To Compare The Experimental And Control Group On On Selected Motor Fitness Variables Of Long Jumpers.

**2. Materials And Methods**

Thirty Junior Level Long Jumpers (N=30) Were Chosen At Random From The Chennai District In Tamilnadu. The Subjects Were Separated Into Two Equal Groups Of Fifteen (N=15) Each, With Group I Acting As The Experimental Group And Group Ii Acting As The

Control Group. The Participants Were Between The Ages Of 12 And 14. Speed And Agility Were Chosen As The Criterion Variables. The 50-Meter Dash Was Used To Determine Speed, While The Shuttle Run Test Was Used To Determine Agility In Long Jumpers.

**2.1 Training Intervention**

One Session Per Day Was Planned For The Training Programme. For Eight Weeks, The Experimental Group Did Plyometric Exercise Three Times A Week On Mondays, Wednesdays, And Fridays. Warm Up And Stretching For 10-15 Minutes, 35-40 Minutes Of Selected Plyometric Activities, And 5-10 Minutes Of Warm Down Made Comprised The Plyometric Training Regimen. The Initial Intensity Was Set At 65 Percent, And Every Two Weeks, The 5 Percent Rule Was Used To Raise The Intensity.

**2.2 Statistical Analysis**

All Test Variables Using Spss Were Derived Using Descriptive Statistics (20). Changes In Speed And Agility Between The Groups Were Evaluated With The Pairing "T" Sample Test And Covariance Analysis. The Level Of Significance Was Set At 0.05 To Examine Its Importance.

**3. Results And Discussions**

**Table 1: Descriptive Statistics, ‘T’ Value And ‘F’ Value On Of Experimental And Control Groups**

Variables	Group	Pre	Post	‘T’ Value	P Value	F Ratio	P Value
Speed	Experimental	9.60	9.55	2.28*	0.02	5.90*	0.00
	Control	9.68	9.67	0.39	0.132		
Agility	Experimental	12.25	12.19	3.56*	0.01	7.80*	0.00
	Control	12.28	12.27	1.76	0.235		

\*Significant At 0.05 Level.

The Pretest Mean Value For Speed In The Experimental Group Was 9.60, Whereas The Posttest Mean Value Was 9.55. The Control Group Pretest Mean Value For Speed Was 9.68, And The Posttest Mean Value Was 9.67. After Eight Weeks Of Plyometric Training The T-Value Of 2.28 In The Experimental Group Showed A Substantial (P<0.05)

Improvement On Speed. The T-Value For The Control Group (0.39), Was Not Significant (P>0.39).

The Pretest Mean Value For Agility In The Experimental Group Was 12.25, Whereas The Posttest Mean Value Was 12.19. The Control Group Pretest Mean Value For Speed Was 12.28, And The Posttest Mean Value Was 12.27. After Eight Weeks Of Plyometric Training The T-Value Of 3.56\* In The

Experimental Group Showed A Substantial ( $P < 0.05$ ) Improvement On Agility. The T-Value For The Control Group (1.76), Was Not Significant ( $P > 0.235$ ).

. Thereby Indicating Significant Differences On Speed And Agility Between The Experimental And Control Groups.

**Table 2: Pair Wise Comparison Of Post Adjusted Means On Speed And Agility Of Experimental And Control Groups**

Variables	Exp	Cg	Md	Se	Sig
Speed	09.58	09.61	0.03	0.005	0.00
Agility	12.24	12.29	0.05	0.007	0.00

The Comparison Of Post-Adjusted Group Means For The Experimental And Control Groups In The Table Above Reveals Substantial Differences In Speed And Agility Between The Groups. When Compared To The Control Group, The Experimental Group Demonstrated A Substantial Increase In Speed And Agility From Pre-Test To Post-Test Values Following A Plyometric Training Programme.

**3.1 Discussion On Findings**

On The Basis Of The Result It Was Conducted That The Effect Of Plyometric Training Improved Speed And Agility Of Junior Level Long Jumpers.

The Outcomes Of This Study Accord With Others That Demonstrated That Periodized Plyometric Exercise Improved Performance In Speed And Agility Among Recreational Football Players (Hazman Et Al., 2020). Another Study That Evaluated The Theoretical Effects Of Plyometric Training On Selected Physical And Motorical Features Of Handball Players Confirmed That Plyometric Training Enhances Speed, Agility, And Explosive Power (Karadenzeli, 2014). The Findings Revealed That Eight Weeks Of Plyometric Exercise Had A Substantial Influence On Speed And Agility. Muscle Length, Strength, Age, Gender, Temperature, Body Shape, Force, And Flexibility Can All Have A Significant Impact On Speed And Agility.

As Seen From Table 1, After Eight Weeks Of Plyometric Training The F Ratio Obtained For Speed And Agility Was  $5.90^*(P < 0.05)$  And  $7.80^*(P < 0.05)$  Respectively

Plyometric Workouts Most Likely Improved Speed And Agility By Influencing Muscle Length, Force, Muscle Temperature, Strength, And Flexibility (Ahamed, Et Al., 2020). The Plyometric Group May Have Boosted The Speed Of Message Flow From Muscle To Nerve Centre And Vice Versa, Resulting In Higher Speed And Agility Test Results (Avery Et Al., 2007).

The Results Show An Increase In Speed And Agility As A Result Of Either Improved Motor Recruitment Or Brain Changes. The Authors Of A Prior Study On Plyometric Training Suggested That The Benefits Were Due To Improved Motor Unit Recruitment Patterns. When Athletes Respond Or React As A Result Of Increased Coordination Between The Cns Signal And Proprioceptive Feedback, Neural Changes Normally Occur. However, We Were Unable To Distinguish Whether Neural Changes Occurred As A Result Of Synchronised Firing Of Motor Neurons Or Improved Facilitation Of Neural Impulses To The Spinal Cord. As A Result, Further Research Is Required To Establish Brain Alterations As A Result Of Plyometric Exercise And How They Affect Speed And Agility (Anitha, 2016).

It Was Found That Systematically Structured Plyometric Training Should Be Included In All Disciplines' Training Programmes In Order To Obtain Peak Performance. According To The Findings Of This

Study, There Is A Substantial Difference Between The Experimental And Control Groups In The Development Of Selected Criteria Variables.

#### 4. Conclusions

1. In Conclusion, It Was Demonstrated That, The Eight Weeks Of Plyometric Training Improved Speed Of Junior Level Long Jumpers.
2. In Conclusion It Was Demonstrated That, The Eight Weeks Of Plyometric Training Improved Agility Of Junior Level Long Jumpers.
3. The Control Group Did Not Show Any Significant Improvement On Speed And Agility.

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