

5 Fundamentals and Mechanics of Skiing

This last weekend, I got some training. We had [Rob Sogard](#) at Cascade and many of our instructors attended his 3 sessions. They were good. I liked the different perspective that he had and it was upper level training, which I enjoyed getting.

During the training and in our own training last week, we discussed the new 5 Fundamental Mechanics of Skiing that PSIA ([Professional Ski Instructors of America](#)) has set up. They are:

Five Skiing Fundamentals from PSIA

1. Control the relationship of the center of mass to the base of support to direct pressure along the length of the skis
2. Control pressure from ski to ski and direct pressure toward the outside ski
3. Control edge angles through a combination of inclination and angulation
4. Control the skis rotation (turning, pivoting, steering) with leg rotation, separate from the upper body
5. Regulate the magnitude of pressure created through ski/snow interaction

The wording above might seem complex but the cool thing is that no, skiing hasn't changed. The technology in skis and boots has but skiing, in general, really has not changed. How things are phrased does change but they always go back to the same concepts. Skis can only do a certain amount of things and you can only do a certain amount of things to your skis.

Five Skiing Mechanics

Combine the 5 fundamentals above with these mechanics to really understand what they mean:

1. Balance: Good balance is crucial for skiing. Skiers must maintain a stable and centered position over their skis, keeping their weight distributed evenly between their feet. Proper balance allows skiers to maintain control and execute turns with ease.
2. Edging: Edging refers to the technique of using the edges of the skis to control direction and speed. By tilting the skis onto their edges, skiers can create friction with the snow, allowing them to turn and stop.
3. Pressure Control: Pressure control refers to the ability to adjust the amount of pressure placed on the skis during turns. This allows skiers to control the shape and speed of their turns, and to maintain good balance.
4. Rotary Movement: Rotary movement refers to the ability to turn the skis using the legs and hips. Skiers use this technique to initiate turns, maintain balance, and

control speed.

5. Timing and Coordination: Timing and coordination refer to the ability to combine the above mechanics in a fluid and efficient manner. Skiers must be able to anticipate and adjust to changing terrain and conditions, while executing turns with precision and control.

Just for Fun, Let's Combine the Two...

Let's integrate the mechanics of skiing with the fundamentals outlined by the Professional Ski Instructors of America (PSIA):

1. **Balancing (Fundamental 1):**
 - Mechanics: Maintain a balanced and centered position by distributing weight evenly over both skis.
 - Application: Control the relationship of the center of mass to the base of support, directing pressure along the length of the skis.
2. **Edging (Fundamental 2):**
 - Mechanics: Use the edges of the skis to control direction and speed.
 - Application: Control pressure from ski to ski and direct pressure toward the outside ski for effective edge control.
3. **Rotary Movements (Mechanic 3):**
 - Mechanics: Use leg and body rotation to steer the skis.
 - Application: Control the ski's rotation (turning, pivoting, steering) with leg rotation, separate from the upper body.
4. **Pressure Control (Mechanic 4):**
 - Mechanics: Shift weight forward or backward to regulate pressure on ski tips or tails.
 - Application: Regulate the magnitude of pressure created through ski/snow interaction for optimal control.
5. **Timing and Rhythm (Fundamental 5):**
 - Mechanics: Coordinate body movements for a fluid and controlled skiing experience.
 - Application: Enhance timing and rhythm to improve efficiency and adapt to changing terrain.

Whew! These integrated principles encompass both the mechanics and fundamentals of skiing, providing a comprehensive understanding of how specific movements and techniques contribute to the core principles outlined by ski instruction organizations.

Conclusion

Mastering these five fundamental mechanics is essential for skiers of all levels to progress and enjoy the sport safely and with confidence.

What's really important is balance. Balance affects everything and if you're out of balance, doing the rest of these things is more difficult.

When I teach beginner lessons, I'm emphasizing balance. This is usually true in intermediate lessons as well. People are usually a little too far back in their stance and could move forward more. This is especially important as you're going into your next turn because it helps you get your skis on edge earlier in the turn. When you do that, you get more control... which everyone wants.

Come take a lesson with me and let's discuss these things as we ski!

-Tony

BONUS: The Five Tenants of Skiing

FYI, I even found an earlier version of these five fundamentals when they were first called "tenants" – I got a sheet given to me from an inside source while they were still being developed. So here they are before they were revised to the final version:

1. Skiers need to stand over the center of their feet
2. They need to be able to distribute their weight over the outside ski and then over the new outside ski as they make a turn
3. They need to turn their feet and legs more than they turn their upper body
4. Skiers should use inclination and angulation to control edge angle
5. They need to have the ability to regulate pressure along the length of the ski

You can see how they changed (I think this is interesting). I like the final versions they came up with.

QR Code

If you want an easy way to share this page, here's a QR code you can download.

QR code for the Five Fundamentals of Skiing

Original article: <https://www.skiwithtony.com/5-fundamental-mechanics-of-skiing/>