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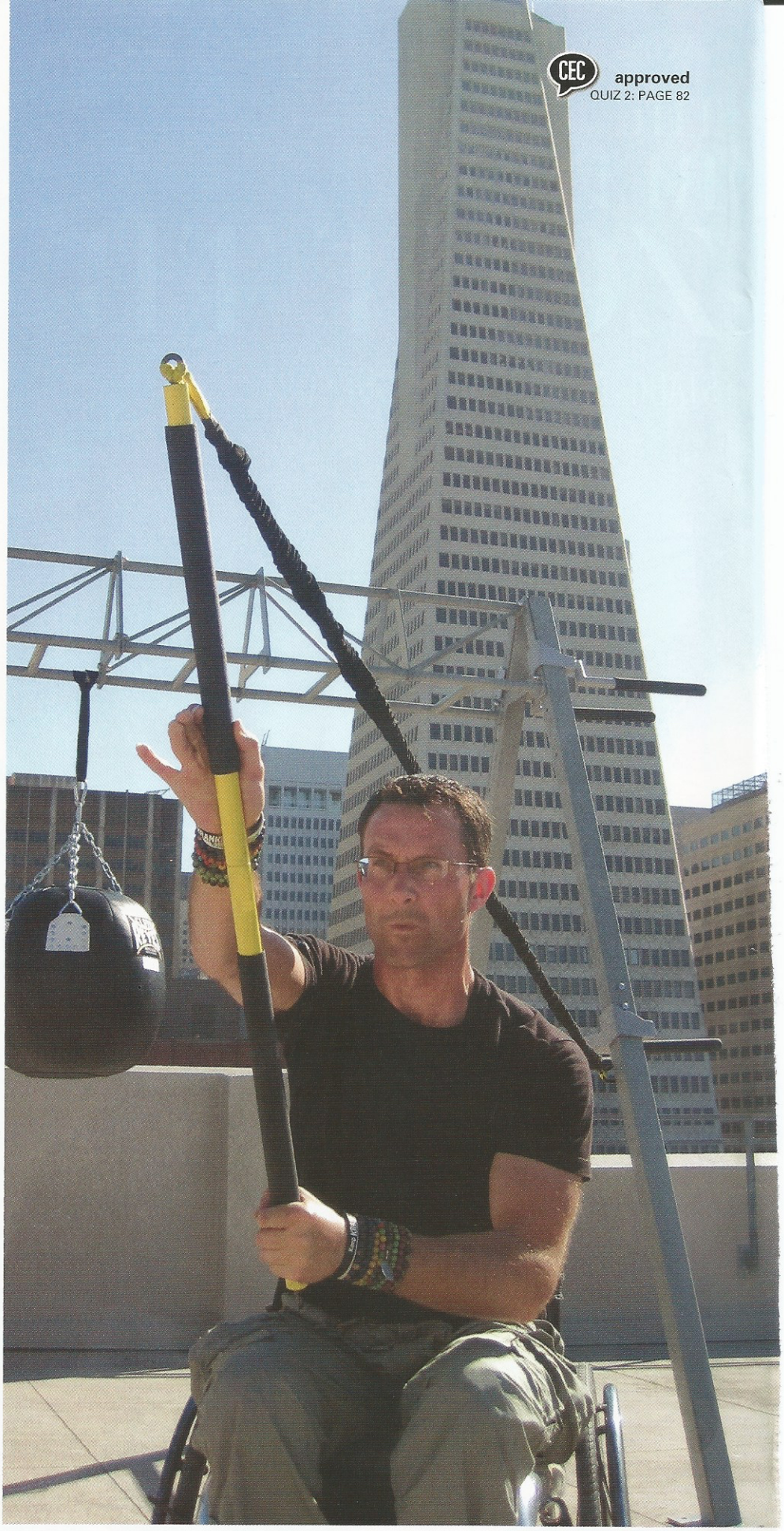

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QUIZ 2: PAGE 82

Raising the Bar

Asymmetrical bar training uses rotation to boost balance, strength and power.

Asymmetrical bar training (ABT) can help clients enhance their sense of balance while improving their core strength and rotational power.

ABT uses a rigid bar with resistance on only one end to create an unbalanced—or asymmetrical—load that introduces the transverse (rotational) plane of motion into the exercise. Picture doing a bench press on a stability ball but loading only one side of the Olympic bar. The uneven load forces the body to rotate toward the heavier side. This triggers the body's instinct to right itself and stabilize the spine, calling on core muscles to resist rotation. This antirotation is a critical component for spine health and core performance (McGill 2010).

Now imagine the same type of pressing exercise performed standing upright with the bar connected to a cable crossover machine. The horizontal angle of force and uneven load are a challenge to core strength, posture and balance, making asymmetrical bar training a unique and effective training modality.

Rotational Force Is Key

Although antirotation is critically important for activities of daily living

and sports, so is the production of rotational force. Placing a suitcase in the overhead bin or driving a golf ball are examples of generating rotational force. In an IDEA article titled "Functional Training Defined," Gary and Doug Gray (2009) identified key indicators of functional training. Because ABT engages movements in three dimensions and creates a chain reaction throughout the body, it has a functional carryover to life and sports.

Additionally, engaging in chopping and lifting patterns with an asymmetrically loaded bar is a great way to assess and treat asymmetries and can be applied to enhancing sports performance and activities of daily living (Voight, Hoogenboom & Cook 2008).

Now that you have an idea of what ABT is about, you're ready to explore multiple variations and find out why it is considered an effective training modality. By the time you've read this article, you'll be poised to incorporate ABT into your programming.

Four Main Varieties of ABT

The most common forms of ABT use one of these four types of resistance:

- pulley systems
- pneumatic devices
- elastic cords and tubing
- uneven bar loads

Let's briefly look at these types of ABT resistance, as they all have different benefits and constraints.

PULLEY SYSTEMS

Widely available in gyms, pulley system resistance simply requires a bar that connects on either end to a pulley/cable. Pulley system resistance is ideal for building strength with slow, controlled motions such as chops and lifts.

One constraint is that as speed of movement increases, it is hard to control momentum—the weight stack actually floats momentarily and then abruptly catches, creating a jerky motion that can cause injuries.

PNEUMATIC DEVICES

Pneumatic resistance allows users either to move a bar quickly through a full range of motion to enhance power, or to go slowly to build strength. These machines use an air compressor that provides a multitude of resistance levels with simple adjustments.

Unlike a pulley system—where the weight stack can "float" with speed—pneumatic resistance has negligible momentum issues, which makes for a smooth motion. Some of these systems also provide valuable feedback such as reps, power per rep and peak power. Pneumatic resistance has a few limitations: The machines are large and expensive (and hence relatively rare), and they are designed for one-on-one training rather than groups.

ELASTIC CORDS AND TUBING

Elastic resistance training uses sport cords or surgical tubing. Resistance cords come in different levels, creating a multitude of intensities. Elastic resistance allows for either slow movements for strength training or explosive and ballistic motions for power training and conditioning. A recent study showed that using elastic resistance as part of a periodization training program can enhance strength and power (Joy et al. 2013).

Another benefit of elastic resistance is its ease of portability and anchoring. For instance, devices such as the TRX® Rip™ Trainer come with a large-mouth carabiner that can be attached to any solid object. This makes it easy for trainers to anchor the device in a multitude of environments and work either one-on-one or with large groups. Facilities can also use a group training station that accommodates multiple users. One constraint to elastic resistance training is that unlike some pneumatic machines, it provides no quantitative data during the workout.

UNEVEN BAR LOADS

Uneven bar resistance is a simple way to create unbalanced loads with a traditional Olympic standard bar, e-z curl bar, etc. Users simply load one side of the bar to create an asymmetrical load.

One constraint of uneven bar training is that it is hard to address the transverse

plane of motion when kneeling or standing; for instance, chopping and striking movements are difficult to control with uneven bars.

Advantages of ABT

As mentioned at the outset, ABT is ideal for improving balance, core strength and rotational power. Let's take a look at each of these in more detail.

BALANCE

Balance, an effort to maintain equilibrium, posture and alignment (Donatelli 2011), is fundamental in daily life and sports. ABT devices challenge balance by introducing uneven forces through the upper body, integrating the entire kinetic chain. "Top-down" instability, seen in ABT, is fundamentally different from "bottom-up" instability, experienced with wobble boards, BOSU® balls, etc. Top-down connects the chain, while bottom-up focuses on primarily lower extremities and core.

Inexperienced users of ABT are first tasked with simply holding the bar in a static posture. Once users can maintain balance without movement, "perturbations" or disruptions to balance are added. Movements such as marching, changing elevation, pushing, pulling and rotating are perturbations that challenge balance and can be used as progressions when introducing ABT into training programs.

CORE STRENGTH AND ROTATIONAL POWER

ABT also helps with core strength and rotational power. Stuart McGill, PhD, a leading researcher on spine health related to exercise and sports performance, has shown that rotational loads transmitted through the lumbar spine can contribute to injury (McGill 2007). Thus, McGill introduces what he calls a "torsional buttressing" task into his core performance programming. **Torsional buttressing** is exercise that introduces rotational loads to the body, building the core strength needed to "buttress," or stabilize, the spine.

ABT is ideal for torsional buttressing, as the resistance bar offers the perfect destabilizing rotational force. In this image of an elastic-resistance ABT exercise, the user is antirotating while targeting muscles from fingers to toes (especially the core).

ABT makes sense for injury prevention, and it transfers well into performance for daily life and sport. Gray Cook's book *Athletic Body in Balance* discusses the importance of preventing "energy leaks" (Cook 2003). The old adage, "We are only as strong as our weakest link," is spot-on in describing the importance of core strength in regard to power transfer. If our core is weak, it doesn't matter how much we can squat or bench; the energy will be lost through the unstable or uncoordinated core. ABT engages the core with every exercise, enhancing balance, posture and energy transfer through the system.

ADDING SPEED TO TRAIN FOR POWER

Once ABT users demonstrate competency with antirotation and slow, controlled movement patterns, movement speed is progressively increased to train for power. Traditional power training

exercises like box jumps, clean and jerks, etc., are excellent exercises but occur primarily in the sagittal plane. However, power movements in daily life and sport (shoveling snow or hitting a golf ball) occur in multiple planes of motion and involve rotation. ABT is an efficient and effective way to incorporate rotational power training into any program. Striking exercises like a hockey slap shot can be ideal for developing rotational power.

Striking patterns are a unique combination of pushing, pulling and rotation—once described as the "serape effect" (Logan & McKinney 1970). Logan and McKinney described the serape effect as the internal and external obliques, the serratus anterior and the rhomboid muscles working together to internally summate forces during ballistic motions such as throwing or kicking. The serape effect is rarely seen in traditional linear lifts but is exaggerated with ABT striking patterns and works to enhance rotational power.

This combination of balance, core strength and rotational power provides a unique training stimulus for users new to ABT, making it a great modality to include in any strength and conditioning program.

How to Incorporate ABT Into Your Programming

Let's look at several general programming options while using an ABT system. Keep in mind that programming variables can be extremely complex and will differ in scope depending on tasks of daily living, personal history, desired goals, etc.

WARM-UP

ABT is a great way to activate the core, awaken the proprioceptive system and engage in full-range movement patterns prior to more intense exercise. Engaging in a simple marching pattern with arms extended off the chest while standing facing the anchor, facing sideways from it and facing away from the anchor for 30 seconds per side will get the system charged up and ready for action.

BLOCK TRAINING

Often, 30- to 60-minute training sessions are divided into 10-minute blocks, each with a specific focus; for instance, 10 minutes on mobility, 10 minutes on agility, etc. You can introduce ABT into this format by creating a 10-minute core-strength block to include chop and lift patterns for 2–3 sets of 8–12 reps on both sides.

POWER TRAINING

One technique widely used in power training circles is "complex training," which can be used in force development to yield an increase in power (May, Cipriani & Lorenz 2010). **Complex training** employs 1 set of a high-load exercise followed by 1 set of an explosive movement—for instance, heavy squats followed by box jumps. This concept works perfectly for ABT. Try 1 set of an isometric torsional buttressing exercise, followed by an explosive rotational striking movement. Perform 3–5 reps (each side), and repeat for 3–5 rounds.

TOTAL-BODY WORKOUT

The following is an ABT foundational movement workout that will challenge core strength, rotational power, balance and overall athleticism. I recommend performing these exercises for 30-second intervals (each side) with a 30- to 60-second rest between sets:

- squat press
- stationary lunge row
- rotation
- step-forward press
- step-back row
- punch
- jump press

Conclusion

Although ABT is relatively new, many in the fitness community have embraced it as a viable adjunct to traditional strength training modalities. ABT's potential for improving balance, core strength and rotational power and its ability to scale to any level of user make it uniquely effective in improving performance, enhancing durability and maximizing results. ■

VIDEO WEB EXTRA!

Watch this brief video to get ideas on how to incorporate asymmetrical bar training into your programming.
http://tinyurl.com/mg5kpmc

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CEC Take the Quiz
www.ideafit.com/ifjquiz or mail the quiz on page 82.

References

Cook, G. 2003. *Athletic Body in Balance.* Champaign, IL: Human Kinetics.

Donatelli, R. 2011. Training for agility and perturbation/balance. *TennisMD.com.* Accessed Oct. 14, 2014. http://tennismd.com/TennisMD_Articles/id/123.aspx.

Gray, G., & Gray, D. 2009. Functional Training Defined. *IDEA Fit Tips, 7* (12). Accessed Nov. 28, 2014. www.ideafit.com/fitness-library/functional-training-defined.

Joy, J.M., et al. 2013. Elastic bands as a component of periodized resistance training. *Journal of Strength and Conditioning Research,* epub ahead of print.

Logan, G., & McKinney, W. 1970. *Kinesiology.* Los Angeles: William C. Brown.

May, C.A., Cipriani, D., & Lorenz, K. 2010. Power development through complex training for the division I collegiate athlete. *Strength and Conditioning Journal, 32* (4), 30–43.

McGill, S., 2007. *Low Back Disorders: Evidence-Based Prevention and Rehabilitation* (2nd ed.). Champaign, IL: Human Kinetics.

McGill, S. 2010. Core training: Evidence translating to better performance and injury prevention. *Strength and Conditioning Journal, 32* (3), 33–46.

Voight, M., Hoogenboom, B., & Cook, G. 2008. The chop and lift reconsidered: Integrating neuromuscular principles into orthopedic and sports rehabilitation. *North American Journal of Sports Physical Therapy, 3* (3), 151–59.