Improving Your Vertical Leap

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Use your entire body to jump higher than ever

Every guy who's ever picked up a basketball wants to be able to dunk. But what most don't know is that high-jumping ability involves a lot more than just strong calf muscles. Incorporating the strategies of power production, pillar strength and neurological training is the key to increasing vertical jump. Do this, and soon reaching the rim won't seem as far away as it once did.

- Power production maximizes the parts of your body from which power is derived.
- Pillar strength makes sure the entire body works together during an athletic maneuver.
- Neurological training emphasizes repetitive movements, so that muscles are taught to work efficiently.

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All three of these areas are vital to increasing jumping ability.

Power Production

Traditional exercises believed to increase a person's vertical leap, specifically calf raises, don't help that much.

"A lot of the power coming from the ankle joint during a jump is actually coming from the muscles at the knee or hip joints," says Daniel Ferris, an associate professor at the University of Michigan's School of Kinesiology. That's why working overtime on the calf muscles is wasteful.

"The best jumpers aren't going to be the ones with huge calves because the calves don't do a lot of the work—they just need to be efficient in transferring the energy from the hip and knee muscles," Ferris says.

Focus on building the larger muscles in the torso, hips and upper legs. That's where most of the power is derived in a jump, according to Ferris.

Before starting an exercise regimen aimed at improving your vertical leap, it's crucial to understand the physical forces that go into jumping.

"When a person jumps, they're producing force against the ground to overcome gravity," says Chip Schaefer, the director of player development and athletic performance for the Los Angeles Lakers. As Schaefer explains, the ability to increase a production of force will result in an increase in power, which is the primary component of a lofty vertical jump.

Pillar Strength

To realize the power necessary to jump, ensure that your body's movements are in sync during exercises. After all, jumping doesn't involve just the lower body—it's a total body movement. Kevin Elsey, a performance specialist at the Athletes' Performance Institute in Phoenix, AZ, thinks of the body as a pillar, which incorporates a connection among the hips, torso and shoulders.

Elsey emphasizes that if a person had a weak muscle or poor technique at any point throughout the pillar, then energy would be wasted with every jump; it wouldn't be optimized the way it could if that person had a strong pillar.

Two major factors limit jumping ability: hip instability and poor mobility in the hips and ankles. Elsey explained that hip instability is more common and is often detected by the knees collapsing in at the onset of a jump or landing from a jump. An indication of poor hip mobility is an inability to squat before jumping, which results in using the back muscles instead of the hip flexors to jump.

Another problem can be a lack of sequencing, which is the timing of different

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body parts transferring force to one another. Elsey noted that some people will flex through their knees rather than their hips to jump. Others, rather than swing their arms upward as they jump, throw them down, which prevents different parts of the body from working cohesively to produce a sound jumping motion.

Swinging the arms can help a jump, although it doesn't provide a great impact, according to Ferris. “By swinging your arms when you jump, you could increase your jump height by 5-to-10 percent," Ferris says.

Neurological Training

"If you look at healthy young males who've been trained to jump rope for a long period of time, they tend to have much more effective recruitment of their reflex responses to landing," Ferris says. Repetition of the exercises means their muscles can work fine without much effort. They don't have to think about it too much—they can just do it. This is why exercises that require fast and powerful movements, such as box jumping, are so valuable. They help a person train neurologically, not just muscularly.

Other recommended activities include what Schaefer calls closed-chain exercises, such as leg presses, squats and lunges. They involve the feet becoming fixed on a surface, whether it's the floor or the platform of a leg-press machine. Schaefer says that open chain exercises like leg extensions aren't as effective because "it's not the way that a muscle functions."

When training for a higher vertical leap, it's all about incorporating meaningful exercises that train your muscles. Otherwise, you'll be stuck on the ground.

About the Writer

Kyle Stack still has sweet memories of dunking on 8-foot rims in middle school. He is a New York–based freelance reporter who has written for MLB.com, SI.com and *ESPN the Magazine*.