



## Return to Snow Protocol

This document has been prepared with the help of many coaches and staff members from sports science and sports medicine with the goal of **guiding** coaches when returning an athlete to snow. It in no way replaces sound judgment and decision-making when returning an athlete to snow after an injury. The primary goal of the return to snow progression should be to keep the athlete healthy, with skill development a secondary priority. This is not a time to build strength/endurance in an athlete; the athlete should have proper strength and endurance before returning to snow!

Skiers should spend at least 3 days on snow in each phase, (except Stage 1) and days on/days off should be progressed as well during the return to ski period (one day on, one day off, two days on, one day off, three days on, one day off, etc.). This progression should be performed with a certified coach present, and if possible, someone with a kinesiology or sports medicine background, to assess the athlete's response to new loads.

An athlete will be held off snow at any time if s/he presents with any of the following during return to ski training:

- Soreness that does not resolve before the next training session
- Pain in the affected area greater than 3/10
- Increased swelling/effusion
- Abnormal gait or movement pattern

In addition, the coach should stop training if the skier exhibits abnormal technique and/or compensatory patterns while skiing.

This progression does not include absolutes in terms of number of runs; rather, the coach (and PT, if available) should determine volume based on several criteria including the type of ski being used, difficulty of terrain, turn-around time (rest time), snow conditions, weather conditions, and athlete response to training. The skier should stop skiing if the coach at any point notices a decrease in skill level/technique while skiing, and the skier should stop **before** reaching fatigue (while s/he feels s/he could still take more runs).

If the intensity of training is being increased, the volume should stay the same or drop, to keep total load from increasing too much in one session. Conversely, when increasing volume, the intensity should drop or stay the same. Intensity may be affected not only by the athlete's perceived exertion, but also by terrain, snow conditions, and ski length.



## **Stage 1: Pre-Skiing (only 1 day at this stage)**

### **Criteria:**

- Skier has passed all functional testing and has received clearance from physician and physiotherapist. Strength of the affected area should be nearly balanced (approx. 80%) with opposing area (left leg/right leg, back/abs, etc.)

### **Progression:**

- Walking in Ski Boots 2x25m; 2x50 m
- Deep squats in ski boots while supported by poles 2x10 reps; 2x15 reps
- Double poling on flat surface 2x25 m; 2x50m
- Skate Skiing on flat surface 2x25m; 2x50m; 2x25m on slight uphill

\*\*\*If athlete completes Stage 1 plus a short recovery well and without pain, s/he can progress to Stage 2, (i.e. the athlete is not required to take a full day off after Stage 1).

## **Stage 2: Initial Drills on Short Skis (lightweight short GS skis, 170cm or shorter)**

### **Criteria:**

- Able to perform all pre-skiing drills with no increase in pain/swelling and no loss of ROM as described in the introduction

### **Progression:**

- Skiing to be performed on groomed, flat to mild terrain
- Side-slipping into smooth stop on fall-line
- Side-slipping into distinctive stop on fall-line
- Side slipping diagonal across fall-line and switch sides
- Side-slipping to edge-set and carving across fall-line
- Sliding wedge turns
- Sliding turn in natural stance position
- Sliding turn in squat position
- Sliding turn in squat position with squat pumps
- Single leg sliding turns, heel lift opposite ski
- Single leg sliding turns, javelins
- Sliding short to medium turns with pole plant
- Sliding short to medium turns without pole plant
- Turns with one leg lifted
- Turns with 1000 foot stepping (stepping back and forth throughout the turn)
- Turns with small hops

## **Stage 3: Initial Drills on GS Skis**

### **Criteria:**

- Able to perform all of the initial drills on short skis without soreness, pain, swelling/effusion, loss of ROM, or abnormal gait pattern as described in the introduction.

### **Progression:**

- Repeat the stage 2 progression on long skis.
- Day 3 on Slalom skis



## **Stage 4: Directed Free Skiing**

### **Criteria:**

- Successful completion of all initial drills, no increased pain or swelling. No loss of ROM or gait abnormalities. Skier can maintain control while free skiing on easy to moderate terrain.

### **Progression:**

- Free skiing at low intensity (50-70%) focusing on basic athletic stance, balance, joint angles, turn shape
- Free skiing should begin on groomed, flat to moderate terrain
- Work to achieve even balance on both legs with trust and confidence in both skis
- Free ski in sections, working up to longer/full length runs
- Non-arcing to arcing turns
- Day 1 on short or regular GS skis, Day 2 on GS skis, Day 3 on SL skis

## **Stage 5: Drill Progression Step 1**

### **Criteria:**

- Able to link turns with all different turn shapes
- Able to adequately and appropriately pressure both skis on moderate terrain

### **Progression:**

- Drills with focus on turn shape, finding edges, arcing turns, pressuring skis, pole plants, ankle/knee flexion
- Day 1 on short or regular GS skis, Day 2 on GS skis, Day 3 on SL skis

## **Stage 6: Drill Progression Step 2**

### **Criteria:**

- Able to successfully complete Drill Progression Step 1
- Able to link turns, demonstrating appropriate edging and balance
- Able to handle steeper terrain and higher speeds confidently

### **Progression:**

- Drills including single ski drills and drills with boots unbuckled to challenge balance
- Advanced drills on advanced terrain
- Free skiing a whole run at high intensity
- Sectioning courses with brushes
- Sectioning courses with gates
- Day 1 on short or regular GS skis, Day 2 on GS skis, Day 3 on SL skis

## **Stage 7: Return to Training with Team (sectioning courses)**

### **Criteria:**

- Able to ski through multiple gates on variable terrain including steep terrain
- Able to completely load each ski repetitively in advanced terrain

### **Progression:**

- Sections of gates in flat/moderate terrain, progressing to steeper terrain with multiple fall lines and variable snow



## **Stage 8: Completion of Partial Training Session**

### **Criteria:**

- Able to section different areas of courses with variable terrain/snow

### **Progression:**

- Skier should begin at lower intensity and be able to complete half a training session at full intensity before moving on to the next stage

## **Stage 9: Completion of Full Training Session**

### **Criteria:**

- Successful completion of half of a training session with the team at normal intensity

### **Progression:**

- Hard snow to variable snow
- 6-8 runs (tech events) 3-4 runs (speed events)
- Day 1: 60% intensity without timing
- Day 2: 70% intensity without timing
- Day 3: 80% intensity without timing

## **Stage 10: Full-Length Timed Runs of Events**

### **Criteria:**

- Able to successfully complete training session with team (6-8 runs of tech, 3-4 runs of speed)
- Fatigue appropriate to demands of training session
- Skier can respond appropriately to changes in terrain and snow found in a full-length run

### **Progression:**

- Skier should first be timed without other teammates present to decrease competition/stress

## **Stage 11: Racing**

### **Criteria:**

- Able to successfully complete full timed runs of applicable events
- Fatigue is appropriate to time/length of run
- Skier can maintain proper form throughout run

### **Progression:**

- Skier should start with tech races and lower level races (i.e. forerunning, club races)