



HOW TO DEVELOP POWER—A LOOK INTO THE PREPARATION OF A 2015 NBA 2ND ROUND DRAFT PICK

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NEED

After the completion of a grueling season, one that included an Elite 8 appearance in the National Collegiate Athletic Association (NCAA) Division I national basketball tournament and an invite to another post-season tournament, a college basketball player came to me with roughly five weeks of time to train prior to the National Basketball Association (NBA) Combine. The NBA Combine is a multi-day event where amateur basketball players are subjected to physical measurements, basketball skill drills, medical evaluation, and specific tests in an effort for team executives and scouts to determine each player's potential for being successful in the NBA.

Below is the list of tests that are featured at the NBA Combine (1):

- Standing Vertical Jump
- Max Vertical Jump
- Lane Agility
- Three Quarter Court Sprint
- Shuttle Run
- 185 lb Bench Press for Maximum Repetitions

After meeting with this athlete, we determined that his goal for the NBA Combine was to show the scouts that he was athletic enough to play in the NBA. This goal translated into showing he had the ability to create his own shot, cover a very athletic

shooting guard, and get his shot off. Knowing the athlete's baseline tests and the requirements of the Combine, we decided that his training needed to focus on improving his overall explosiveness. We designed a five days per week, five-week program with the major goal of improving power. The following is the training program used to prepare this athlete for the NBA Combine.

PROGRAM DESIGN PHILOSOPHY

Researchers have shown that resistance training can improve strength, which can translate to more explosiveness for basketball players (7,8,9). Therefore, based on the needs of this athlete, we decided to break down the training to five days per week. Two days per week would primarily focus on explosive movements with single-leg strength as the secondary focus, two days per week would focus on explosive movements where we would isolate the hips without jumping and focus on lower body strength development using both legs, and the other day would focus on recovery and mobility.

Due to the time it would take to teach weightlifting lifts (Olympic-style), and the lifting experience of this athlete, we decided he would not perform any clean or snatch variations during this program. This is not intended to devalue weightlifting or prescribe against the use of those lifts in general. The limited time before the Combine (5 weeks) and inexperience with those lifts while in college determined that the learning curve was going to be

too much to overcome in too short of a period for this athlete. In other words, the risks of incorporating Olympic-style lifts in such a short time did not outweigh the potential rewards, so we instead focused on other exercises through this 5-week program.

WARM-UP

Dynamic warm-ups have been shown to improve flexibility and improve jumping performance (5,6). Based on this athlete's needs, the dynamic warm-up emphasized glute activation and hip flexor engagement exercises. The glute activation segment of the dynamic warm-up included the following exercises:

- Mini Band Monster Walks (15 yards each direction)
- Speed Band Knee Outs (1 x 15)
- Double-Leg Hip Thrusts (1 x 15)
- Single-Leg Hip Thrust Holds (60 s hold)
- Fire Hydrants (1 x 15)
- Clams (1 x 10 per side)
- Toe Down Lateral Leg Raises (1 x 10 per side)

We conducted the above dynamic warm-up, inclusive of glute activation, each day. Based on the time constraints, there was not much opportunity or need to progress this athlete's warm-up regimen.

TRAINING

During the explosive training days, this athlete would spend the majority of time doing work on an accommodating variable pulley training system, which features a platform and multiple pulleys with band attachments to vary resistance. Using the arm bands helped develop arm swing velocity, which can enhance an athlete's vertical jump performance (10,11). A benefit of an accommodating variable pulley training system is that it can simultaneously train explosive leg power and arm swing velocity by loading both the legs and arms while jump training. This feature allows athletes to train multiple factors of vertical jump performance (3). The program for this athlete is described below.

DAY 1

Set 1

- Double-Leg Vertical Jump with Red Bands
 - » 4 reps with a brief pause followed by 4 continuous reps
- Single-Leg Vertical Jump with Red Bands
 - » 3 reps on each leg with a brief pause
 - » Followed by a set of 2 bodyweight contrast double-leg jumps

Set 2

- Double-Leg Vertical Jump with Silver Bands on the hips and arm bands for upper body resistance
 - » 4 reps with a brief pause followed by 4 continuous reps
- Single-Leg Vertical Jump with Red Bands (arm bands off)
 - » 3 reps on each leg with a brief pause
 - » Followed by a set of 2 bodyweight contrast double-leg jumps

Set 3

- Double-Leg Vertical Jump with Red and Silver Bands and arm bands for upper body resistance
 - » 4 reps with a brief pause followed by 4 continuous reps
- Single-Leg Vertical Jump with Red Bands (arm bands off)
 - » 3 reps on each leg with a brief pause
 - » Followed by a set of 2 bodyweight contrast double-leg jumps

Researchers have shown that jumping ability can be improved through loaded plyometric exercises (4). Therefore, the athlete next performed plyometric exercises. We used the Dumbbell (DB) Vertical Jump to activate the hips with an external load. Without the use of an arm swing to assist in power development, this exercise is well suited to train the hips to move as fast as possible. In this program, the athlete would do 2 sets of 6 reps while holding 20-lb DBs, and then finish with a contrast set of two bodyweight vertical jumps incorporating the arms into the jumps. A contrast set is a set of high/heavy resistance lifts/exercises, followed immediately by performance of an explosive exercise using the same movement pattern.

Following the plyometric exercises, the athlete used a pneumatic squat machine for explosive squats (this machine is a pneumatic apparatus that measures power during a squat or similar movement). This machine provides information on the power output for every rep, which gives real time data as to the quality of each rep. This athlete would do 6 sets of 3 reps with a brief pause in between each rep. By only doing three singular reps for every set, the intention was to get the fast twitch muscles to activate at their highest capacity during each rep.

The explosive portion of day 1 was complete after the squats. The athlete then performed a variety of single-leg strength exercises (e.g., single-leg squats, rear foot elevated split squats, lunges, step-ups) paired with a hamstring-specific exercise (e.g., seated single-leg resistance band leg curls, single-leg hip thrusts, glute ham raises, hamstring slideboard leg curls). We designed the program to achieve muscle balance between the quadriceps and hip flexors and the hamstrings and gluteal muscles.

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DAY 2

The second day of this program started with kettlebell swings to activate the hips to help develop explosive strength. Kettlebell swings have been shown to improve maximal and explosive strength (2). Kettlebell swings are also an effective method to train explosiveness while limiting stress on the joints from repeated jumping. This was especially important for this athlete throughout the 5-week period because he was spending numerous hours on the court working on his basketball skills, which involved a lot of jumping.

The second day also focused on strength exercises. We progressed this athlete to deadlifts after the kettlebell swings. The deadlift was an effective exercise to strengthen the muscles of the hips and knees. To perform the deadlift, the athlete's hips and the legs (more specifically, the muscles that extend the knees and the hips) generate force to overcome the load. The deadlift is an effective exercise at activating the muscles of the legs, hips, back, and arms, which are all strengthened with progressive loads. Although some coaches use special or isolated exercises to train these multiple muscle groups, the deadlift is particularly useful because of the multiple muscle groups involved.

DAY 3

This day of training focused primarily on active recovery, mobility, and flexibility. Rest and recovery are vital to making sure each training day is maximized to its fullest. It was important to provide an opportunity for active recovery knowing that this athlete had on-court sessions after each one of these workouts. Recovery was dictated by several factors, including the athlete's self-perceptions each day and the training schedule.

DAY 4

The fourth day started with a concentration on single-leg strength and explosive work. The pneumatic squat machine was used for explosive single-leg squats, but with a much lighter resistance than on Day 1. For the single-leg squats, he performed three reps per set for each leg, with a brief pause in between each rep. The resistance increased progressively through the five weeks.

DAY 5

The fifth day began with a focus on isolating the hip flexor and training it dynamically. The athlete would perform explosive knee-ups while attached to the accommodating variable pulley training system, which ensured the isolation of the hip flexor and trained it to activate as fast as possible.

This training day was also a squat day, so this athlete performed squats in the pneumatic squat machine. The program utilized pause squats, in which the athlete squatted down to parallel, paused for a one count, and then exploded up to full extension of the hips and knees. This type of squat was selected rather than the barbell squat because it can potentially lead to jumping improvement while allowing the athlete to concentrate fully on hip speed without having to worry about losing control or posture.

There was still a focus on power output, but it was treated as more of a strength exercise where with the resistance much higher.

SUMMARY

As one can see, the two main strength exercises of this 5-week program were deadlifts and squats. All other strength exercises were single-leg variations. Every basketball player has a dominant leg and it was a goal of this program to get the non-dominant leg developed as equally as the dominant leg. By doing this, the program effectively made the athlete a better double-leg jumper while limiting the potential for injury. Two days per week were spent doing exercises in which the athlete was jumping, one day concentrated on extension while limiting the number of ground contacts from the use of kettlebell swings, and the other day isolated the hip flexor, which limited the number of ground contacts.

Since five weeks is not a lot of time to prepare for such an important event, the need to maximize every minute of training was vital. It was also important to understand how much time the player was spending on the court working on basketball skills during preparation in order to maximize gains and avoid overtraining.

Finding the appropriate balance between plyometrics, strength, and explosive work where the hips could be activated without jumping was a challenge. In the end, this athlete increased his max vertical jump by seven inches, recorded a 2015 NBA Combine best 44-in. max vertical jump, and was selected in the 2nd round of the NBA Draft.

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ABOUT THE AUTHOR

Erik Kaloyanides is considered one of the nation's leading experts in athletic performance and strength and conditioning. In 2015 alone, he was responsible for training 10 players who signed National Football League (NFL) contracts, a 2nd round National Basketball Association (NBA) draft pick, and a 1st round Major League Baseball (MLB) draft pick. Kaloyanides focuses his training on developing explosiveness and speed. He is the President and Founder of Athletic Evolution CrossFit, EK Performance, and 5 Star Academies. Kaloyanides is certified by the National Strength and Conditioning Association (NSCA) as a Certified Strength and Conditioning Specialist® (CSCS®). He also has his CrossFit Level 1 certification and is a Nike Trainer. Kaloyanides is a former scholarship football player for Syracuse University, where he holds degrees in finance and marketing.

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