GET LOADED! Page 52

32 DEGREES

THE JOURNAL OF PROFESSIONAL SNOWSPORTS INSTRUCTION | WINTER 2009

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PAGE 56

22

STOKING THE SPEED NEED
AT RACE CAMP

42

BETTER SHREDDERS
THESE PROGRAMS HAVE **ALL THE RIDE STUFF**

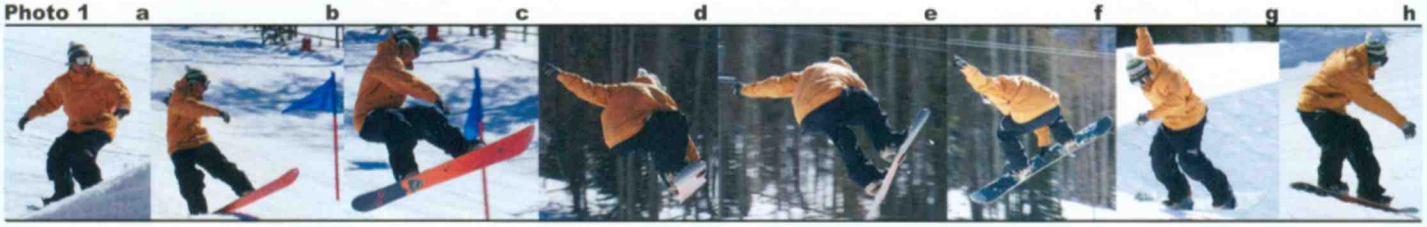
64

TEACHING TIP:
HOW TUNNEL VISION
EQUATES TO BETTER SKATING

Tune Up Those Frontside Air 360s

by CHUCK ROBERTS and JOHN ROBERTS
photos by CHUCK ROBERTS

Photo 1 a b c d e f g h



It can't be disputed that a nice, crisp 360 with a grab for added style is an awesome move, and places one in the upper echelons of freestyle riders. If you teach or coach park and pipe, you probably have students hounding you every week to give a lesson on 360s with air. Although this move appears easy when performed correctly, there are quite a few subtle aspects that greatly affect the chance for success. So let's take a look at the mechanics of a typical 360 and see what it takes to master or teach this move. (It's assumed that any rider working on 360s is already comfortable with straight airs and air 180s.)

Photo 1a–h, a sequence of a rider performing a frontside 360 with a grab, shows some of the key movements necessary to perform a full 360 spin. As when analyzing any freestyle trick, PSIA-AASI's ATML Method™—by which you break down the move into its approach, takeoff, maneuver, and landing—provides a great way to understand its mechanics. Photos 2a and 2b show close-ups of the approach. The choice of direction of rotation significantly affects the approach to the jump. For a regular-footed rider, a counterclockwise direction of rotation (looking down on the rider) is best performed with a slightly edged, heelside approach (fig. 1), with the red arrow indicating rotation. This is also called a frontside takeoff, wherein the rider faces downhill for the first 90 degrees of rotation.

Whether frontside or backside, it's generally preferable to take off from the edge to the inside of the spin, similar to how the board would be edged in a turn. The slight edge establishes a track in the direction of the rotation and provides a stable platform from which to "pre-wind" the upper body—that is, slightly rotate the upper body opposite the direction of rotation prior to initiating the actual spin. (See the "Pre-Wind" sidebar, page 36.) After pre-winding, the rider will find that the edge provides a firm foundation to push against when unwinding to create the spin.

In photo 2a the rider is adjusting speed and picking his line, carve shape, edge angle, etc., based on the jump characteristics. In photo 2b, notice that the rider is looking in the direction of the rotation, which significantly helps him perform a great takeoff (rotating the head in the direction of the spin aids the unwind just before release). The green arrow in figure 1 is the approach track for a toeside, clockwise takeoff when riding regular (i.e., a backside takeoff in which the rider's back is facing downhill for the first 90 degrees of rotation). If you have ever seen a jump on which skilled riders are performing aerial spins, you usually see two arc-shaped, carved tracks on the jump (fig. 1). (For more on the mechanics of the approach, see Jeff Brier's article, "Line Up Your Approach to Spins in the Terrain Park," in the winter 2004 issue of *The Pro Rider*.)

Photo 2a

Photo 2b

Photo 4a

Photo 4b

In unwinding, the rider unleashes rotational energy, using the edged board as a stable platform from which to spin and spring during takeoff. You want to begin almost fully counter-rotated (prewound) in the opposite direction of the spin as you carve on your heel edge. Next comes the unwind followed by "the pop," in which you use the lip of the jump and/or extend your legs to get lift (see "The Pop" sidebar, page 38). When you release for the pop, timing is crucial. Remember that the unwind must be completed before the takeoff, while the board is engaged in the snow. If you release the edge early, you may only be able to perform a 180. A late release of the edge will result in a nice shifty but not a 360. That's because when you're late with the unwinding movement, you don't generate sufficient rotation to get the board all the way around through a 360.

In Photos 4a and 4b, the rider has completed the unwind and is beginning the release and pop (i.e., the takeoff). Again, timing of the pop is key. During the unwind, pressure will gradually build in the tail of the board, and you'll want to extend and release this pressure at the top of the lip. (You fine tune your trajectory in the air by "popping" or absorbing the lip of a jump to put you square on the sweet spot of the landing. Spring up for more distance, or absorb if it looks like you might go long.) In photo 4b the rider rotates his torso to create the spin, coming around with the right arm in front of the body to add extra rotational momentum. (Momentum is the tendency of an object to continue in a straight line. Rotational

Photo 5a

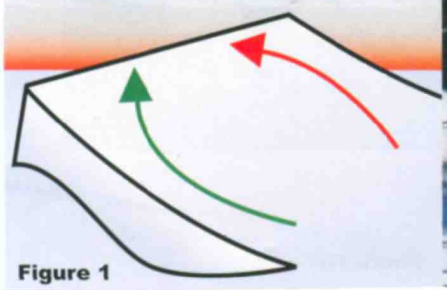


Figure 1

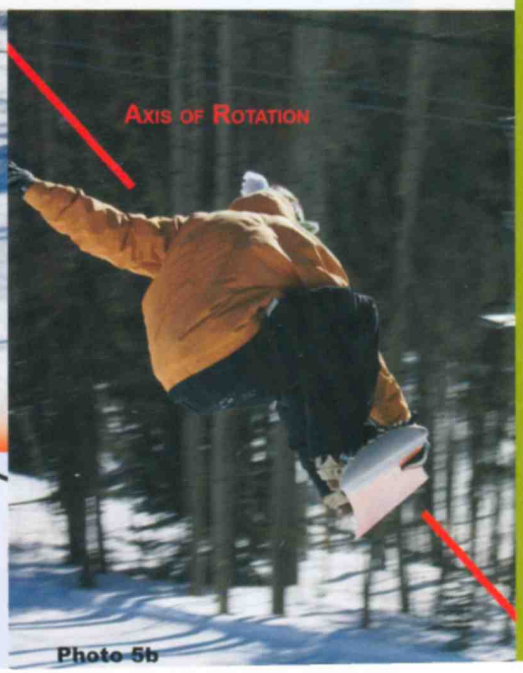
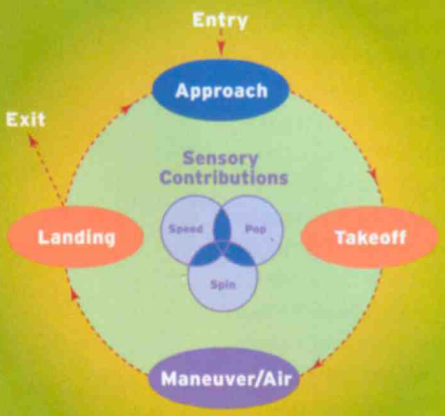


Photo 5b

The Trick at a Glance



Looking for a crib sheet for frontside air 360s? Here, for your review, are the seven major parts of this trick:

APPROACH

Setup: In this phase, you are judging your speed and calculating for the amount of speed lost during the carve up the ramp. You are picking your line, carve shape, edge angle, etc., based on the jump you are hitting.

Pre-wind: This is where you prepare to spin. You twist your upper body opposite the direction you are spinning, and you apply force to your edge to get a head start on your rotation. You want to be almost fully counter-rotated in the opposite direction of the spin (pre-wound) as you carve on your heel edge.

TAKEOFF

Release and pop: This is by far the most important part of the spin. As you unwind, focus on keeping your shoulders level with the axis you want to take, and make sure that your axis of rotation is equally centered between your bindings. When you release, timing is crucial. Begin your unwind and then extend your legs and pop. The pop is key. As you rotate your upper body, you will notice that you will gradually build pressure in the tail of the board. Extend and release this pressure at the top of the lip. Look over your front shoulder in the direction of the spin.

MANEUVER

Initial spin: Once you leave the ground, bring the board to you (very important) and grab it. Keep looking in the direction of the spin.

Final spin: Once you have spun 180 degrees, you will begin to see the landing zone over your front shoulder. Look at the landing zone and spot your landing. This will help stop your rotation. Release the grab and extend your legs for the landing.

LANDING

Snow contact: Land with your weight centered on the board and your knees bent to absorb the landing.

Riding away: Immediately after landing, set your edge to stabilize yourself. This will counteract any rotational momentum you still have and will keep you from washing out. Once you have control of the board, ride away like the trick was easy and people will marvel at how steezy you truly are!

momentum is the tendency of a body to continue rotating.)

Once the release, or pop, from the snow occurs, the rotation increases (photo 5a) as the rear hand moves between the feet at the axis of rotation for the frontside grab, while the front hand extends vertically along the axis of rotation (photo 5b). (The axis of rotation is an imaginary line about which a body rotates. A line from the North Pole to the South Pole is the axis of rotation of the earth.) The rider has rotated approximately 30 degrees counter-clockwise in photo 5a, and about 90 degrees counter-clockwise in photo 5b. The front grab (photo 5b) tends to reduce the rotational inertia (see fig. 2 a, b) of the body, increasing the spin rate in a manner similar to a figure skater who pulls in the arms in order to spin faster. It can also help add balance.

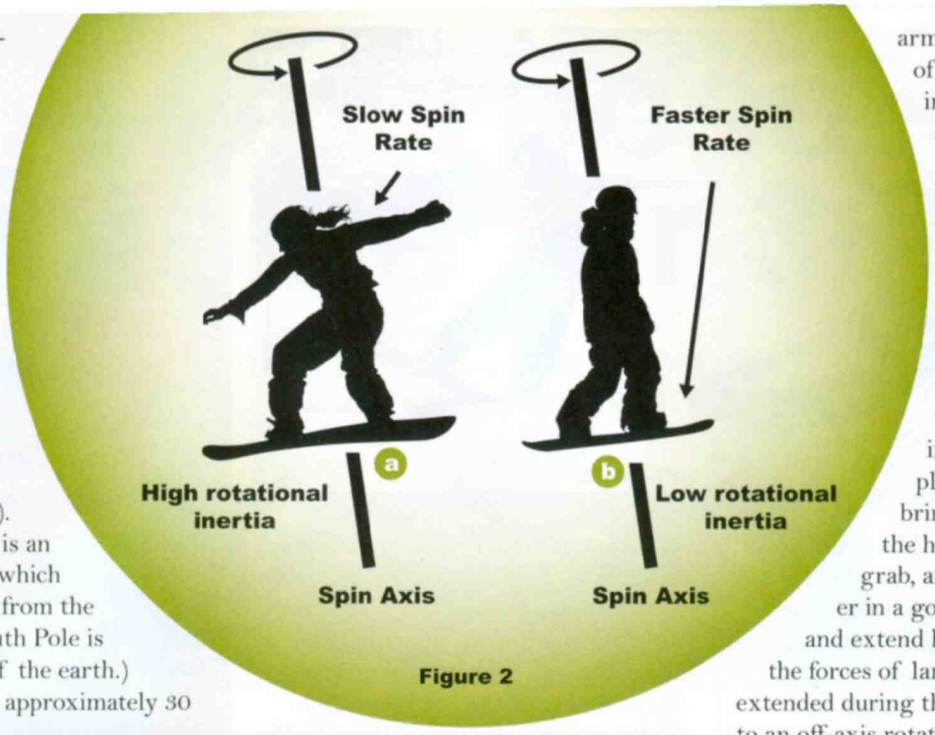


Figure 2

Figure 2 a, b illustrates riders with different rotational inertia, a term we borrow from physics to describe the resistance of an object to rotate. Moving the mass of your arms away from your body increases rotational inertia, slowing down the spin. Keeping your arms in close to the axis of rotation results in less resistance to spinning and faster spins. In essence, you bring your arms in for a faster spin and extend your arms to slow down the spin in preparation for the landing.

The compact, flexed position shown in Photo 5b accomplishes two goals. It brings the board up to the hand to facilitate the grab, and also places the rider in a good position to adjust and extend his legs to help absorb the forces of landing. If the rider is extended during this phase it may lead to an off-axis rotation, which, because it's difficult to correct while extended, can result in a crash landing. Note that the grab is considered a secondary movement and should not be the focus of the jump, since a good grab will not cover for a poor takeoff or insufficient revolutions per minute. A smooth and stylish air 360 without a grab is better than a poorly executed 360 with a grab.

Photos 6a and 6b show the rider continuing to rotate (the maneuver) by holding the grabbed position, minimizing rotational inertia to keep the spin going.

In Photo 7a, the rider is moving the arms away from the body to slow rotation, a cue that he is ready to release the


Photo 6a


Photo 6b


Photo 7a


Photo 7b

Pre-Wind

In order to carry greater angular momentum into the spin, riders "pre-wind" the upper body—that is, rotate the upper body opposite the direction of rotation prior to initiating the actual spin. After pre-winding, the rider pushes against the snowboard's edge to unwind into the spin.

The rider pre-winds over the left shoulder in preparation for a backside spin (clockwise looking down on the rider). The pre-wind is in the opposite direction of the spin. Notice that the hips remain square with the board, while the upper body is slightly countered.

The rider now unwinds, again keeping the hips square with the board, to initiate rotation in the direction of the backside spin.

The photo below shows the rider's rotation after the lip.

Photo 8a

Photo 8b

grab and prepare for the landing (photo 7b).

The rider extends his legs to absorb the landing and extends his arms horizontally to increase rotational inertia and slow the rotation for landing (photo 8a). Looking at a fixed object helps him spot the landing and stop the head rotation. This translates to the upper body, slowing its rotation and allowing for a successful landing. Photo 8b shows a controlled landing with center of mass between the feet and an edge slightly engaged. If landing flat, rock to one edge to help stop the rotation and stabilize the board.

Be aware that not all grabs enhance the rotation of a 360. Performing a tail grab may increase rotation inertia and diminish rotation. It is a more difficult move to complete; hence, it yields more style points.

MOVEMENT ANALYSIS

As in most maneuvers, a great approach is essential. Skilled riders in competitions line up, scuff speed, and pre-wind to get the best approach possible—since a lousy approach begets a lousy takeoff and makes the 360 spin difficult to achieve. Ingredients of a lousy approach are excessive speed, a flat board with no edging, excessive edging, a non-centered stance, and insufficient preparation (pre-wind).

When performing movement analysis of students trying first-time frontside air 360s, check the timing of edge releases. Is the student releasing too early? Early release can cause a pre-spin, in which the body rotates while the board is in contact with the snow. This can make the rider hit the lip in a near sideslip fashion, which can diminish air time and compromise positioning while spinning. A late edge release causes a slow spin rate, which means your student might not make the full 360.

Observe the takeoff. Is your student perpendicular to the board or leaning slightly forward? If a rider is not perpendicular to the board, this can result in a wobble around the rotational axis, which complicates the maneuver.

Photo 9

Photo 10

Photo 11

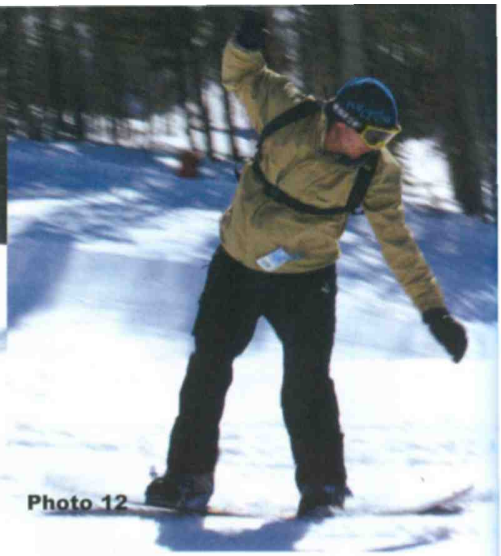


Photo 12

Are your students holding a compact stance or extending early in the jump? Excessive extension makes it difficult to perform a grab during the maneuver and can cause the rider to pitch forward or backward, making it difficult to land in control. Photo 9 shows a rider with excessive toe edge and rearward body position at the approach. Remind your students that the rider's stance should be perpendicular to the board with slight edge engagement.

The rider in Photo 10 is off axis (pitched backward toward the jump) and is trying to adjust body position toward the front of the board. Caution students to maintain a compact (flexed) body position, which reduces the tendency to pitch over during a maneuver.

Photo 11 shows a rider who has pitched forward before landing and is trying to lean back in an unsuccessful attempt to avoid catching the tip of the board in the snow. The rider in Photo 12 has made a reasonable landing, but has positioned his center of mass over the front foot, which resulted in a forward fall. Encourage students to keep the center of mass (i.e., their core) between the feet when landing.

In photo 13 the rider has underrotated, causing him to land in a butter slide. When teaching your students to

IF A RIDER IS NOT PERPENDICULAR TO THE BOARD, THIS CAN RESULT IN A WOBBLE AROUND THE ROTATIONAL AXIS, WHICH COMPLICATES THE MANEUVER

The Pop

The "pop" is the lift a rider gets from the lip of the jump, extension of the legs, or a combination of the two. The pop governs the height and distance traveled during the maneuver.

This rider is using only the lip to pop and is not extending his legs. Riders fine tune the pop by either absorbing the lip to land short or extending at the lip to land long.

This rider is using the lip and also extending the legs to get more pop to achieve a longer/higher maneuver. (However, he has raised his hands to accentuate his extension, which is not necessary and can lead to a loss of control during the maneuver.)

carry the rotation all the way through the maneuver, encourage plenty of pre-wind (with slight edging) at the approach, proper timing of the release, and a positioning of the arms near the long axis of the body.

PRACTICE AID

It's certainly possible to perfect front-side air 360s by working on the various elements outside of the park and on gentle terrain park features. However, riders can also benefit from using a balance board to help develop the skills required for a 360.

As shown in photo sequence 14, balance boards can be used to practice pre-winds and unwinds and get a feel for high and low rotational inertia. If you have an opportunity to use a balance board with students, demonstrate the skills you're looking for and have them give it a go. (Make sure the device is approved for use by area management and your snowsports school.) Observe your students' pre-winds and positioning. See how many rotations they can achieve with one attempt. See if they can stop the rotation (by increasing rotational inertia) and spot the landing. Be sure to check for off-axis rotations.

In addition, encourage your students to exaggerate the pre-wide and tighten/release their core muscles to explore the effect of arm motions and musculature on their rotations. (Students on snowboards can perform a similar exercise by standing on a small, flat bump in the snow and practicing the same movements you'd promote with the balance board.)

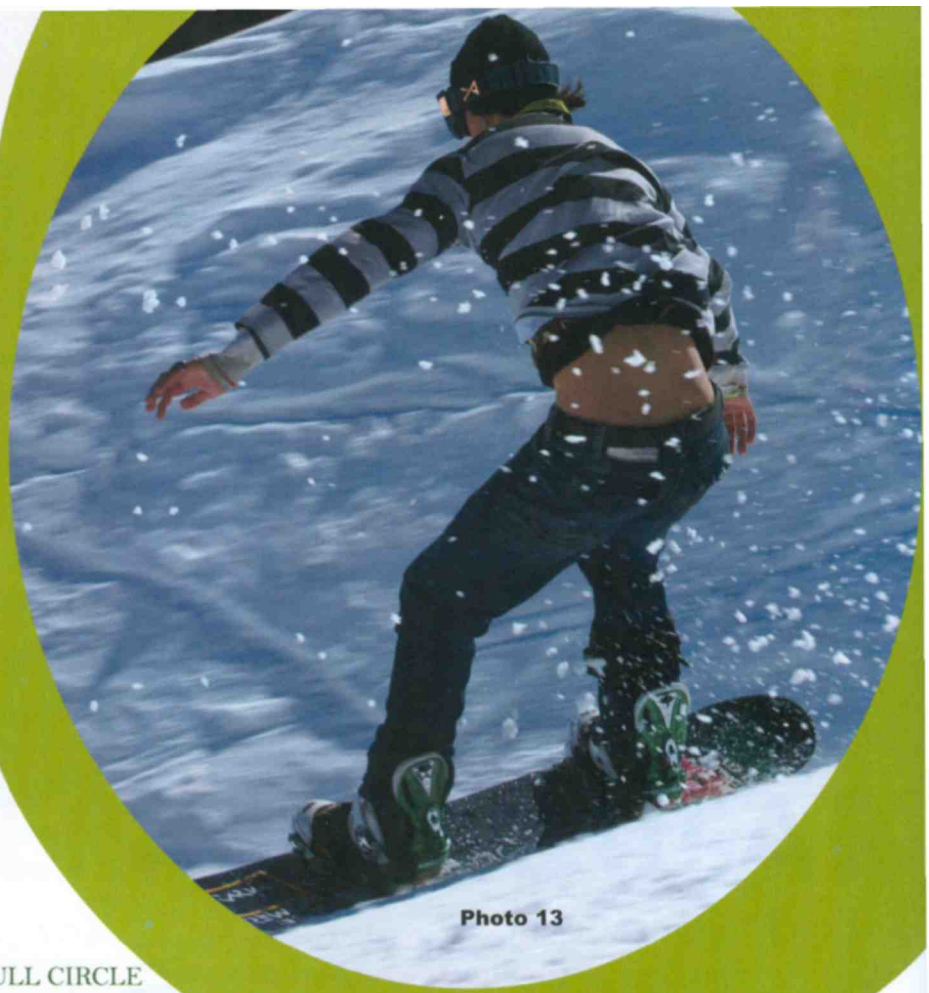


Photo 13

FULL CIRCLE

The 360 is a great bread-and-butter move with all the ingredients of more difficult spins such as 540s and 720s. For these advanced spins, a little more intense pre-wind, more precise timing of the release and a more slender position (less rotational inertia) are all that are required. A smooth-flowing 360 is an awesome reflection of your riding skill as well as the riding skills of your students. 32

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Photo 14a

Photo 14b

Photo 14c

Photo 14d

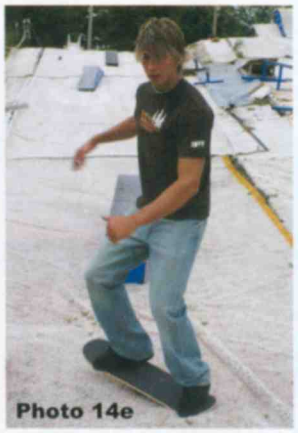

Photo 14e