



# Can Freestyle Club & Coach Resource

Section 6.4

## **AIR 4 SNOW**

Performing Air 2/3 Acrobatic Skills with skis on snow

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## **Introduction**

In the Air 4 Snow Module Coaches will be trained to teach skills for Comp Intro, introductory and advanced acrobatics/gymnastic skills up to twisting singles in Freestyle Ski competition and training environments.

Coaches must pass an Air 4A coach competency evaluation to teach introductory skills on snow, and must also pass Air 4 B Snow evaluation to teach advanced acrobatic skills up to single rotations with twists on snow.

Coaches and athletes are applying acrobatic mechanics learned in Air 1 and 2 and 3.

# Table of Contents

AIR 4 OBJECTIVES .....	5
Skills .....	5
Qualification .....	5
COACHING EMPHASIS.....	6
4 Areas of Emphasis.....	6
TRAINING ENVIRONMENT .....	7
Introduction of Inverted Air Skills Site.....	9
Moguls Environment Considerations .....	10
Aerials Environment Considerations .....	10
Halfpipe Environment Considerations .....	10
Slopestyle Environment Considerations.....	11
COMPONENTS OF SUCCESSFUL TRAINING .....	11
Completion of Mileage Requirements .....	11
Progression .....	11
Jump Specifications .....	12
Fitness Level.....	12
In-Run Speeds .....	12
ROTATION MANAGEMENT (progression observation for the coach) .....	13
Control: .....	13
Adjustment: .....	13
Consistency:.....	13
SKILLS .....	15
Front Tuck .....	15
Bio 720 .....	15
Misty 540,720 .....	15
Back Tuck .....	15
Back Layout.....	16
Back Full .....	16
Cork 720.....	16
Cork Back .....	17
Flat Spin/Rodeo 540/72.....	17
Flair .....	17
Underflip.....	18
CONCLUSION.....	20

# **AIR 4 OBJECTIVES**

## ***Skills***

Air 4 introduces skills covered in the training environment of water ramp and air bag in Air 3 and adapts those skills to snow. The execution of each maneuver in the snow environment with safety as the primary focus is the responsibility of the coach.

The course is broken into two certification components:

Air 4A will certify a coach to teach and qualify the introductory skills corked 720, front tuck and back tuck on an 'intro to inverts' jump site. The goal is to increase the awareness of the coach to the factors that surround the on-snow environment. The conditions of the snow environment and coach awareness of specifications of jump shape and size, and distance from the knoll, can and need to be utilized for desired outcomes of execution.

Air 4B will evaluate a coaches competency to teach and qualify a variety of spinning single inverts skills in a variety of competitive environments. It is likely a coach will require extensive experience and mentoring before attaining Air 4B status.

## ***Qualification***

The coach will learn the qualifying process for athletes performing cork 720 through all of the inverted single skills. There are 2 parts to the qualification process:

1. Use the Qualification Form to work through the technical process with the athletes, scoring them on their abilities.
2. The second part to the qualification process is filing the Qualification Form to the PSO and CFSA.

The Qualification process and documents are outlined in ARQ; part of an Air 4 coach's competency is to be very familiar with the updated contents of ARQ.

An Air 4 coach will be competent in observing the athlete progress through a series of maneuvers, and aid in the development of technique by communicating

specific mechanical adjustments to land safely. By observing the same maneuver over a series of jumps, the coach will become completely familiar with the athlete's ability to achieve a specific mechanical adjustment or key technical points, with the goal of safety. The coach will acquire the ability to adapt the qualification process to the environment of mogul specific jumps, the varied terrain of park jumps, and the Halfpipe.

## **AIR 4 COACHING PROCESS (Pre-Requisites)**

Air 1 & 2 Trampoline

Air 3

Air 1, 2, and 3 certification must be complete before Air 4 certification can be recognized.

## **COACHING EMPHASIS**

The goal of the Air 4 manual material is to educate the coach for management of the training environment with regard to qualification and execution of specific maneuvers. The snow environment presents the challenge to the coach by adapting the relatively predictable controlled training environment of water ramp and air bag with pre-set speeds and consistent jump height, to the snow environment with ever changing conditions and the unlimited variety of jump types.

### **4 Areas of Emphasis**

**Observation:** The coach must actively observe, assess and develop the athlete's performance. Developing the ability of the coach to target specific body movements by the athlete during execution, and to provide instruction is to be emphasized. Those specific areas of body movement directly relate to the outcome of the athlete performing the maneuver on snow.

**Safety of Execution:** To safely achieve the specific performance goal of the athlete, the coach must accurately observe mechanics applied for

control. This process will be used in all disciplines of freestyle in all possible conditions encountered in the snow environment. The coach needs to be aware of the trajectory of the maneuver and its relationship to take off and landing. A correctly timed take off gives the coach a visible cue for apex and its relationship to ease of execution.

**Progression:** Progression as it relates to performance is the foundation of development in the snow environment. Monitoring an athlete through a series of progressions will inform the coach of the athlete's abilities. The coach will use discretion from knowledge of a working relationship with the athlete to determine the best plan for accomplishing skills being performed in the snow environment.

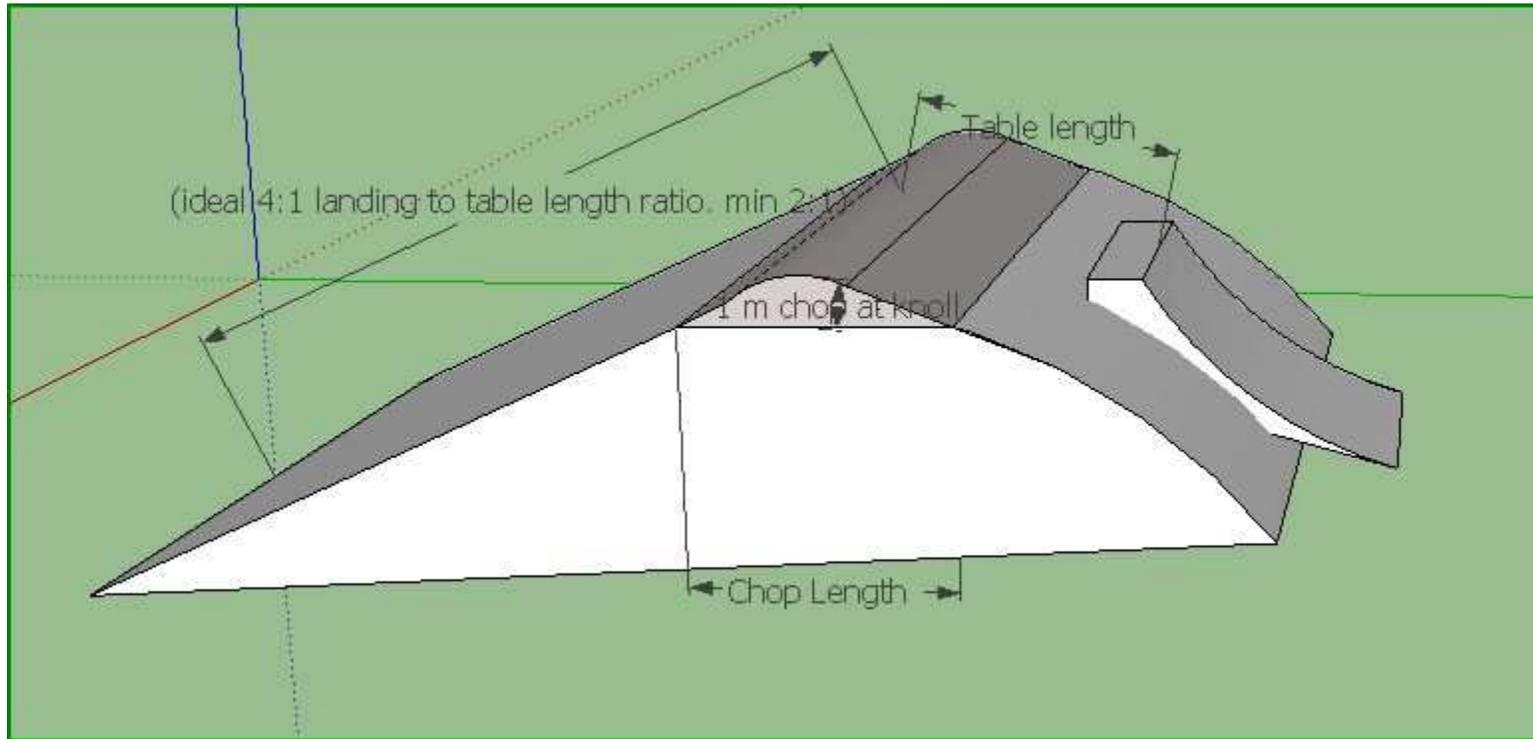
**Speed:** In-run speed is one of the first and most significant things that will change from the training environment to on-snow. Small variations of speed can affect performance of mechanics on takeoff and can ultimately affect the safety of the athlete. There are many ways to monitor and correctly develop the athlete's ability to manage their in-run speed. It is the coaches' responsibility to clearly communicate the affect of in-run speed on overall performance and execution of the newly acquired skill and to help the athlete gauge their speed.

## TRAINING ENVIRONMENT

The terrain used for Air4 on-snow training is under the management of the ski resort. It is the coaches' responsibility to make sure their training sites meet the specifications, as covered in the ARQ manual, section 3.0 "Air Site Specifications." In this section there is a list of specifications for minimum standards for an air site, mogul jump and halfpipe. These are guidelines that are met in the controlled environment of a jump site that is built and maintained by clubs and therefore sanctioned freestyle events. Some park features are not within the spec listed in the ARQ manual. The role of the coach is to choose the jump or feature available for training that is similar to the training environment that the athlete has used for qualification. The coach needs to be proactive with the decision process of where and when the athlete is performing a newly qualified maneuver for the first time on snow. The care and attention to detail of site preparation and spec, at this stage of development for the athlete is absolutely necessary and cannot be overlooked by the coach. This attention to detail will ensure that the athlete is given the best opportunity to successfully

accomplish the goal of safely performing advanced skills on snow. This detail needs to be stressed and cannot be overlooked.

## Introduction of Inverted Air Skills Site



ARQ Manual reference:

- 3.0 Jump Specs
- 5.2.3 Landing Hill Preparation

## **Moguls Environment Considerations**

An entry level air site, as illustrated in this manual, is the preferred air site for first time entry level inverts. The landing zone can be chopped and free of moguls on the out run and the jump can be controlled from a consistent in-run speed also free of moguls. In the jump build and specs, the coach has the ability to further match the training environment and control skier traffic to optimize the athletes focus. Moguls specific jumps can be built to specifications closely resembling the jumps the athlete's will experience on a mogul course without a mogul line above and below the jump. If the athlete is performing in a training environment that closely resembles a mogul jump and pitch, the athlete will have a focus on the skill and performing it safely and consistently before execution in a mogul course. This is considered best practice when a mogul athlete is performing first time inverts on snow.

## ***Aerials Environment Considerations***

As with the entry level air site, the aerial site can be used for first time inverts on snow if the athletes are very comfortable skiing the outrun. The very steep spec landing can be hand tailored and the knoll softened to accommodate the athlete's first attempts. The jump can be prepared with exact in-run speeds calculated to meet the first time inverted maneuvers. The aerial training environment is very specific and closely relates to the on snow environment. Speed is consistent and the emphasis is on technique. Mileage and repetition of progression is one of the main goals of the training environment.

## ***Halfpipe Environment Considerations***

First time inverts in the Halfpipe include Flair, 90 Lincoln 90, and Ally-ooop flat 540. The athlete needs to have good speed in the pipe with straight airs a minimum of 2 feet above lip of the pipe as time in the aerial phase needs to be considered to complete inverted maneuvers. Carving into the pipe wall and direction of the take-off is critical for a successful execution of any invert in the Halfpipe. The best practice for these skills is pipe specific air bag training. When the coach can introduce a cut pipe wall, or a ¼ pipe, into an air bag, the athlete will have the opportunity to attempt first time inverts, safely landing of an air bag. The coach has an opportunity to place themselves on the pipe wall in line with the imaginary lip of the pipe into the air bag. This will allow a visual cue for the coach to see where the skill would develop for an on snow attempt.

## **Slopestyle Environment Considerations**

**Jumps** in the Slopestyle run should progress in relation to the athlete's confidence when performing inverted maneuvers. The athlete should start with a jump suited to the performance of the first time invert. A good choice of jump is a medium step-up, as the athlete has a reduced impact after apex.

**Rails or Jibs** with a cannon or rail/box feature extended from the take off are not ideal for teaching first time inverts as the timing of mechanics is critical when making contact with the feature and setting flip, although there are inverts being performed in this environment, the athlete/coach will need to have complete confidence that the maneuver will be performed with a high rate of success. Before performing any invert off a rail or jib, the athlete should be 100% proficient with the maneuver in a variety of on snow environments on a variety of jumps. One of the ways to ensure the athlete is properly prepared is a rail extended over an air bag to produce results.

## **COMPONENTS OF SUCCESSFUL TRAINING**

### **Completion of Mileage Requirements**

Before the athlete can perform the desired maneuver on-snow; the coach is responsible for communicating to the athlete the mileage requirements of jumps performed. The ARQ manual section 6.5.6 gives a complete list of pre-qualification mileage requirements. It is the responsibility of the coach to monitor this mileage and/or communicate with other coaches that may be responsible for the development of an individual athlete's jump mileage. Repetition is a great training tool for familiarizing or acquiring special awareness for specific skills.

### **Progression**

Athletes need to progress through a set series of maneuvers managed by the coach, displaying control leading up to target qualified maneuver. It is very important that the coach observes each maneuver performed through the progressions to assess the performance of each maneuver. This information is critical for the decision making process for the coach to advance the athlete to increase their degree of difficulty. Learning progressions are set out both in ARQ

and in the Air 2 Manual. An example of a good coach intervention with progression into Misty 540 is an athlete landing in the switch position on either 180 or 540 before attempting this maneuver for the first time.

## **Jump Specifications**

The spec of the jump, choice of progressions, and more specifically the maneuver to be performed on varied jump specs is imperative for the coach to consider to aid in athlete development. When choosing specific terrain for execution, the coach needs to assess the level of development for each athlete and determine what jump they should perform on. This matching of skill, performance, progression and execution to a jump spec is determined by the coaches' ability to measure the jump height, the pitch of the take off, the distance from the knoll and the degree of the landing area. With an accurate description of the jump spec, the coach has the ability to correctly suit the jump to the athlete and the maneuver to be performed. The coach makes all of the calculations so the athlete just has to focus on the maneuver being performed.

## **Fitness Level**

When an athlete is ready to perform trained maneuvers in the snow environment for the first time, they need to be 100% mentally committed and 100% physically able to perform. The coach through observation and communication determines this level of mental and physical fitness with the athlete. Verbal communication of whether the athlete is ready should be met with answers of complete commitment. If the athlete thinks they are ready, and are ready to commit, they will have the confidence to perform. If the athlete is nursing an injury or communicates they are scared to the point they don't want to perform, they should not be pushed but revisit the maneuver when they are completely ready.

## **In-Run Speeds**

One of the most proven ways to monitor in-run speeds is with a radar gun, either portable or permanent in the transition. A radar system will produce accurate feedback to coaches and athletes. Other forms of speed management include observation techniques from a stationary position on the knoll. This requires a trained eye from the coach who has experience in the training environment. A clear indication of speed can be seen when the athlete lands

high or low in the landing zone and if required, adjustments need to be made. Another way to achieved correct in-run speed is by the coach demonstrating a good start height and going off the jumps or going through the jump line in the training environment. Another way that is specific to Slopestyle venues is following a skier at a safe distance by matching velocity. This is only recommended for jump flow lines and only when performing straight airs. This technique does not apply for Big Air venues as only one jumper is allowed at a time. This “tip to tail” approach is only recommended with the emphasis on risk management for athletes and coaches when visual distances of no less than 20m are enforced. The distance between the athletes, or coach and athlete, should be greater than the distance of the jump to the knoll. This should allow for a bail out from the following skier if the leading athlete or coach encounters a mistake. All in-run speed checks should consider weight of skier and length of skis.

## **ROTATION MANAGEMENT**

(progression observation for the coach)

**Control:** Control is one of the most important things to look for in an athlete when progressing through a series of maneuvers. When the athlete is aware of changing snow conditions, differences in in-run speeds, and varied jump specs, they are in control of their environment. As the difficulty of the maneuvers increase the athlete and coach should be able to sense the changes or adjustments needed to safely execute each maneuver.

**Adjustment:** When performing any trained maneuver from the water ramp and air bag environment, the athlete needs to be aware of making adjustment on both the take off and when in the air to accommodate to the pitch of a snow landing. As the athlete and coach choose the proper jump size to fit the stage of development, the consistency of proper technique on takeoff needs to be stressed.

**Consistency:** A key observation from the coach as the athlete begins a progression leading up to the target maneuver for a training session is a confident, consistent takeoff. If the athlete is building up to a new maneuver to be performed, they should have good execution of each maneuver in a planned progression. When the athlete is comfortable with the snow conditions, speed on the in-run, and good visual cues on landing, the athlete is ready to execute

the new maneuver on snow. A common term for communicating this to the athlete is whether they are “feeling it”. If the athlete is not “feeling it” they are not confident and are not ready to perform new maneuvers.

# SKILLS

**Front Tuck** As an entry level invert, this maneuver should attempt to be performed on snow with an emphasis on the degree of take off being no less than the training environment that the athlete qualified the maneuver on. The coach should be aware of the landing conditions with a chop as stated in ARQ on landing hill preparation. With a complete commitment to the forward action on takeoff, the athlete should be very familiar with the set from training and execute. The vision needs to be stressed to the bottom of the landing after pulling for tuck.

**Bio 720** With this maneuver it is critical that the athlete has a complete understanding of the application of the slight forward action from the trampoline training environment. The 720 spin rotation is controlled and well executed from the straight spinning progression. The next step is for the athlete to commit to the slight forward action and produce the off axis in front of the CG. The timing of the set and consequent pulling up of the knees to the bio off axis position needed to be clearly demonstrated from the training environment. When the athlete produces a slight forward action on the lip of the jump, the knees come up as the shoulder turns and off axis is achieved. Legs extend as 720 approaches in preparation for the landing zone and to return to the upright position. In the snow environment, a jump with less of a degree of pitch on takeoff than the training environment is acceptable.

**Misty 540,720** The misty 540, as a forward flipping type of action, landing switch, needs to be performed very confidently. Spinning progressions leading up to this maneuver landing in the switch position will give the coach a clear indication of the athlete's competency. As coaches do not see the switch landing in the training environment in regard to skiing away in control, spinning and landing switch on snow in control is critical for progression. Progressing on to the Misty 720 is an emphasis on shoulder committing to the direction of spin rotation as the athlete picks up the landing as the misty 540 rolls into view. The head and shoulder need to drive hard and lead the way to Misty 720 as the athlete adjusts to the landing zone.

**Back Tuck** The backward action is a full commitment on takeoff with, hips and arms leading in the direction in front of the CG point. The weight is over ball of foot. Extension is critical at the point of takeoff. Head is neutral and then looks to the landing zone after tuck is completed. Arms in front and lower body joints flexed for landing.

**Back Layout** Similar to the back tuck takeoff with an emphasis on being tight and locked out with the lower body joints at the lip of the jump. Weight can be over arch but the shoulders are in line with the feet and not dropped or slung to create rotation. The layout rotation is a correctly timed lock out on take off with head and shoulders neutral and pressing the hips to apex, staying tight with the lower body joints into the landing zone. Just prior to impact with the landing zone, the athlete flexes lower body joints to absorb the impact with the snow. Hands should be reaching for the bottom of the hill as vision looks forward and not down.

**Back Full** The progression for the back full is through the back tuck and back layout with an emphasis on the layout takeoff. After the athlete commits to the layout the shoulder opens in the direction of spin rotation to initiate the back full. At the completion the athlete steers into the landing with the lead arm powering the spin and brings the following arm in front to the landing zone. The arm movement of tilt twist on takeoff is released in the same sequence as the initial set. Left spin is left arm down, right arm down, left arm up and right arm up for completion. Speed for back full on snow is the same as the back layout.

**Cork 720** This maneuver is considered entry level for off axis. From the training environment of water ramp or air bag, on snow execution is identical. As with the training environment, the straight 720 should be the progression leading up to the snow execution. Lift or extension on takeoff and vision or spotting into the cork zone is critical for points of focus for the athlete. As the athlete leaves the end of the jump, the cork set is timed immediately into the aerial phase for first time execution. As the athlete becomes familiar with this maneuver they will smooth out the cork set as they build confidence with mileage.

**D-Spin** One of the progressions for this maneuver is the cork 720. It can also be developed through the back full. The athlete should follow either of these development progressions before executing on snow. The commitment to setting invert to an off axis is critical. The feel comes from the mileage of training the athlete has with this maneuver. The choice of terrain or jump should allow the athlete the time to develop control in the mogul environment. Choosing an on snow training environment with an open landing zone rather than the mogul terrain will aid the athlete in their first attempts of execution.

**Lincoln Loop** The key factor in taking the Lincoln loop to the snow environment is maintaining a visual focal point for the set out and in front, and staying committed on that point. Through transition the athlete needs to keep the chest up and looking for a focal point. Arms can aid in setting rotation with one up and the other remaining down until they switch position on takeoff. The arm that is up determines the direction of sideways rotation around the anterior posterior axis. The head remains neutral and arms remain low at completion in preparation for landing.

**Cork Back** Cork back is determined by the similar set of a back tuck with the hips creating off axis by the angle of direction to desired side of horizontal. With the commitment of the backward action, the hips set off to one side or the other on takeoff. The head looks immediately to the direction of the landing zone to correct or counter the off-axis cork back set. The shoulders also turn to perpendicular of the landing zone at the end of flip rotation.

**Flat 360** This skill is similar to the Cork Back Flip except the hips remain neutral on takeoff relying heavily on the upper body, chest and shoulders to produce the flat spin. The trailing hand safety grab or the Japan grab aids in the set of this skill. The direction of the flat spin, right or left, needs to have the lead shoulder closed to the 360 position when in the air. If the leading shoulder opens the skill goes to 540. Also, the head looks in the desired direction of spin, independently of the shoulders. Extension at the completion of the skill is done with the skis pointing in line with the direction of travel to maintain the flat 360.

**Flat Spin/Rodeo 540/72** The progressions leading up to this maneuver on snow are very important for execution. Athletes that have met their mileage requirements on water and air bag should follow their same progressions for this maneuver on-snow. Flat and rodeo are backward actions that incorporate landing switch. Athletes should be very comfortable with the switch landing through their progression before attempting this maneuver. Flat spin should be lifted into with a strong commitment with upper body and extension. The hips remain closed for the flat spin and the hip opens for the rodeo. Both achieve off axis from the set on takeoff. Flat Spin is non-inverted and Rodeo is inverted.

**Flair** This maneuver is usually performed in the halfpipe. The athlete commits to the vertical right or left wall and rotates down the pipe for flair and up the pipe for ally-oop flair. The basic explanation of this maneuver is a back flip with a 180 at the end. In the actual execution the athlete turns the shoulders in the direction of spin rotation prior to the initiation of the flip. Immediately after the

flip is initiated on the vertical wall of the halfpipe, the athlete rotates similar to a Lincoln Loop, with a 90 degree turn down the pipe wall, forward to the landing zone.

**Underflip** The Underflip is easily described as an Arabian with skis on feet. The athlete commits to the backward action on takeoff and immediately commits to opening the shoulder in the direction of spin rotation. The coach can assess and develop the execution from observing a backward action being set on takeoff and immediately turning to 90 to perform what resembles a Lincoln loop to 90 at completion to land switch. In the snow environment, jump size should be selected to suit athlete's development level. The spec on degree of the takeoff should resemble the training environment as well as a properly prepared landing. Step up or traditional table top is an ideal jump type. The jump spec that resembles a step down will increase the impact in the learning stages and could possibly discourage the athlete from further attempts.

**Cork 540** Cork 540 is closely tied to the underflip. The underflip set is a backward action with direction change to land switch. Cork 540 is similar with the emphasis on off axis rather than flip. The vision remains on the direction of travel to the landing area at all times. The off axis is aided by a carve take leading in the direction of spin direction. When the athlete leads with the upper body for spin, the shoulders dip to achieve off axis as the chest squares up to 540 at completion.

**Switch Rodeo 540** This skill is considered the entry level switch flip on snow. The skill develops into a forward landing skill and makes it easier to ski away from. Progression leading up to this skill is consistency with switch takeoff up to switch 540. Also, a misty flip forward is a good way to communicate mechanics for this skill. As the athlete enters transition, counter rotation of the upper body begins the transfer of movement into the switch flip set. The hips are critical importance with achieving a press up and into 90 degree moving forward to create the switch rodeo flip. As the hips continue to press over the head and the landing appears. The shoulders complete spin or twist into the forward landing position.

# Qualifying Jumps on Snow

## **5 JUMP Qualification Process:**

As an Air 4 on Snow Qualifier, your goal is to implement a series of 5 jumps where the athlete is performing a maneuver to be qualified off a snow jump to a snow landing. During this 5 jump process, the coach is free to communicate with the athlete for mechanical adjustments or speed changes needed to ensure the safety of the athlete while performing in the qualifying process. The coach observes the safety of executing each maneuver on a scale outlined in the air qualification form provided by CFSA. The same rules apply for the qualifying process as stated in ARQ under qualifying jumps.

### **\*IMPORTANT**

Jumps can be qualified on an Air Site, Traditional Air Site, Half Pipe, SlopeStyle Jump or Mogul Course, on snow. A certified Air 4 Coach can qualify

## CONCLUSION

*The goal of the Air 4 Manual is for the coach to introduce the athlete to the on snow environment. Understanding that if goal of the coach is safety, allowing the proper time to develop an athlete is the focus. After all the considerations are made, matching the athlete and skill to that environment will be the challenge of the coach. If the proper work was done in the training environment of trampoline, air bag and water ramp, following mileage requirements and qualification, performing a first time invert on snow is simply execution.*

## GREAT IDEAS

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# How to be a better coach



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**Learn to listen**, especially to the athletes –  
they are excellent teachers.

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**Help each athlete develop** all of their capacities:  
physical, mental/emotional, and social.

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