

## Right-Sized Plyo Platform Set

Item #18239



- **Overview.** Perfect for all sizes and abilities! These smaller heights are great for teaching younger and smaller participants the benefits of plyometric jumping exercises that increase speed, explosive power and strength. The Right-Sized Plyometric Set includes four platforms: 6”H with 11”sq. top; 10”H with 13”sq. top; 14”H with 16”sq. top; and 18”H with 21”sq. top. The steel frames are stable, have non-skid platforms, and nest for easy storage.
- **What Are the Educational Applications?**
  - Power and strength are integral components of fitness found in almost all physical activities. Plyometric exercises are specialized, high intensity training techniques used to develop athletic power (strength and speed). Plyometric training involves short bursts of explosive muscular contractions that stretch the muscle before it contracts so that it contracts with greater force, which in turn builds muscle strength. The goal is to create the greatest amount of force in the shortest amount of time, resulting in stronger muscles and improved athletic performance.
  - Plyometrics should be specific and match the movements encountered during competition. Therefore, a volleyball player interested in increasing vertical jump height should focus on lower body plyometrics. A javelin thrower, whose goal is to improve his launch, should focus on leg thrust plyometrics.
  - Plyometric exercises improve resiliency in the joints and soft tissue and train students how to absorb shock better and sustain repetitive contractions over time (e.g. continuous jumping for a rebound in basketball).
  - Plyometrics reduces lower-extremity injuries in team sports when combined with other neuromuscular training (i.e. strength training, balance training, and stretching).
- **How Can I Use This Product With My Students?**
  - **Where:** Indoors or outdoors.
  - **Age:** Seven years through adult.
  - **Group Size:** One person per plyometric platform.
  - **Basic Skills Needed:** Jumping, hopping and bounding.
- **Set Up/Instructions:**
  - Warm up with 5-10 minutes of light aerobic activity followed by 5-10 minutes of stretching to all major muscle groups.
  - The focus must always be on quality and not quantity. Therefore, do not perform too many repetitions in any one session. Students new to plyometrics should start with low intensity exercise. As a student gets stronger, s/he can move to higher intensity exercises. When doing so, lower the number of sets and repetitions because higher intensity exercises are far more stressful on the body than low intensity exercises. Furthermore, plyometric exercises should be performed at high speed and with maximum intensity while maintaining high quality. For example, in jumping exercises, as the feet touch the ground the student should explode upwards rapidly. Don't sink into a deep squat - minimize ground contact time.
  - Allow two days (for low intensity) to three days (high intensity) between plyometrics sessions.
  - Tell students to wear well-cushioned shoes that are stable and can absorb impact when participating in plyometric exercises. In addition, have the students land on grass or panel mats (not crash mats) to help reduce the impact upon landing.

- The most important aspect of a safe and effective plyometric program is teaching safe landing. Students land softly on their toes and then allow the heels to contact the floor. The other key to proper landing is to avoid any twisting or sideways motion at the knee.

## The Games/Activities

### **BEGINNER (LOW IMPACT) LOWER BODY ACTIVITIES**

Platform drills involve maximal efforts to improve anaerobic power. Exercises should not be thought of as cardio-respiratory conditioning but as power training. Because of this, complete and adequate recovery is required.

Recovery for jumps may consist of 5 to 10 seconds of rest between repetitions (each ground contact is one rep) and 2 to 3 minutes between sets (whether it be for the same activity or moving to a different activity). Rest between each repetition is needed to allow the neuromuscular system to recover. Remember, the idea is not become fatigued.

Always stress good form.

#### • **Activity #1: Lateral Step-Up**

- a. Objective: To increase muscular power in the lower body.
- b. NASPE Standard: 1, 3, 4
- c. Set Up: Use one developmentally appropriate sized plyo platform per student.
- d. How to Play:
  1. Students stand to the side and next to the plyo platform with the closest foot on the platform and the outside foot planted on the ground.
  2. Use the leg on the platform to raise the body into the air until the leg on the platform becomes fully extended.
  3. Return to the starting position and repeat.
  4. Never push off the ground with the outside foot. Only use the bent leg to do all the lifting.
  5. Perform exercise alternating legs.
- e. Extensions:
  1. EASIER: Decrease platform height.
  2. HARDER: Increase the height of the plyo platform.

#### • **Activity #2: Alternating Push-Off**

- a. Objective: To increase muscular power in the lower body.
- b. NASPE Standard: 1, 3, 4
- c. Set Up: Use one developmentally appropriate sized plyo platform per student.
- d. How to Play:
  1. Stand facing the plyo platform with the left foot on the platform, close to the left edge of the platform, and the right foot on the ground.
  2. Use the left leg to raise the body up onto the plyo platform. In addition, swing the arms to provide momentum in raising the body onto the plyo platform.
  3. Return to the starting position.
  4. Perform steps 2 and 3 using the right foot to raise the body onto the plyo platform and the left foot stepping onto the ground.
  5. Continue activity alternating feet each time.
- e. Extensions:
  1. EASIER: Decrease platform height.
  2. HARDER: Increase the height of the plyo platform.
  3. HARDER: Stand facing the plyo platform with the left foot on the platform and the right foot on the ground. Use the left leg to raise the body up onto the platform swinging the arms for extra momentum. When at full left leg extension, and ready to come back down to starting position, switch feet so the right foot is on the box and the left foot lands on the floor.
  4. HARDER: Stand to the right side of the platform with the left foot on the platform. Using the arms for momentum, push up with the left leg and jump over the platform, landing with the right foot on top of the platform and the left foot on the floor. This exercise must be performed in one continuous motion, back and forth over the platform.
  5. HARDER: Perform same activity from the side of the platform (lateral push-offs).

• **Activity #3: Front Jump to Platform**

- a. Objective: To increase muscular power in the lower body.
- b. NASPE Standard: 1, 3, 4
- c. Set Up: Use one developmentally appropriate sized plyo platform per student.
- d. How to Play:
  1. Stand on the floor facing the plyo platform with feet shoulder width apart and hands behind the head.
  2. Jump up and land softly with both feet on the plyo platform.
  3. Step back down of the platform and repeat.
- e. Extensions:
  1. EASIER: Have arms starting at the sides and swing them in an upward motion when jumping up to provide additional upward momentum.
  2. EASIER: Decrease platform height.
  3. HARDER: Increase the height of the plyo platform.
  4. HARDER: Jump immediately backwards into the start position instead of stepping back down.
  5. HARDER: Hop (one foot) down from the platform and immediately jump back onto it with two feet.
  6. HARDER: Jump up onto box from the side (lateral jump rather than front/head on) and step down after lateral jump.

• **Activity #4: Front Jump From Platform**

- a. Objective: To increase muscular power in the lower body.
- b. NASPE Standard: 1, 3, 4
- c. Set Up: Use one developmentally appropriate sized plyo platform per student.
- d. How to Play:
  1. Stand on the platform with feet shoulder width apart, toes close to the edge.
  2. Squat slightly and step off from the platform and land on the floor.
  3. Land softly on the toes and roll through the heels. Avoid twisting when landing, keeping the knees in line with the toes. Try to “freeze” (hold position without moving) as soon as contact is made with the ground.
- e. Extensions:
  1. EASIER: Decrease platform height
  2. HARDER: Instead of “freezing” upon landing, jump straight up into air toward a marker (e.g. basketball rim).

• **Activity #5: Standing Jump Over**

- a. Objective: To increase muscular power in the lower body.
- b. NASPE Standard: 1, 3, 4
- c. Set Up: Use one developmentally appropriate sized plyo platform per student.
- d. How to Play:
  1. Stand on the floor facing the plyo platform with feet shoulder width apart.
  2. Bending only at the hips, bring the knees up to jump over the plyo platform.
  3. Do not let the knees turn sideways or move apart to clear the platform.
  4. The body should remain in a straight line.
  5. Turn to face the platform and jump back over.

**BEGINNER (LOW IMPACT) UPPER BODY ACTIVITIES**

• **Activity #6: Ball Push**

- a. Objective: To increase muscular power in the upper body.
- b. NASPE Standard: 1, 3, 4
- c. Set Up: Use one developmentally appropriate sized plyo platform per student; and one developmentally appropriate ball per student (lighter balls for beginners with reduced strength: playground ball, volleyball, etc.; heavier ball for intermediate/stronger students: basketball, etc.).
- d. How to Play:
  1. In partners: one partner lays on the ground face up with his/her head 1’ away from the platform; the other partner stands on top of the platform holding the developmentally appropriate ball over the partner lying on the ground.
  2. The platform partner drops the ball down towards the chest of the partner lying on the ground, who then catches the ball (pre-stretch) and immediately throws it back up to the platform partner.
  3. Switch positions after approx. 10 reps.

e. Extensions:

1. EASIER: Decrease platform height, or remove it altogether.
2. HARDER: Increase platform height.

• **Activity #7: Upper Body Altitude Drop**

a. Objective: To increase muscular power in the upper body.

b. NASPE Standard: 1, 3, 4

c. Set Up: Use one developmentally appropriate sized plyo platform and one panel mat per student

d. How to Play:

1. Start from a push-up position on the platform.
2. Drop off to the side of the platform and land on the panel mat keeping elbows bent no more than  $\frac{1}{4}$  range.
3. Perform 3-4 reps per set.
4. Never increase the box height above the height that allows you to land with minimal arm bend.

**INTERMEDIATE/ADVANCED (HIGH IMPACT) LOWER BODY ACTIVITIES**

Recovery for jumps consists of 5 to 10 seconds of rest between repetitions (each ground contact is one rep) and 5 minutes between sets (whether it be for the same activity or moving to a different activity). Rest between each repetition is needed to allow the neuromuscular system to recover. Intermediate/advanced students should use the following repetition guidelines:

- Intermediate: 100-120 reps (ground touches) for each muscle group in each session (as time permits).
- Advanced: 120-140 reps (ground touches) for each muscle group in each session (as time permits).

• **Activity #8: Depth Jump**

a. Objective: To increase muscular power in the lower body.

b. NASPE Standard: 1, 3, 4

c. Set Up: Use one developmentally appropriate sized plyo platform per student.

d. How to Play:

1. Begin by standing on the plyo platform.
2. Instruct students not to jump but step off the platform and land on both feet.
3. As soon as the feet make contact with the ground, students jump straight up into the air and land on plyo box (make ground contact as short as possible).

e. Extensions:

1. EASIER: Decrease platform height.
2. HARDER: Increase the height of the plyo platform.
3. HARDER: Use 2 platforms of equal height placed 2-4 feet apart. Stand on one platform, toes close to the front edge, feet shoulder width apart facing the second platform. Step off of the platform, landing on both feet and jump onto the second platform, landing lightly. The jump from the ground should be as quick as possible.
4. HARDER: Use 2 platforms of different heights placed 2-4 feet apart. Stand on the shorter platform. Perform same steps as #2 above.
5. HARDER: Use one platform and a hurdle or cone (something 6+” high based on developmental appropriateness) placed 3 feet apart. Start by standing on the platform. Students step off the platform and upon landing, jump over the hurdle/cone.

• **Activity #9: 360 Depth Jump**

a. Objective: To increase muscular power in the lower body.

b. NASPE Standard: 1, 3, 4

c. Set Up: Use one developmentally appropriate sized plyo platform per student.

d. How to Play:

1. Begin by standing on the plyo platform.
2. Step off the platform and land on both feet.
3. Immediately jump straight up into the air and perform a 360° turn while in the air, landing again on both feet.

e. Extensions:

1. EASIER: Decrease platform height.
2. HARDER: Increase the height of the plyo platform.
3. HARDER: Use 2 platforms of equal height placed 2-4 feet apart. Step off the platform, landing on both feet, perform the 360° turn in the air and land on top of the second platform.

4. HARDER: Use 2 platforms of different heights placed 2-4 feet apart. Stand on the shorter platform. Perform same steps as #2 above.
5. HARDER: Use one platform and a hurdle or cone (something 6+” high based on developmental appropriateness) placed 3 feet apart. Start by standing on the platform. Students step off the platform, perform the 360° turn in the air and jump over the hurdle/cone, landing on the other side of the hurdle/ cone.

• **Activity #10: Squat Depth Jump**

- a. Objective: To increase muscular power in the lower body.
- b. NASPE Standard: 1, 3, 4
- c. Set Up: Use one developmentally appropriate sized plyo platform per student.
- d. How to Play:
  1. Begin by standing on the plyo platform in a quarter-half squat, toes close to the edge.
  2. Instruct students to step off the platform and land in a 90° squat position on both feet.
  3. Upon landing, students explode out of the squat (jumping straight up into the air) and land again in a squat on the platform.
  4. The jump from the ground should be as quick as possible.
- e. Extensions:
  1. EASIER: Decrease platform height.
  2. HARDER: Increase the height of the plyo platform.
  3. HARDER: Use 2 platforms of equal height placed 2-4 feet apart. Stand on one platform, toes close to the front edge; feet shoulder width apart facing the second platform in the squat position. Step off of the platform, landing on both feet in a squat position and jump onto the second platform, landing lightly in a squat position. The jump from the ground should be as quick as possible.
  4. HARDER: Use 2 platforms of different heights placed 2-4 feet apart. Stand on the shorter platform. Perform same steps as #2 above.

• **Activity #11: Single Leg Depth Jump**

- a. Objective: To increase muscular power in the lower body.
- b. NASPE Standard: 1, 3, 4
- c. Set Up: Use one developmentally appropriate sized plyo platform per student.
- d. How to Play:
  1. Begin by standing on the plyo platform.
  2. Step off the platform and land on the right foot.
  3. Then hop straight up into the air as high as possible, landing on the platform on the same foot (right foot).
  4. Keep ground contact as short as possible.
  5. Repeat same steps as above for the next repetition, but land on and take off from the left foot.
- e. Extensions:
  1. EASIER: Decrease platform height.
  2. HARDER: Increase the height of the plyo platform.
  3. HARDER: Use 2 platforms of equal height placed 2-4 feet apart. Instead of hopping into the air, hop onto the second platform.
  4. HARDER: Use 2 platforms of different heights placed 2-4 feet apart. Stand on the shorter platform. Perform same steps as above.

**INTERMEDIATE/ADVANCED (HIGH IMPACT) UPPER BODY ACTIVITIES**

• **Activity #12: Medicine Ball Push**

- a. Objective: To increase muscular power in the upper body.
- b. NASPE Standard: 1, 3, 4
- c. Set Up: Use one developmentally appropriate sized plyo platform per student; and one developmentally appropriate weighted medicine ball per student.
- d. How to Play:
  1. In partners: one partner lays on the ground face up with his/her head 1’away from the platform; the other partner stands on top of the platform holding the developmentally appropriate weighted medicine ball over the partner lying on the ground.
  2. The platform partner drops the ball down towards the chest of the partner lying on the ground, who then catches the ball (pre-stretch) and immediately throws it back up to the platform partner.

3. Switch positions after approx. 10 reps.

e. Extensions:

1. EASIER: Decrease platform height, or remove it altogether.
2. HARDER: Increase platform height.

• **Activity #13: Upper Body Depth Jumps**

a. Objective: To increase muscular power in the upper body.

b. NASPE Standard: 1, 3, 4

c. Set Up: Use two developmentally appropriate sized plyo platform of equal height per student; one panel mat per student.

d. How to Play:

1. Set platforms up on the panel mat.
2. Students position themselves in a push-up position in between the platforms with one hand placed on each platform.
3. Students slightly push off the boxes so they land with their hands in between the platforms.
4. As soon as the students make contact with the ground, tell them to try to relax and 'bounce' back up placing their hands on each original platform, minimizing the ground contact time as much as they can.
5. Keep doing this in a rhythmic motion for about 5-10 reps per set.

e. Extensions:

1. EASIER: Decrease platform height.
2. HARDER: Increase the height of the plyo platform.
3. HARDER: Use 2 platforms of equal height placed 2-4 feet apart. Step off the platform, landing on both feet, perform the 360° turn in the air and land on top of the second platform.
4. HARDER: Use 2 platforms of different heights placed 2-4 feet apart. Stand on the shorter platform. Perform same steps as #2 above.
5. HARDER: Use one platform and a hurdle or cone (something 6+” high based on developmental appropriateness) placed 3 feet apart. Start by standing on the platform. Students step off the platform, perform the 360° turn in the air and jump over the hurdle/cone, landing on the other side of the hurdle/cone.



• **Safety Issues & Concerns:** Plyometrics are not inherently dangerous, but the highly focused, intense movements used in repetition increase the potential level of stress on joints and musculo-skeletal system that increases the chance of injury. Therefore, the following safety precautions should be followed.

- Since higher than normal forces are put on the musculo-skeletal system during plyometric exercises, students need to have participated in strength and endurance training prior to plyometric training.
  - **To test to see if the student is strong enough:** Before starting plyometrics, experts state students new to plyometrics need to be able to lift 1.5 times their bodyweight for one repetition.
  - **To test to see if the student is fast enough:** Chu (2008) recommends that a participant perform five repetitions of the squat exercise at 60% of his/her bodyweight.
  - **To test to see if the student has proper balance:** Three balance tests include one standing (double-leg and/or single-leg), two quarter squat (double-leg and/or single-leg), and/or three half squat (double-leg and/or single-leg) with each test position held for 30 seconds without falling. However, less intensive plyometric exercises can be incorporated into general circuit and weight training during the early stages of training to progressively condition the student. Simple plyometric drills such as skipping, hopping and bounding should be introduced first.
- Experts (Lohman, 1989) suggest it is developmentally appropriate for students as young as seven years old to perform low intensity plyometric exercises. However, plyometric exercises are stressful on the joints, tendons, central nervous system (CNS), and muscles. Therefore, preadolescent and adolescent students must avoid high intensive plyometric exercises (e.g. depth jumps) because they have immature bone structure.
- Tell students to “listen to their body.” If/when they feel fatigued, they need to reduce the amount of sets and/or reps and/or intensity or stop the session altogether because their technique will suffer which will drastically increase the possibility of injuries.
- Students must be instructed on proper technique before starting plyometrics. They should be well rested and free of injury in any of the limbs.

- Do not try to increasing the load by adding additional weight like wearing weighted vests or ankle weights. Too great a load reduces the speed and quality of movement negating the effects of plyometrics.
- Plyometric training will not leave students out of breath or tired. Students often want to do more. Don't allow this because (1) the chance for injury increases and (2) students will experience severe muscle soreness up to 34 hours later!
- Subjects weighing more than 220 pounds are generally more likely to be at risk for injury with plyometric exercises. The heavier subject will have greater stresses placed on the bones and joints increasing the risk of injury. In addition to weight, the structure of joints and previous injuries should be examined before beginning a plyometric program. Persons with injuries or abnormalities of the spine, legs, knees, etc. have an increased risk of injury during platform drills and should use extreme caution when participating in these activities (Baechle, Earle, 2000).
- Research has yet to determine an optimal plyometric training program length. Most programs range from 6 to 10 weeks. Vertical jump height improves as quickly as 4 weeks after beginning a plyometric training program. (Baechle, Earle, 2000; Sporting Excellence Ltd, 2008).
- Teachers need to pay close attention to monitor and ensure proper technique. Jumping exercises are not necessarily dangerous when performed correctly, but poor technique may predispose a participant to injury (Baechle, Earle, 2000).
- Determining which height to use:
  - Measure the height reached with a standing vertical jump (SVJ).
  - Perform a depth jump for height off a 14" platform and try to beat the SVJ height reached.
  - If the student did not reach the same height, attempt from the next lowest platform height and then attempt again. If the student beat the SVJ height, increase to the higher platform and try again.

### Meets These NASPE Standards

1. Demonstrates competency in motor skills and movement patterns needed to perform a variety of physical activities.
2. Demonstrates understanding of movement concepts, principles, strategies, and tactics as they apply to the learning and performance of physical activities.
3. Participates regularly in physical activity.
4. Achieves and maintains a health-enhancing level of physical fitness.
5. Exhibits responsible personal and social behavior that respects self and others in physical activity settings.
6. Values physical activity for health, enjoyment, challenge, self-expression, and/or social interaction.

### References

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Chu, D. (2008). *Basics of plyometrics*. Champaign, IL: Human Knetics

LOHMAN, T.G. (1989). Assessment of body composition in children. *Pediatr. Exerc. Sci.* 1, p. 19–30

Sporting Excellence Ltd, (2008). The physiology of plyometrics. Retrieved February 11, 2012 from <http://www.sport-fitness-advisor.com/plyometrics.html>

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**In the US:** FlagHouse, 601 FlagHouse Drive, Hasbrouck Heights, New Jersey 07604-3116 Phone 800.793.7900 201.288.7600 Fax 800.793.7922

**In Canada:** FlagHouse Canada, 235 Yorkland Blvd., Suite 105, North York, Ontario M2J 4Y8 Phone 800.265.6900 416.495.8262 Fax 800.265.6922

**International Customers:** FlagHouse, 601 FlagHouse Drive, Hasbrouck Heights, New Jersey, 07604-3116 USA Phone 201.288.7600 Fax 201.288.7887