Acta Scientific MEDICAL SCIENCES (ISSN: 2582-0931)

Volume 9 Issue 8 August 2025

Research Article

A Review on Effects of Plyometric Training for Recreational Cricketers for Upper Extremity Power, Strength and Endurance

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Received: July 22, 2025

Published: July 31, 2025

Abstract

Introduction: Plyometric exercise is one of the strategies for enhancing the neuromuscular capacity to increase power, strength, and endurance. Plyometric training for cricket bowlers has been sensibly introduced, and it looks to be a secure approach of conditioning for cricket bowlers to improve their athletic performance. This training consists of a series plyometric exercise which to be performed with suitable rest duration in between, which is aimed to stimulate overhead activity.

Aims and Objective: To review the effects of upper-extremity plyometric training for cricket bowlers on upper body power, strength and endurance for improving overall performance and agility which is less supported by the research evidences.

Methodology: A Search of article using keywords was carried in Research Gate and Pubmed, Google Scholar Article dated from 2018-2022 where 14 articles are carried for the review.

Result: 14 Articles included and the results of this review showed significant improvement in upper body power, strength and endurance on overhead medicine ball throw activity and push up performance and can be good approach for the conditioning for at least 8 weeks of training.

Conclusion: This review concluded that, upper extremity plyometric training showed the significance on push up performance test and overhead medicine ball throw test among recreational cricket fast bowlers for the improvement of performance.

Clinical Relevance: Plyometric training can increase the speed and force of muscle contractions, allowing cricketers to generate more power in their throws and shots. By incorporating these exercises into their training routine, cricketers can improve their muscular endurance, enabling them to sustain long periods of play without fatigue.

Keywords: Plyometric; Cricket Fast Bowlers; Upper Body Plyometric Exercise; Recreational Cricketers; Overhead Throwing

Introduction

An individual maintaining a lifestyle being successful in his sports performance without involving in any sports related injury is really a challenge for a player. Cricket is a sport that is played in more than 100 nations across the world and is continually gaining in popularity. In terms of regular international competition, cricket is one of the top team sports in the world. It is a bat-and-ball sport, much to baseball, that is often played outside on fields of natural grass. Cricketers must have a high degree of fitness in addition to the technical abilities needed to play, which makes them vulnerable to overuse injuries from repetitive training. Bowling motion is a highly skilled activity that requires years of practice to master. Due to the explosive nature of bowling motion, lot of force is needed to be produced in a short amount of time. During bowling motion, Internal shoulder rotators are engaged in the arm's acceleration phase through concentric contractions, while the external rotators are involved in the arm deceleration phase.

Any weakness in the external shoulder rotation can lead to impingement syndrome because during the acceleration phase of the bowling action, the external rotators are flexed eccentrically to decelerate and control the arm. Fast bowlers may sustain injuries due to a variety of reasons, including posture issues, poor bowling technique, insufficient physical or physiological characteristics, as well as severe physical demands. The main risk factors for developing shoulder injuries like impingement and dislocation is the presence of imbalance between the agonist and antagonist groups of muscles, with an injury possibly occurring if the external rotator strength is inadequate. Moreover, many bowlers are assigned to play in the outfield during a game, which increases their likelihood of developing from "thrower's arm" and other ailments. Fast bowlers frequently have shoulder issues such as rotator cuff strains and impingement. Throwing the ball while fielding causes shoulder injuries significantly more frequently in cricket fast bowlers since the trunk generates a lot of bowling speed.

Plyometric is a training strategy that uses workouts that are explosive and is utilised by athletes in various sports. Plyometric training for athletes is one of the most cutting-edge ways of strength training that boosts their power and enhances athletic performance. By using an eccentric action that is immediately followed by a concentric movement, plyometric training creates a stretch shortening cycle.

Materials and Methods

Review of Literature

Nuan Deng., *et al*. (2022) The findings indicated that consistent plyometric training significantly enhanced maximum serve velocity, demonstrating its direct impact on sports specific skills. Additionally, the training regimen contributed to notable improvements in sprint speed, lower limb muscular power, and agility attributes essential for optimal tennis performance. These results support the incorporation of plyometric exercises into routine conditioning programs for tennis players aiming to maximize their physical capabilities on the court.

Mukesh Saran., *et al*. (2022) Results demonstrated significant improvements across these metrics, suggesting that the integrated approach not only aids in stabilizing the shoulder joint but also contributes to optimizing the functional performance of fast bowlers. This evidence supports the application of multimodal rehabilitation strategies in cricket-specific injury management and performance enhancement.

Debabrata Sarkar., *et al*. (2022) Results revealed significant improvements in various physiological parameters such as muscular strength, power, and endurance, along with enhancements in skill-related factors including agility, coordination, and speed. These gains collectively contributed to better overall athletic performance. The findings affirm that incorporating plyometric exercises into regular training routines can be highly effective in developing both fitness and sports-specific skills in athletes.

Nuannuan Deng., *et al*. (2022) The results demonstrated significant improvements in upper and lower body muscle power, muscle strength, linear sprint speed, agility, and flexibility. These outcomes highlight the program's capacity to induce comprehensive neuromuscular adaptations across the body, making it a valuable method for enhancing overall athletic performance. The findings support the integration of full-body plyometric exercises into training regimens for athletes seeking balanced physical development.

Christos Ioannides., *et al*. (2020) suggested that six weeks of specific plyometric training enhances lower body power and strength including the upper body power performance in young Karate athletes. The results showed significant improvements in

lower body power and strength, as well as notable enhancements in upper body power performance. These findings highlight the effectiveness of short-term, targeted plyometric interventions in developing comprehensive physical capabilities in young combat sport athletes. The study supports the integration of plyometric exercises into Karate training routines to boost both lower and upper body performance.

Valadés Cerrato D., *et al*. [1] suggested that Performance-level volleyball teams may improve their upper-body maximum strength, power application, and spike speed by engaging in the plyometric activities that were studied. The study demonstrated that incorporating specific plyometric exercises led to marked improvements in upper-body maximal strength, power output, and spike velocity. These findings suggest that well-designed plyometric training can be an effective strategy for enhancing sport-specific skills and overall performance in high-level volleyball athletes. The research supports the application of upper-body plyometric routines as part of regular training regimens in performance-level volleyball.

Procedure

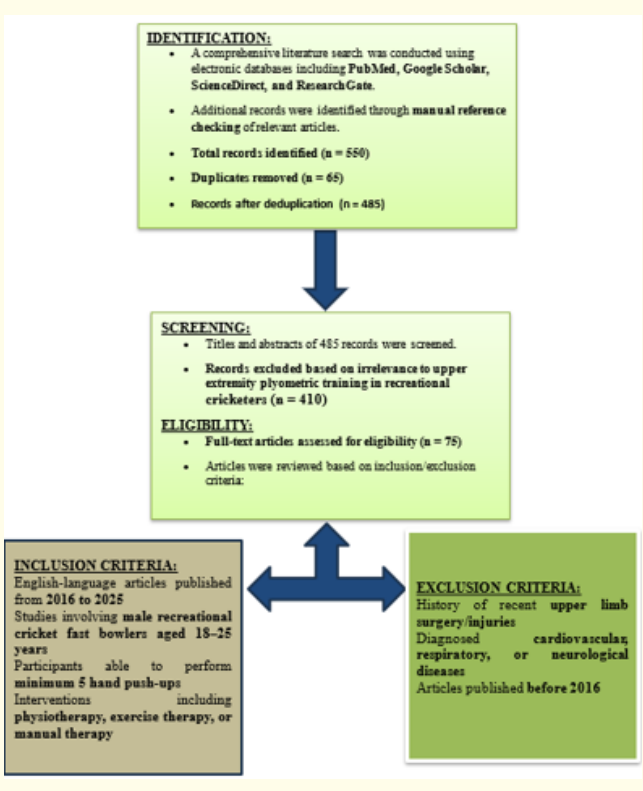

Figure 1

Results

The analysis revealed that upper extremity plyometric training, particularly involving medicine ball throws and plyometric push-ups, significantly improved neuromuscular activation, explosive upper-body power, strength, endurance, and joint stability. These exercises simulate sport-specific movements like bowling and batting, resulting in enhanced performance and injury prevention.

Discussion

Upper limb plyometric training induces key neuromuscular adaptations, including improved motor unit recruitment and synchronization, beneficial for functional sports performance. Exercises such as the Ballistic Six closely replicate cricket-specific biomechanical patterns, facilitating better transfer of training outcomes to gameplay. Moreover, such interventions are effective, safe, time-efficient, and accessible to recreational athletes with limited training infrastructure [2-24].

Conclusion

Plyometric training of the upper extremities offers significant benefits for improving strength, power, endurance, and injury resilience in recreational cricket fast bowlers. The Ballistic Six protocol, in particular, serves as an effective and sport-specific conditioning strategy. Further long-term, population-specific studies are warranted to standardize protocols and enhance training efficiency in recreational cricket settings.

Conflict of Interest

No conflict of interest.

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