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DEVELOPMENT AND IMPROVEMENT OF EXPLOSIVE POWER IN SHOT PUT ATHLETES

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Abstract: Explosive power is very important in shot put because athletes need to create high force in a short time. This article discusses different modern training methods that help improve explosive power in shot put athletes. Recent scientific studies show that plyometric training, ballistic exercises, and complex training are effective for this purpose. These trainings help athletes become more powerful by improving coordination and muscle reaction. The article looks at how these methods work and how they can be used in practice.

Key words: explosive power, shot put, plyometric training, ballistic training, complex training

Introduction

In the sport of shot put, explosive power is crucial. It allows athletes to push the heavy shot with great speed and force. This kind of power is not only about muscle strength but also about the speed at which the strength is used. Because the shot must be thrown in a very short time, athletes must train to develop high-speed strength.

Recent research in sports science has presented many ways to improve explosive power. Several training techniques have been introduced and tested to help athletes perform better. Among these, plyometric, ballistic, and complex training are the most common and effective methods for improving power in shot put. These methods have been studied widely and shown to bring good results when applied correctly.

Methods

A review of recent literature was conducted by selecting scientific articles published in the last five to ten years. Databases such as Google Scholar and ResearchGate were used for searching. The articles were chosen based on their focus on athlete performance and scientific testing of training methods. Information from selected studies was then analyzed to identify the most effective methods for increasing explosive power. Priority was given to studies with real testing on athletes and not only theoretical discussions. The goal was to understand which types of training gave the best results and why they were effective.

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Results

Research findings show that several types of training methods help in the development of explosive power. One effective method is plyometric training. This involves quick and powerful movements like jumping, bounding, and hopping. These exercises train the muscles to produce force quickly. A study by Thaqi, Berisha, and Asllani (2021) found that a 12-week plyometric training program improved shot put technique by more than 50% in high school students. Ballistic training is also widely used. It involves exercises where the athlete performs explosive movements with no slowing down at the end, such as medicine ball throws or jump squats. These exercises allow full muscle activation and help increase the rate of force production. According to Winwood, Swinton, and Keogh (2015), ballistic training improves both power and speed by targeting fast-twitch muscle fibers.

Another method is complex training. This method combines heavy strength training with explosive exercises in the same workout. For example, a heavy squat is followed by a jump squat. This uses the concept of post-activation potentiation, which means that muscles can contract more powerfully after lifting heavy weights. As Derwin (2023) explains, this technique increases neuromuscular readiness and performance. Finally, neuromuscular coordination is an important part of explosive strength. Improved coordination between nerves and muscles allows more effective and quicker muscle contractions. As mentioned by Hofmann (1994), this improvement leads to better power output without always increasing muscle size.

Discussion

These training methods help athletes become more explosive and effective in shot put. Plyometric exercises build the ability to use strength quickly. Ballistic training improves power by allowing maximum muscle activation. Complex training combines both strength and speed for a greater overall effect. Improved neuromuscular coordination helps athletes use their strength more efficiently.

It is important to plan these training programs carefully. Overuse or poor technique can lead to injury. Periodization, rest, and proper coaching are necessary for successful use of these training methods. Every athlete has different needs, so training should be adjusted to their physical condition and skill level.

Conclusion

Explosive power is essential in shot put, and modern training methods such as plyometric, ballistic, and complex training have proven effective in improving it. Scientific studies support the use of these methods in athlete training programs. With careful planning and correct application, these techniques can help athletes achieve better performance in competition.

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