"DISCOVERING HOW TURNS WORK"
A CLINIC FOR NEW AND SENIOR INSTRUCTORS

(ADAPTED FOR PSIA-W FROM THE AUSTRALIAN PROFESSIONAL SKI INSTRUCTOR'S CLINIC "THE PACKAGE")

THE PURPOSE OF THIS CLINIC IS TO GIVE INSTRUCTORS AN EFFECTIVE WAY TO:

- Gain an understanding of how all turns work in skiing.
- Gain an understanding of the mechanics of skiing.
- Teach/coach themselves and not solely rely on a "trainer" for feedback
- Clarify the words used to describe how turns work (skidding, carving, pure carving, railing).

NEARLY ALL THE STEPS (all the way to step 11) are conducted in a wedge and on green trails.

- **STEP 1:** Ask the instructors to make three or four turns with a totally flat (zero edge) outside ski (a contradiction of course).
    - *It takes about three attempts for the instructors to understand what their outside ski is doing, how to flatten it and actually accomplish the task of sliding straight down the hill with no direction change.*
    - *Ask the group how they flatten the outside ski and get, as you can imagine, half a dozen different answers. We attempt to perform the task, trying a couple of alternate ways.*
    - *Ask the group which part of our body we use to FEEL what happens between the ski and the snow. We discuss the receptors on the bottom of the foot.*
    - *Standing across the hill we put a hand on our downhill knee and roll it from side to side but keep the ankle and foot completely dead or numb inside the boot (this, we mention to the group, is how many of our guests ski). We repeat the exercise this time actively rolling the foot inside the boot and discuss the difference in feeling. We acknowledge that the foot/ankle/knee all move as one.*
    - *We have another try at the flat ski "turns" actively rolling the foot flat and using the receptors on the bottom of the foot to tell us what it feels like to have the outside ski so flat. We discuss the uncomfortable sensations resulting from the task.*

STEP 2: Ask the group, this time, to have a go at making three or four turns with the ABSOLUTE minimum amount of edge necessary to have the ski change direction ever so slightly.

- *Again it takes a couple of practice tries before they develop the sensitivity to apply the smallest increment of edge necessary to make a slight veer to one side and then the other.*
- *Ask the group how they roll the ski on edge. Again a variety of answers so we try them out and discuss what feels the best for each of them.*
- *We make some turns and focus on feeling the whole inside of the foot (big toe, ball, arch, and heel).*

- *At this stage it is already obvious who understands how to stand on the ski correctly, i.e., balancing on the whole foot without using the back or front of the boot as a crutch.*
- *Ask those members of the group who do stand correctly what they feel etc., and then spend some time working in pairs, for example, to help those who lack the understanding.*

STEP 3: Ask the group to do the same as step 2 but add another increment of edge.

STEP 4: Same as above with yet another increment of edge.

- *At this stage (about the third increment of edge increase) we have progressed from slight direction changes to proper turns.*
- *Ask the group HOW we guide the skis around the corner, or what part of our body we use to apply the twisting force.*
- *We discover that there are some who use the hip and sometimes even the upper-body as well as the legs to provide the guiding force. It takes a bit of time to show them how to twist the leg inside the hip socket without twisting the pelvis as well (building an awareness is about all that can be done at this stage. The process of correcting this error takes time).*
- *Ask them whether we apply the twisting force in equal increments throughout the turn or whether we apply the twisting force more abruptly at various stages of the turn.*
- *We have a go at the turns concentrating on applying a consistent turning force throughout the turns (this may seem silly and obvious however there are instructors (even level 3) who are not aware that they do not provide a smooth twisting force.*
- *We discover that everyone naturally moves up and down in these turns and discuss why we move up and down in skiing.*
- *Ask the group what else they feel during the turns. We discover that the start of the turn feels lighter and the end of the turn feels heavier.*
- *We have another go at these turns and then ask them to feel HOW the pressure builds up (abruptly or smoothly) and WHEN OR EXACTLY WHAT PART OF THE TURN the pressure starts to build up. We discuss the results of their discoveries.*

- *Ask the group WHY there is a pressure build up in the turn. As you can imagine there are several impressive sounding words that are thrown around, however in general the groups struggle for a clear answer. Draw a turn in the snow and use succinct and clear descriptions to explain how and why the pressure increases during the turn.*

- *Ask the group what we do to deal with this pressure increase during the turn. Firstly we discover that the outside ski's edge angle needs to keep increasing in order to steer across the hill in a continuous turn or arc. I demonstrate to the group a slow wedge turn starting across the hill. I roll the outside ski on edge very early (and make sure they see*

that) but then keep the edge angle the same for the rest of the turn and we notice that I drift down hill rather than turn across the hill. I repeat the demonstration but this time I keep increasing the edge angle and I am able to steer the turn to completion in a continuous arc (again this is easily observed by everyone). So we discover that no matter what sort of turn one makes (wedge, parallel, short, long) one always has to progressively increase the edge angle to complete the round arc. We make some turns and consciously feel ourselves increasing the edge angle through the turn.

- *Ask the group what else we do to deal with the gradual building of pressure through the turn. We discover that the leg muscles (gluteals and quads) need to be tensed to prevent ourselves from collapsing against the outside ski. We make some more turns and feel ourselves smoothly increasing the tension in our leg muscles. The stronger the carving, the stronger the pressure build up, and the more we feel like we push back at the ski.*

STEP 5: Ask the group to make four more turns and add another increment of edge angle

STEP 6: Same as above with another increment of edge angle. By this stage we are making some pretty strongly steered wedge turns.

- *Ask the group what else we are starting to add in order to get the strongly edged ski to come around the corner. We discover (much to the surprise of many lower level instructors) that a substantial amount of strength, power, muscle, grunt, uuuggghh, etc., is needed from the leg muscles to guide the skis through the turn.*
- *We summarize all the bits and pieces of the turn so far:*
  - *Early rolling with the foot/ankle (and of course knee)*
  - *A smooth but powerful guiding force from the thigh muscles.*
  - *A progressive increase of edging and muscle tension (thigh and buttocks).*
  - *A smooth up and down movement.*

STEP 7: Ask the group to perform turns increasing the edge angle to the point where there is TOO much edge angle this time.

- *We discuss what happens to the ski, the turn, and the muscles in the turning leg (compared to a turn that is carved but not railed). The lower end instructors often do not understand what railing is and what the difference is between a railed turn and a carved turn.*

STEP 8: So we've gone to the extreme of edging and now go back again to a carved turn. Ask the group to perform the most powerfully steered/carved (not railed) wedge turns they can manage; ONE AT A TIME so that you can watch everyone. Although the group is clearly starting to understand how to make a carved turn, the following typical errors crop up:

- *Not rolling the outside ski early enough.*
- *Not enough edge angle through the turn (not carved strongly enough).*
- *Stomping onto the ski right at the start of the turn rather than smoothly and*

progressively pushing against the ski as the pressure increases.

- *Not increasing the edge angle enough through the turn.*
- *Not powerful enough with the turning force from the leg.*
- *Too much upper body tilting to the outside of the turn.*
- *Hip rotation.*
- *Not able to blend the rolling, turning, pushing, grunting etc., well enough to make the smooth carve.*

***THE MOST EXCITING THING IS THAT THE FEEDBACK YOU GIVE TO THE GROUP IS EASILY UNDERSTOOD AND ABSORBED BECAUSE WE HAVE JUST GAINED A THOROUGH UNDERSTANDING OF THE MECHANICS OF TURNING. IT IS QUITE AMAZING TO SEE BECAUSE FOR THE FIRST TIME IN THEIR SKIING CAREER THEY REALIZE THAT THEY HAVE GAINED THE TOOLS TO START TEACHING THEMSELVES. MAKE SURE THAT THE GROUP IS ABLE TO SEE AND RECOGNIZE EACH OTHER'S MISTAKES*.**

STEP 9 We dedicate several runs to improving the weaker areas. Vary the group management (them rotating while you stand in one spot, you circulating with the group, them working in pairs or threes, back to one at a time etc.)

- *We discover and discuss all the differences between a strongly carved turn and a skidded turn. This is hugely beneficial because the group becomes aware of all the different feelings and ways to tell whether you are carving or skidding.*
- *We do several turns switching between skidding and carving to heighten the awareness development.*
- *We add some fun variations such as: who can make turns leaving the narrowest, deepest tracks (not railed though). Who can grunt the loudest? Who can produce the most lactic acid build up after ten turns? Who can make the smoothest carved turns. Who can get on the edge the earliest in the turn and still carve it smoothly?*

STEP 10: We are still on green terrain. Ask the group to make the carved wedge turns with MORE SPEED (still no railing).

- *We discover that MORE edge angle is required and I ask the group how we achieve this.*
- *For the first time we discuss the role of the hip and hip angulation.*
- *We discuss how to achieve natural hip angulation (i.e., not too countered and not too square).*
- *We discover that creating edge angle comes from a combination of the foot/ankle/knee, the hip and whole body. We practice the angulation/inclination movements stationary using the poles and against each other.*
- *We discuss the need to have an appropriate blend of the above mentioned areas. Too much knee or too much hip is counter productive.*
- *We make turns without poles and hands on the hips focusing on being aware of*

increasing the edge angle through an increase of angulation and inclination.

- *We discuss how to move from one turn to the next (crossing over) with the correct angulation/inclination. Wedge turns with the hands on the hips (first stationary if necessary) are not a bad way of gaining a feeling for the cross-over movement.*

STEP 11: We now start varying the radius. The radius of all the wedge turns thus far has been 'mediumish'.

- *We discover the difficulty of maintaining a smooth carving action, as the turns get shorter and shorter. Each instructor has their own threshold, below which they find themselves having to push the back of the ski out rather than carving the turn .We discuss the fact that it takes a season or more to develop the ability to carve turns of all different radii.*
- *We discuss the fact that the BLEND of the rolling, guiding, pushing, powering, is always necessary for what ever radii but that it is either performed more quickly (shorter radii) or more slowly (longer radii).*

STEP 12: We also start applying the same carving skills to parallel turns (but at least hip width apart).

- *Initially it is common to see the carving skills disappear as soon as parallel turns are made.*
- *The good news, however, is that the group is able to discover themselves (to a large degree) how to transfer the carving skills from the wedge turns to the parallel turns.*
- *These skills can now be taken further to shorter turns and pure carved turns.*

POCKET GUIDE VERSION: PLEASE READ THE ENTIRE CLINIC DESCRIPTION AND KEEP A COPY ON HAND, BEFORE, RELYING ON THE CONSOLIDATED VERSION LISTED BELOW.

CUT – OUT

DISCOVERING HOW TURNS WORK (CONSOLIDATED):

GOALS:

1. Understand how turns work
2. Understand turn mechanics for skidded, carved, pure carved & railed turns
3. Tools to teach yourself and develop self - training skills
4. Clarify terminology for how turns work.

---

1. 0' Edge * How to roll foot vs. knee
2. Turns with minimum amount of edge/staying balanced over outside foot
3. Add direction change

---

4. Increase edging "slightly" /discuss how we guide skis through turn
-where does guiding force come from
-make sure it is a consistent turning force
-discuss pressure at start and finish of turn
-review why pressure builds in turn
-practice Progressive Edging

---

5. More turns with a little more edging

---

6. Review what we are doing to get a strongly edged ski to also turn
-summarize steering/guiding forces with thigh muscles

---

7. Perform turns with so much edge angle the ski rails
-review difference between carving & railing

---

8 & 9 Watch each other and work on common problems with steering
-not rolling outside ski early enough/not enough edge angle though turn
-not enough turning force though leg
-hip rotation/not able to blend the rolling, turning, balance over outside ski

---

10. Add speed to turns, rv use of hip for angulation/ rv x-over
-resist forces with strong outside leg – This is now carving

---

11. Vary the radius & find how short you can go before you begin to skid

---

12. How to transfer carving skills from wedge to parallel
-Take skills to working on shorter turns and pure carved turns