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Effect of plyometric exercises for development of shoulder strength and speed among basketball players of RTM Nagpur University

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Abstract

Plyometric exercises are a vital element for Basketball for earning the utmost strength, speed and force during the Basketball match and should be included in any exercise program of Basketball. The purpose of the present study to find out the effect of plyometric exercises for the development of Shoulder strength and speed among Basketball players. The sample for the present study consists of 20 Male Basketball players of RTM Nagpur University out of which 10 are experimental group and 10 are controlled group. Plyometric exercises correspondent as hopping, bounding, depth jumps, tuck jumps, Pushups etc., were given to experimental group on alternate days i.e., three sessions per week and controlled group were given the general training for six weeks. Pre Test and Post Test were conducted in Pull-ups to measure the shoulder strength and 30 m Run to measure the speed among experimental group and controlled group. This study shows that due to the plyometric training there's a breakthrough of experimental group in the shoulder strength and speed and controlled group is downscaled in performance of shoulder strength and speed. Basketball game demands explosive power and great continuity. Explosive power is a combination of speed, muscular continuity and muscular strength, all of which can be developed through plyometric exercises. It is concluded that due to plyometric exercises there will be advancement in shoulder strength and speed among Basketball players.

Keywords: plyometric exercises, maximal strength, basketball players, etc.

Introduction

Plyometric exercises are a vital component for Basketball players for obtaining the maximal strength, speed and force during the Basketball match and should be included in any conditioning program of Basketball players. Successful Basketball players are athletic, technically sound and tactical savvy in the court. Spending long hours in the gym makes you more technical and tactical. With an effective workout routine and the right training, your coordination, quickness and explosiveness should improve through Plyometric training. Plyometric train your nervous system to trigger quick, powerful muscle contractions, workouts include high intensity exercises that emphasize short bursts of energy. Basketball is a sport that requires explosive strength and great speed for an athlete to succeed. Plyometrics mimics the physical demands of a fight and will train your body to move more quickly and explosively. When completing plyometric exercises, they must be done in short bursts at the highest intensity possible, then take a brief rest before moving to the next set or exercise.

Basketball is a handball game usually played by two teams of five players on the court. A basketball is a spherical object that rolls and bounces. The objective is to get the ball through a hoop mounted high on a backboard at back end. It is a very popular sport worldwide, played with a round and usually orange ball that bounces. Basketball players mainly use skills such as dribbling, shooting, running, and jumping.

Explosiveness is an important ingredient in the game of basketball. Players and coaches are constantly in search of ways to jump higher and run faster. After all, with all else equal, the player or team who can run faster and jump higher has a tremendous advantage over their opponent. Vast improvements can be made to a player's explosiveness by implementing a structured, progressive, and safe strength training and plyometric program, complemented by dynamic flexibility training and court conditioning drills.

By improving in each of the following five areas; a basketball player will become more explosive on the court.

Strength

If a player increases the strength in their legs, hips and core, they will automatically improve their ability to produce force, which results in increased explosiveness. For example, the more force a player can exert against the ground, the higher the potential to jump.

It is extremely important for a strength training program to be safe, time efficient, and productive. To reduce orthopedic stress while strength training, players should work within an appropriate repetition range (8-15 reps per set) and avoid maxing out (seeing how much they can lift for one repetition). Players should aim to make every strength training workout as time efficient as possible; this is done by using a limited number of sets and exercises, thus making the workout brief, yet very intense. This can also be accomplished by minimizing rest intervals between sets to induce an overall conditioning effect.

A strength program should focus on training the entire body equally to ensure muscle balance, as well as having each exercise taken to the point of momentary muscular fatigue (the point at which no further reps can be achieved). Working opposing muscle groups equally will help reduce the risk of on-court injuries, while training at a high level of intensity will produce maximum results.

All of this can be accomplished in two or three well-planned full-body workouts per week, each lasting about an hour.

Fitness is a very important in the success of a Basketball player. Basketball player need excellent levels stamina, speed, agility and power. In order to improve as a Basketball player you should be testing and monitoring your fitness levels and adjusting your training so you can fully reach your potential.

Power

As obvious as it sounds, if a player wants to be able to jump higher, he or she needs to practice jumping as high they can. Plyometric exercises such as jumping, skipping and bounding—if incorporated appropriately—provide a means for players to practice jumping with maximum effort in a controlled and safe environment. Additionally, a proper plyometric program can help train the nervous system to perform athletic movements more efficiently. These exercises and drills should be chosen carefully and be done in limited volume.

Flexibility

Flexibility is widely defined as the range of motion in a joint or group of joints. Improving flexibility in the hamstrings, ankles, lower back, and hips can increase a player's potential to be explosive. Flexibility is best accomplished by performing all strength training movements through a full range of motion, as well as performing dynamic flexibility exercises before every workout or practice.

The days of sitting on the ground and static stretching are over! In addition to improving flexibility, dynamic flexibility exercises assist in developing coordination and motor ability – both of which are attributes that help improve a player's explosiveness.

Plyometrics

Plyometrics — plyos for short — is a type of exercise that trains muscles to produce power (strength + speed). Plyometric exercises involve a stretch of the muscles,

immediately followed by a contraction of the same muscles — which is why it's sometimes referred to as “jump training.” While strength training mostly creates nervous system and muscular adaptations to get stronger, plyometric exercises will help improve explosiveness — our ability to generate maximum force in a minimum time. Picture a sprinter taking off at the starting line, or an Olympic long jumper jumping from stillness, they both need explosive power to do what they do. Plyometrics is an important component of most professional sports performance training as it focuses on the “speed” component of power.

Plyometrics are exercises that usually involve some form of explosive movement such as jumping, hopping, or bounding for the lower body, as well as some type of swinging, pushing, and throwing for the upper body. Plyometrics are designed to increase power, coordination, balance and quickness.

If you go to the gym, you probably noticed a few wooden boxes or metal platforms stacked beside other sports equipment. Plyometrics exercises often use these types of props to jump on and down from to promote a greater extension of muscle fibers.

Plyometric exercises include vertical and broad jumps, where you jump as high and/or as far as possible. Skipping rope, jumping squats, single leg hopping and clapping push-ups are also great examples of plyometric exercises.

Again, attempts should be made to reduce as much impact and orthopedic stress as possible. That is, try and use soft training surfaces, make sure your players are wearing proper footwear, and know that when it comes to plyometric training, more is not necessarily better.

Squat jumps, broad jumps, lateral bounds, and box jumps are some common plyometric exercises used to increase a basketball player's explosiveness. As mentioned before, when performing box jumps, it is highly recommended that players jump onto the boxes only; they should walk down off of the boxes to eliminate as much impact as possible.

It is important to note that these exercises should be performed when players' legs are fresh; they should be done before a strength training workout if both workouts are being performed one after the other.

Smart plyometric training will improve your speed and power, all while improving your coordination and agility too. With a smart and specific training plan, you can get faster when you sprint, jump higher during basketball games, change directions quickly on the soccer field or return tennis serves every time.

Most athletes are not blessed with supernatural ability. The great majority must work hard to reach their goals.

If you want to improve your basketball skills over time, take advantage of opportunities to train with plyometrics. Plyometrics involve stretching the muscles before quickly contracting them to generate power.

When used properly, plyometrics for basketball can help you develop a solid strength base, increase your vertical jump, improve your speed on the court and hone your ability to decelerate.

When beginning basketball plyometric training, you must progress slowly in order to avoid injury. Start by performing jumps with both legs and advance to single-leg jumps after you have developed sufficient strength and coordination.

One of the most common mistakes with basketball plyometrics is “jumping” into them too fast, before your body is ready. Here is a sample plyometric progression, which you should only attempt to implement over time.

Why plyometric exercise is important for basketball players

1. Improve Explosiveness, Jump Height & Athleticism

As you can imagine, basketball and most sports are inherently explosive in nature. From dunking on your opponent, sprinting down the floor, or playing lockdown defense, explosiveness is everywhere in basketball! As a result, to become more explosive and athletic, you need to be training aspects of your mind and body.

Research has demonstrated that plyometric training has transferred over well to sport by improving one's jump height, sprint time, and change of direction. This is accomplished by improving your rate of force development, decreasing ground contact time, and optimizing the stretch-shortening cycle. More simply, plyometric training improves your body's ability to produce force more quickly and efficiently.

2. Improve Your Skill of Jumping

Like dribbling, shooting, and passing, jumping is a skill. Moreover, improving your skill of jumping with enhance your jump and overall performance. One of the first priorities of a jump is to achieve full triple extension. Triple extension is achieving a position, in which your ankles, knees, and hips are in one straight line. For example, think about sprinting or jumping to touch the rim, your legs are completely straight when you leave the ground.

Furthermore, there are many different types of jumps you perform in basketball. For example, you may be taking off two-feet or one-foot, jumping for height or distance, or doing a Euro-Step. Developing proper mechanics for each of these jumps are essential to unlocking your full potential. Consequently, depending on what your program is intended for, it's going to take a lot of skill to get the full benefit of each exercise and improve your jump performance.

Method

The purpose of the present study to find out the effect of plyometric exercises for the development of Shoulder strength and speed among Basketball players. The sample for the present study consists of 20 Male Basketball players of RTM Nagpur University out of which 10 are experimental group and 10 are controlled group. Plyometric exercises such as push-ups, medicine ball throws, hopping, bounding, tuck jumps, box jumps, dumbbell throws etc., were given to experimental group on alternate days i.e., three sessions per week and controlled group were given the general training for six weeks. Pre Test and Post Test were conducted in pull-ups to measure the shoulder strength and 30 m run to measure the speed among experimental group and controlled group. The Basketball player weight categories is from 50 kg to 80 Kgs.

Result

This results of the study shows that due to the plyometric training there is a improvement of experimental group in the Shoulder strength and Speed and controlled group is decreased in performance of shoulder strength and speed due to the general training.

Table 1: Mean Values of 30 M Run test Between Experimental and Control Groups of Basketball Players

Variables	Group	Pre Test Mean	Post Test Mean	t	P - Value
30 M Run Test	Experimental	4.53	4.23	2.58	0.000
	Control	4.66	4.73		

The Experimental Group of 30 M Run Men is 4.53 in Pre Test and Controlled Group mean is 4.66 in Pre Test there is a difference of 0.13 in Pre Test. The Experimental Group Mean is 4.23 in Post Test and Controlled Group mean is 4.73, the Experimental Group mean in Post Test in 30 M Run is decreased from 4.53 to 4.23 there is an improvement of 0.30 from Pre Test to Post and Control Group Mean is post test is 4.73 there is a increase of 4.66 to 4.73 from Pre Test to Post, the performance is come down to 0.07 in the controlled group. Due to the Plyometric Training the Experimental group has improved a lot.

Table 2: Mean Values of Pull-Ups Test Between Experimental and Control Groups of Basketball Players

Variables	Group	Pre Test Mean	Post Test Mean	t	P - Value
Pull-ups	Experimental	10.00	13.50	6.19	0.000
	Control	10.10	10.00		

The Experimental Group of Pull ups in Pre Test is 10.00 and Controlled Group mean is 10.10 in Pre Test there is a difference of 0.10 in Pre Test. The Experimental Group Mean in Pull Ups Test is 13.50 in Post Test and Controlled Group mean is 10.00, the Experimental Group mean in Post Test in Pull ups Test is improved from Pre Test 10.00 to Post Test 13.50 and Control Group Mean is post test is 10.00 there is a decrease in the performance from 10.10 to 10.00. The Experimental Group has improved due to Plyometric exercises in Pull-ups Test and Controlled Group is decreased due to general training.

Conclusion

Basketball game demands explosive strength, speed and agility. Explosive power is a combination of speed, muscular endurance and muscular strength, all of which can be developed through plyometric exercises. In a speed sport like Basketball overall body strength, agility and great speed provide distinct advantage. It is concluded that due to plyometric exercises there will be improvement in shoulder strength and speed among Basketball players.

Recommendations

Similar Studies can be conducted on Women Basketball Players and other sports and games.

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