



Winter Sports

Strength and Conditioning for Snowboarding

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In the year 2000, snowboarding was the fastest-growing sport in the United States, with boarders numbering just over 7.2 million (1). In a ski industry where growth has remained flat during the past several decades, the sport of snowboarding has been the savior of many a ski resort. Ski areas that have historically focused their marketing efforts on affluent/adult populations, now recognize that their largest market lies in the 18 – 30 year old snowboarder and that snowboarding is for everyone. It is no longer uncommon to see entire families enjoying the sport and many die-hard skiers of all ages now mix up their winter routine by participating in a combination of both activities.

With its ever-widening appeal, snowboarding will continue to be one of the most popular recreational activities. But that does not mean personal trainers have embraced the specific demands of this misunderstood sport. To be a good snowboarder, you will need a high degree of strength and balance to transition from edge to edge while maintaining your balance despite never ending changes in speed, terrain, and weather.

Twists and Turns

Each kind of competitive snowboarding sanctioned by The United States of America Snowboarding Association (4) (halfpipe, slopestyle, Boardercross®, giant slalom, and slalom) presents its own unique set of challenges for the boarder and the trainer.

The giant slalom and slalom events are “carving” or “downhill” racing events whereby the athlete runs gates on a dual course just like in the sport of skiing. These events are run on longer boards with hard boots. While carving at high speeds, the boarder’s body always faces down the hill. A high degree of concentric, eccentric, and isometric strength is required to perform well at these events.

In contrast, the halfpipe, slopestyle, and Boardercross events are more representative of “free riding” or “all-mountain” boarding with spinning, flipping, jumping, and landing. These events are often judged for difficulty and style. Boardercross, modeled after motorcross racing, represents a combination of the Giant Slalom and Slopestyle with jumps and bumping in

addition to the downhill racing aspect of the event.

A well-rounded snowboarder should be able to carve turns of various radiuses on groomed slopes like a carver, while being able to adapt to varying terrain like a Boardercross rider. Steep and deep terrain will require a different set of skills, even as many of the basic principles remain the same.

If you are a beginning snowboarder, be prepared to tough out the first couple of days. Unless you are a snowboarding prodigy, your first days will be characterized by a humbling albeit short learning curve.

Basic Training

Let us look at your training program as it might change throughout the year. You can begin your off season training by developing basic strength in your lower body and core. This basic strength training can incorporate squats, lunges, heel and toe raises, and all types of core work. Aspen physical therapist and trainer Bill Fabrocini points out that snowboarding requires the athlete to control all movement in a pattern

from proximal to distal. This means that the majority of the snowboarder's movements need to be manifested outward from the core of the body (abdominal and hip musculature), with the limbs playing more of a secondary role (2). This is an important concept to keep in mind when developing your training program. Any strength training that you do should involve a strong core stabilization component. Additionally, all of your dynamic movements should begin from your center and manifest outward.

Once you have developed your basic strength, be innovative. Winter X Games gold medallist and snowboard shop owner, Travis McClain claims that cross-training in gymnastics and trampoline work has been the most beneficial to his performance (3). If you're serious about your snowboarding (particularly slopestyle and half-pipe), consider enrolling in a gymnastics program as a method of cross-training. Travis further suggests that any time a strength exercise can be paired with a balance exercise there is greater benefit to your performance on the mountain. This relates back to the concept of specificity of training. As your season nears, give up the basic strength exercises for lighter weight exercises with more emphasis on balance and specific stance work.

The primary muscle groups that are involved in snowboarding include the muscles of the core, hips/gluteals, quadriceps/hamstrings, and the muscles of the lower legs and feet. These muscles should be trained in the most specific way possible.

Another major focus should be to strengthen your body specifically to avoid the most common snowboard injuries. According to Bill Fabrocini, the most common injuries that snowboarders incur are ankle (talus) fractures due to excessive dorsiflexion in soft snowboard boots, wrist fractures and sprains, shoulder injuries due to contusions from the impact of falls, and neck-whiplash injuries (2). Although it is impossible to avoid falling from time to time, increased strength of the tendons and ligaments of the ankles, wrists, shoulders, and neck can increase the amount of force necessary to cause a severe injury. Travis McClain adds that stretching the hip flexors is extremely important because he believes that injuries related to tight hip flexors constitute the most common, unreported injuries to snow boarders (3). And the snowboarder's ability to maintain his/her center of gravity on a variety of terrain is often dictated by the strength and flexibility of the muscles of the body's core (abdominal, lower back, hips). The athlete's ability to achieve dynamic equilibrium can be increased through balance drills, dynamic stance work, and overall body awareness training.

Snowboarding is also an asymmetrical sport. This means that unlike skiing, one leg is mounted on the board in front of the other in a staggered stance. This creates unique challenges in an athlete's training program because he/she must be very strong in this position, but a failure to balance out the repetitive stress to the most used muscles can result in postural imbalances, inefficiencies, and injuries. Compensation exercises should be included during the snowboard season to avoid injuries. It is a good idea

PROGRAM

Compensation and Injury Prevention

(performed throughout the year)

- Isometric neck strengthening
- Wrist flexor and extensor strength
- Wrist flexor and extensor flexibility
- Rotator cuff strengthening
- Hip flexor stretching
- Glute medius strength
- Work with opposite leg forward for muscle balance
- Basic postural work (for the full body)

Basic Strength—Early Prep Phase

(Spring – early Summer)

- Squats
- Lunges
- Dead lifts
- Straight Legged Dead lifts
- Back extensions
- Basic abdominal/core strength (with rotation)
- Calf raises and heel raises
- Push ups
- Dips
- Body weight rows
- Proprioceptive exercises for the feet (standing on discs)

Adding Power and Eccentric Strength—Pre Season

(mid-Summer – early Fall)

- Box jumps
- Plyometrics with rotation
- Modified Olympic lifts
- Dynamic kettlebell work
- Interval training

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PROGRAM (continued)

Specific: Strength and Skill Development

(Fall – early Winter)

Snowboard stance work

- Stable
- Unstable
 - Adding balance component
 - On balance discs (figure 1), med balls, half-dome stability ball, etc
- With rotation and reaction drills (adding rotation and dynamic component)

Rotational Exercises with bands or cables

- Simple cable rotations in snowboard stance (figures 2 and 3)
- Perform a simple chopping motion on one side, pulling high to low.)
- Cable rotations with a side switch —stepping (figure 4)
 - On the high side of the chop, slide the distal leg back to the other leg (closest to the machine), turn 180 degrees, step out and perform the chopping motion on the other side. Alternate in this way.
- Cable rotations with a side switch —jumping
 - Every time the hands reach to the high side, jump and rotate 180 degrees, then perform the chop on the opposite side.

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Figure 1. Balance disc training for proprioception in a snowboard stance.



Figure 2. Cable Rotations 1

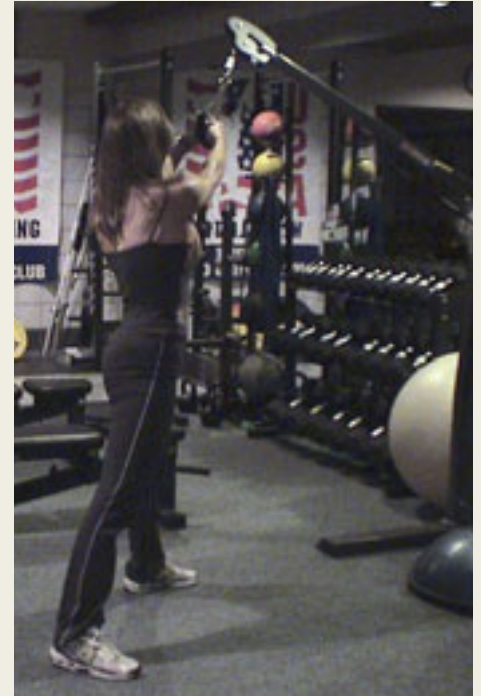


Figure 3. Cable Rotations 2



Figure 4. Cable Rotations with a side switch (jumping or stepping)

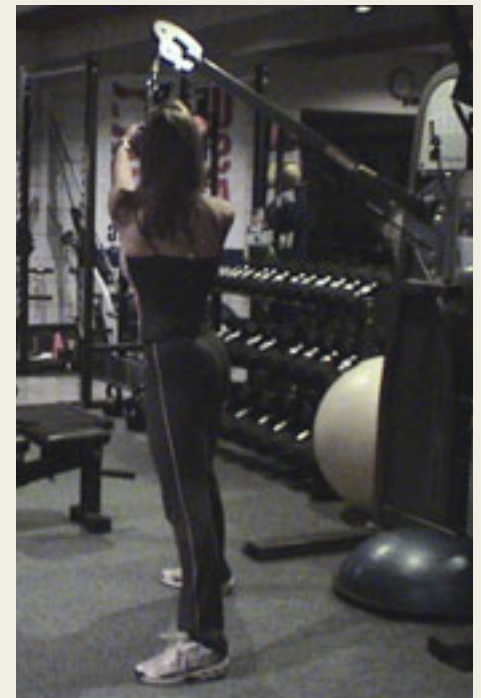


Figure 5. Turkish Get Up Progression 1



Figure 6. Turkish Get Up Progression 2

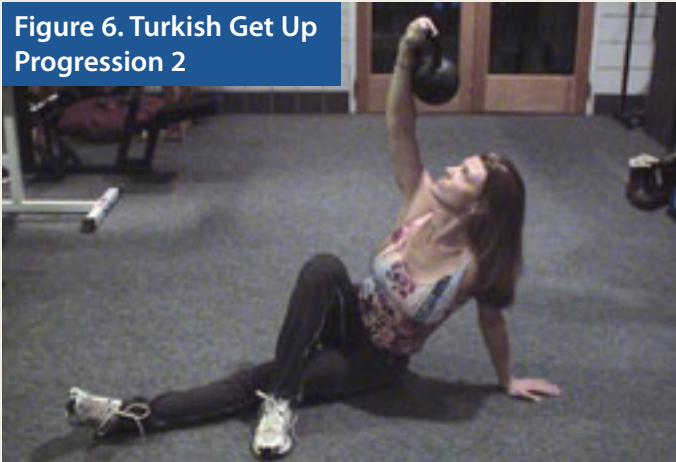
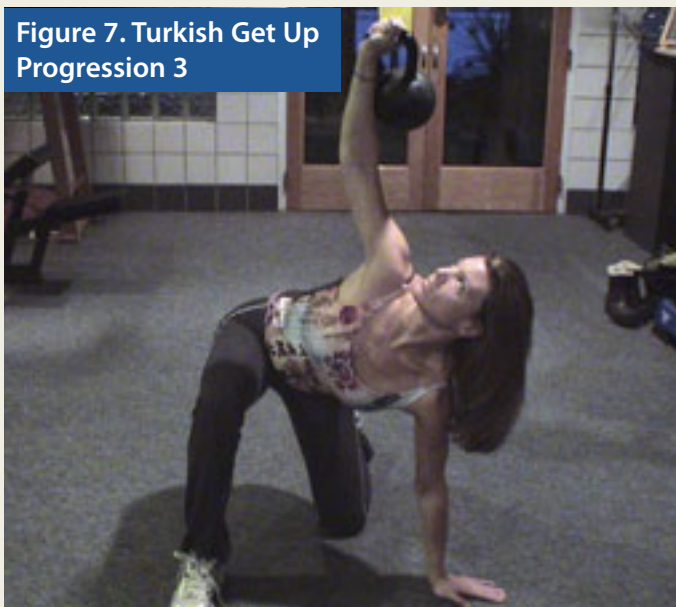


Figure 7. Turkish Get Up Progression 3



PROGRAM (continued)

Specific: Strength and Skill Development
(Fall – early Winter)

180 degree jump turns landing in stance
(performed with or without an agility ladder)

Body weight exercises
—push ups, pull ups, dips

Turkish get ups (figures 5, 6, and 7)

Kettle bell figure 8s

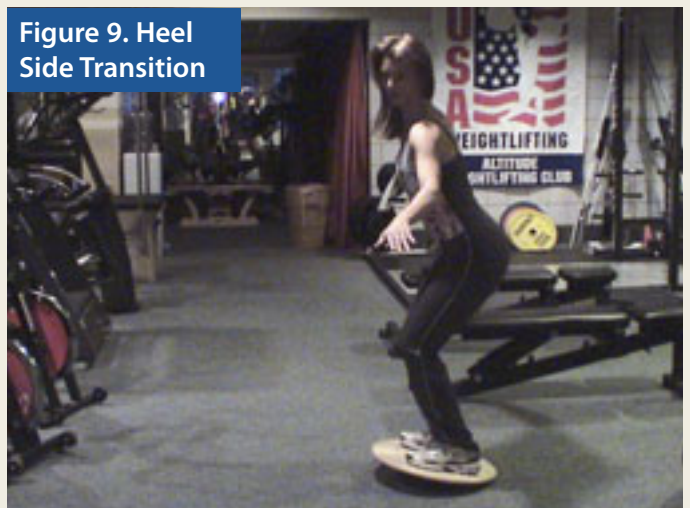
Heel-side/Toe-side transition exercises on balance board
(figures 8 and 9)

Proprioceptive and balance work for the lower body

Figure 8. Toe Side Transition



Figure 9. Heel Side Transition



to perform your stance work on both sides rather than focusing solely on your dominant side.

Unless you are a competitive snowboarder who needs upper body strength to pull yourself forcefully from a starting gate, there is minimal need to train the muscles of the upper body. The ability to maneuver your body weight and to push yourself up off of the snow throughout the day warrants the inclusion of bodyweight exercises for the upper body. Movements such as push-ups, dips, and body weight rows for muscle balance can be helpful to this purpose. Footwork, acrobatics, dynamic, or complex movements first should be followed by explosive movements to develop power in the lower body and core. After your technical, multi-joint exercises, you can focus on developing the physical endurance necessary to maintain your stance for an extended period of time. It is a good idea to work on some more specific, stance-related balance at the end of the workout to get your body used to performing well in a fatigued state.

Since snowboarders need to develop a feel for the snow beneath their feet, they should include some proprioceptive exercises to aid them in developing sensitivity to the terrain. Balance discs,

wobble boards, and half-dome stability balls can be used for this purpose. In this unstable environment, the athlete should practice the transition between heel-side, and toe-side edge of the board.

Different energy systems are used in snowboarding. It is useful to train your glycolytic system to tolerate the lactic acid build up that you are certain to experience on the hill. You should also incorporate a bit of aerobic exercise or cardiovascular training to improve your ability to recover quickly between runs. Put it all together, and you will be on your way to boarding with the best.

References

1. Arnold B. (2005). Your Guide to Snowboarding: Top Ten Facts You Should Know. Retrieved 1/13/06 from <http://snowboarding.about.com/cs/basics1/a/whatis.htm>
2. B. Fabrocini (personal communication, December 6, 2005).
3. T. McClain (personal communication, December 7, 2005).
4. United States of America Snowboard Association. 2005-2006 Rulebook. Retrieved 1/13/05 from <http://www.usasa.org/rulebook.html>

About the Author

Joshua Landis has been a personal trainer in Aspen for the past 10 years. In addition to his B.S. in Health and Wellness, Josh is a Certified Strength and Conditioning Specialist, an ACE certified personal trainer, a certified Olympic Weightlifting Coach, a Certified Gyrotonic® instructor, and a 3rd degree Black-belt instructor in the traditional Korean martial art known as Soo Bahk Do. In 2002, Josh founded Altitude Body Performance Center as a personal training facility to serve the Aspen community. Altitude is also recognized as an international educational facility for Personal Trainers, Coaches, and Physical Therapists. Josh and his small group of Personal Trainers, Massage Therapists, Pilates and Gyrotonic® Instructors work with clients of all ages. Their specialties include: injury rehabilitation and prevention, strength and conditioning for sport performance, Pilates, and the Gyrotonic Expansion System®. Josh currently writes a fitness column for the Aspen daily news. ▲