

## **Skiing Focus - What?**

Adults are a very discerning group of diverse individuals who are quite adept at recognizing balderdash. This means that coaches need to be very knowledgeable and confident. The coach must thoroughly understand and be able to communicate the “what”, the “why” and the “how” of skiing.

For our purposes here, these factors are defined as follows:

The “what” are the basic theories, theorems, and concepts of skiing.

The “why” are the physical laws that explain and support the “what”.

The “how” are the various strategies, tactics and techniques; i.e. what we actually coach and instruct others to “do”.

### **The “WHAT”**

In 1975, under the leadership of Horst Abraham and the Alpine National Demonstration Team, PSIA introduced what is known as the Skills Concept which became the basis for the American Teaching System and was also accepted by other countries around the world. The skills concept is the foundation of the “what”.

Skiing can be broken down into three main components, the snow, the skis and the body. The skills that play a role in skiing are what the body does with the skis on the snow. The focus is on the “skis”. There are four skills that describe what the body can do with and on the skis:

1. Balance - balancing yourself in a dynamically changing world as the skis slide over the snow
2. Steering - pointing or steering your skis in the direction you want them to go
3. Edging - controlling the angle your skis make with the snow
4. Pressure control - controlling the pressure or force exerted on your skis by gravity and the laws of motion

The good news is that a skill, as defined by the American Heritage Dictionary, is a “proficiency, facility, or dexterity that is acquired or developed through training or experience”. That means that even though we are all born with varying natural talents, we may all also develop skills and become better skiers through training and experience! The even better news is that we can continue to develop these skills as we age. Our reflexes might not be as quick, our recovery time may be a bit longer, but we can continue to become more and more skillful at skiing no matter how old we get (as long as we maintain our physical fitness). Ultimately, your ability as a skier is based on both your natural talent and your developed skills.

Skillful skiing is efficient skiing. Efficient skiing is using the minimum effort to manage or produce an effect; i.e. how you manage the interaction of the ski with the snow within the realm of the natural physical forces exerted on you and your skis. I think of this as being how I can stack my bones with the minimal muscular energy to maneuver my skis.

### **Balance**

The first skill to develop is that of balance. Balancing is something that our brains are very adept at doing. We have been balancing ever since our infancy when we first started to roll over, sit and crawl. Our brains are quite good at it and we need to trust them. Watch a child stack blocks. The more adept they are at balancing one block on the other, the taller they can stack them. You balance in much the same way, you stack your bones in a basic stance. In skiing, we have a basic skiing stance. However, when considering your skiing “stance”, it is important not allow the image of the “stance” to hinder our ability to move and stay in balance. Sometimes “stance” evokes a static image and causes people to “freeze” or hold a position. In skiing, we are always moving and hence our stance needs to be continually adjusting and changing in order

to maintain balance. There are a few characteristics though, of a good skiing stance. These include flexing/unflexing ankles, knees and hips, a rounded “small” of the back (see photos), hands forward and out to the side, and your head stacked on your torso and facing where you are going.

One key to good balance is to be always moving and never holding a position. Continual motion. In dynamic balance, feeling, timing and anticipation are critical. For anticipation, you need to “feel” the forces acting upon you, “see” what is coming next and “understand” the implications so that you can time your movements to maintain dynamic balance. So, for balance, remember, always move, never hold a position so that you can also feel the forces acting upon you and go with them to use them, move them, and move with them - be with the force!!!

## **Steering**

Steering, also called rotary, is a simple concept. It is simply pointing your skis in various directions. While skiing, you are always steering your skis; i.e. you are always guiding and directing your skis. When you go straight, you steer them straight and when you turn, you steer them in an arc. Lately, in some skiing circles, there has been talk of steering angles, however, that is of little relevance and generally serves mainly to confuse the issue of pointing your skis in various directions. The skis may be steered such that the tail follows the tip, or they may be steered with some skidding or sideways component.

Throughout the history of skiing, there have been a variety of methods employed to steer the skis. These methods have changed and evolved along with the changes in equipment. Modern boots are stiff laterally and permit the ankle joint to flex forward and back in a limited range. The boot fit and boot to ski connection dictates how effective various steering methods are.

The ski may be steered by rotating the foot, which, due to the nature of the modern ski boot, is mainly accomplished by rotating the shin bone below the knee. This does not allow for a very great degree of motion, or for much power or force. However, mastering such steering is essential in becoming proficient at steering skills. You are always guiding and directing your feet and, in most modern skiing, we want the steering to start with the feet.

The ski can also be steered by moving the thigh bone, i.e. rotating it in the hip socket and pointing the whole lower leg and knee in various directions. The muscles involved are quite a bit stronger and have a larger range of motion. However, this range of motion is limited by range of the hip/thigh joint. Therefore, to be more effective in using the thighs, it is also necessary to coordinate them with rotation of the pelvis. I think of my pelvis as being the “joystick” of the thighs. If I want to be able to move my thighs in a certain manner, I need to make sure that my pelvis is coordinated and lined up to allow me to maintain the strength in the thighs. This form of steering the skis is also in continual use at all times.

(In the past few years, there has been quite a lot of talk about moving the femur in the hip socket. However, remember, it is impossible to move the thigh *without* moving it in the hip socket since it is a ball and socket joint! The result of so much focus on moving the femurs in the hip sockets has been quite a few skiers becoming very “stiff” in that joint, trying to hold the pelvis and not allow it to move as needed for strength with the femurs. This shows up often as issues with “counter”.)

Steering can also be accomplished by adding in the whole torso, head and arms into the rotational movement. In the past and now with the advent of rocker skis, this form of steering was/is more dominant. Generally speaking though, the most effective steering of the skis originates at boot level by turning the feet with the rest of the legs and body supporting the feet.

Thus, steering is accomplished by a coordinated blend of many body parts. The exact desired outcome will determine what body part is more dominant in controlling the steering of the skis.

## **Edging**

Edging is quite a simple concept. View the ski with an axis running lengthwise and tipping/rotating the ski around this axis; i.e. tipping the ski from the flat base to its edge. As in steering the design of the boot and the connection to the ski permits movements with the body to edge the ski. It is helpful to think of the bones in your body as levers that you can use. Similar to the discussion in steering, you can edge a ski by rolling the foot in the boot, tipping the shin bone sideways, adding in the thighs and hips to move your whole body as a lever, in various combinations. You can even stand tall and lean your whole body over and your skis will tip.

Skillful skiing is an efficient blending of all the skills. Edging should always be coordinated and blended with steering and pressure and balance. It is good to think about steering your skis onto an edge, progressively as you enter the turn and then progressively steering them off of their edges. This steering and edging is blended with managing the forces of the turn - pressure control - both fore/aft and side to side while remaining in balance. It's a good thing that our brain works with our body somewhat automatically so we do not have to think through each and every move!

## **Pressure Control**

Managing the pressure on our skis from the turn forces is not only one of the first fundamental skills, but also the most difficult to fully develop. You need to be aware and "feel" your skis on the snow to steer and edge the skis, but more so to manage the forces that are generated when we ski. I cannot emphasize enough the importance of being sensitive to the sensations of skiing. It's these sensations that are one of the "addicting" factors in skiing, so it's a bonus when you encourage your clients to pay attention to and to feel the snow, feel the forces!

The forces are discussed in another article on the "Why", but suffice it say here that skiing deals mainly with the laws of gravity and motion (momentum) - thank you Sir Isaac Newton. Due to how this real world of planet earth works, we need to manage these forces which we feel as pressure on our bodies and our skis. Pressure control skills involve how you balance on your skis both fore/aft and side to side/foot to foot/ laterally. Again, think of your body as being bones and using the levers of those bones to distribute the total forces generated by both the dynamics of the turn and your body mass, onto your skis. By simply lifting one ski, you have already transferred the forces to the other ski. By flexing at the lower part of a turn where we feel the pressure build up, we go with the forces and thereby decrease the pressure on the skis. By extending we can either increase or decrease the pressure on the skis depending on the timing in the turn. We can lean forward, pressure the tips of the skis, stay balanced over the sweet spot or lean backwards and pressure the tails of the ski. Edging will transfer pressure laterally. Steering cause either cause an increase or a decrease in pressure depending on the timing in the turn. Of all the skills, pressure control/management is the most intimately blended with all the rest with the most variables and hence, the most difficult to master.

In pressure management/control, timing is critical. Knowing when to move is just as important as knowing where to move. For timing, you need to feel the forces as well as understand how your body and your skis interact with the forces. Paying special attention to the "feeling" is again indispensable - how can you manage the forces if you don't feel them? Understanding the "why" of the forces is helpful for everyone, but especially for those who are not the naturally talented and gifted athlete. Knowledge and understanding really help in the application of the skills.

## **Modifiers/Descriptors/Components of the Skills**

Coaching skill development thus entails helping your clients learn how to better use their skis; i.e. their tools or toys. Obviously, it is the body that needs to learn how to manipulate the skis, so you are often coaching and refining bodily movements that blend the skiing skills that result in efficient and successful skiing. We can refer to these as “movements in motion” (Thank you Canadian’s at an Interski 1987.) Movements can be thought of as having various components. Understanding them as such aids in communicating and implementing the skills concepts.

These components are: Direction, Duration, Intensity, Accuracy, Timing

**Direction.** All movements have direction, there is no such thing as a non-directional movement, so please do not let one of the current buzz phrases (directional movements) confuse you. In coaching, what is important is which direction. So, whether, you advise a client to flex with the forces at the bottom of a turn, or move their thighs into the turn at the top, it is important to remember always to include in your advice, where, what direction.

**Duration.** Closely linked to timing, duration is a function of the “when” of timing and the rate, and/or varying rates, for the movement pattern. In coaching one very common example of working with duration is in developing flexion and extension movement patterns. Often the client will rapidly extend, stay there, then rapidly flex and stay there. Coaching them to take longer getting longer, longer getting shorter will help them to be able to better shape their turns.

**Intensity.** Intensity goes jointly with the magnitude of the forces being generated. Again, here it is important to be able to “feel”. For example, it is more efficient to use just the right amount of edge angle to hold a desired arc, than to over edge the skis. Learning to become progressive in movements also aids in being able to vary the intensity level. Here again, it’s the concept of continual motion balancing and blending all the skills.

**Accuracy.** Being able to produce the movement accurately is also important. This is where the student centered approach is critical to be able to communicate exactly what is the desired movement pattern. It is important to be very specific; i.e. what body part, where in the turn, what direction, how much etc., in simple words, avoiding vague, general terms that have may elicit multiple interpretations such as “counter” more or less or “move into the turn”, “have a stronger inside half”, etc. Accurate demonstrations are also essential.

**Timing.** Timing is everything! Feeling is essential for timing, as is understanding the desired outcome. In order to time the movement patterns properly, the client needs to be relaxed enough to be able to move. Fear is an important factor that needs to be dealt with prior to being able to achieve the correct timing. Fear freezes and for timing requires constant, continual motion which will in turn allow for “feeling” the forces through the skis and the body.

## **Skiing Skills Application - Tracks in the Snow**

Skiing is a sport, something we do. Developing skills needs to always be linked to the doing - the skiing. It is imperative to always work on skills with a skiing objective; i.e. what sort of tracks do you want to leave in the snow, where do you want to go. Therefore, first and foremost, have the tracks, the “going”, the skiing, in the forefront. Those tracks are the purpose of and the result of skiing skills development. It is amazing how simply explaining “where” to a client will result in them making monumental changes in their skiing. With seniors, who learned in the days of more z-shaped turns, simply working on rounded tops of the turns with rounded bottoms will help them develop the skills necessary for utilizing the modern shaped skis.

## Round the Small of Your Back



Not This!!!

But like These!!!!



Ted  
Ligety



Ted  
Ligety



Phil  
Mahre

