Nordic Ski Technique Summaries

Ralphie G. Schwartz, Esq.

Technique Summary

Technique Elements Common to Both Disciplines

Big Muscle to Small Muscle Progressions
In poling for example, the initial power is generated by the abdominals, followed by the shoulders, and finished by the elbows.

The Pre-Load Principle
With all other things being equal, a muscle that is placed under a stretch during the pre-load phase, generates more power than one that is not. (This is due to the action of the Muscle Spindles, plus the parallel and series elastic components of the muscle) This principle applies, to some degree, to virtually all poling, and leg drive variations.

Knee Bend Constant

- Ski with an acute ankle angle.
- The knee should be over, or ahead of the toes (the knee 'covers the toes').
- Ski with a 'sharp knee angle.'
- Ride a flat foot.
- The leg delivers power through a flat foot.

Forward Body Position for All Techniques

- Lean forward from the ankles.
- The line of the shin should be parallel to the line of the torso.

Try to move the center of gravity ahead of the support points. All bipedal locomotion is a matter of controlled falling. In order to move forward, one must lean forward. In order to move forward faster, lean forward more.

The Poling Constant

- Use the poles to generate forward power only. (Improved balance is the beneficial side effect of strong poling)
- Virtually all poling variations, from the full range of motion double pole, through almost all skating strokes, to poling in the diagonal stride, involves a preparatory rise in the torso, followed by pole implantation, and includes some degree of torso compression.
- The torso compression ranges from a hip/abdominal flexion to a few degrees above horizontal for a cruising speed classical double pole,

through an 'abdominal crunch' motion for an accelerating classical double pole, to a very slight, almost imperceptible compression in the V-1 skate (hip/spine flexion + rotation) and classical diagonal stride (crunch).

Arm Recovery

- Relax. The arms should feel long and heavy, swinging straight down from the shoulders.
- The arm recovery should contribute to forward momentum:
- Straight down the track for classical
- In the direction of the new skate in skating

Production of Glide

- Ride a flat ski.
- Maintain a quiet body.
- Ride a flat foot, evenly weighted.

Production of Grip

Skating

- Grip is produced by edging.
- Edging is produced by the weight shift over a straight ankle.

Classical

- Kick through a flat foot.
- The pressure is focused on the ball of the foot.
- The kick is early and explosive.

Key Points for Classical Skiing

Diagonal Stride

- Relax!
- Always work at finding ways to make the ski glide further!
- Emphasize an aggressive forward swing of the leg .
- Strive for loose hips & lower back. As the new gliding leg swings, and then drives forward, the hips follow. This will result in slight hyperextension of the lower back and a forward movement of the same side hip which shows up as a slight rotation @ the hips & lower back.
- Use your poles to extend the glide.
- The elbow should be bent to 90 degrees at the pole plant. This angle is maintained until the final push.
- Start poling early. The poling hand should generally reach the thighs by the time the legs come together.

- Keep pushing on the pole until the hand is well behind the back (as viewed from the side).

Double Poling

- Relax!
- Start from a high, forward position.
- Elbows bent to 90 degrees at implantation, and the angle is maintained until final push-off.
- Initiate with the abdominals, follow with the shoulders, end with the elbows.
- Drive the feet forward.

Double Pole/Kick

- One good double pole; one good kick.
- Relax!

Classical Speed Progression

The order of classical skills from slow to fast is as follows:

- Herringbone
- Diagonal Stride
- Double Pole/Kick
- Double Pole
- Tuck

The idea is to constantly look for opportunities to turn a herringbone into a diagonal stride, a diagonal stride into a double pole/kick, a double pole/ kick into a double pole, and a double pole into a tuck.

Do not allow yourself to become stuck in a diagonal stride!

Key points in skating

V-1

- V-1 is a technique for climbing and skiing slow stretches.
- Skis are used at a wide angle due to the slow skiing speeds.
- When conditions permit, land on a flat ski and let the weight shift produce edging.
- Keep the feet moving!
- Due to the wide ski angles and the extreme cost of losing momentum, there is insufficient time to bring the feet back together between strides or to come into balance over the glide ski.

- Pole implantation occurs at approximately the same time that the glide ski hits the snow.
- Use the poles to help the glide ski to do its job.
- Poling is quick and powerful with minimal waist compression, and some rotation.
- Make the weak side skate a quality skating movement.
- Relax!

V-2

- V-2 is a technique for faster conditions, including gradual ascents, and even up-hills in fast conditions.
- Skis are used at a much-reduced angle due to increased skiing speeds.
- Land on a flat ski and let the weight shift produce edging.
- Keep the feet moving.
- It is essential to be patient, and to take the extra time required to come into balance (or nearly so) over each new gliding ski.
- Initiate with a double pole
- Delay the start of the skating movement until the double poling hands reach the thighs!
- Keep the shoulders and hips squared to the track.
- Compress the waist as much as time allows.
- Relax!
- Practice this technique! It's fast, and great for developing balance.

V-2/Alternate

- This is the fastest of the skate techniques that use poles.
- It is simply a V-2 with poling performed on one side only.
- Make the weak side skate a quality skating movement.
- Relax!

Skating Speed Progression

The order of skating skills, from slow to fast, is as follows:

- Diagonal V-Skate
- V-1
- V-2
- V-2/Alternate
- No poles skate with a tuck
- Tuck

The idea is to constantly look for opportunities to turn a diagonal V-skate into a V-1, a V-1 into a V-2, a V-2 into a V-2/alternate, a V-2/alternate into a no poles skate with a tuck, and a no poles skate with a tuck into a tuck.

Do not allow yourself to become stuck in a V-1!

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