



NORDIC HANDBOOK



*PSIA-AASI
Northern Rocky Mountain
Division - December 2006*



TABLE OF CONTENTS

Nordic Education Pathways	3
PSIA-NRM Membership	5
The American Teaching System	8
The Learning Partnership	8
Student Behavior	9
Instructor Behavior-Table 1	10
Movement Analysis-Table 2	11
The ATS Teaching Model	12
Safety	14
Instructor Behavior Summary	15
Movements and Skills in Telemark and Cross Country Skiing	16
Telemark Education Pathway	17
The Skiing Model/ Movements	17
Maneuvers and Tasks	21
Certification	28
Level I Telemark Checklist	29
Level II Telemark Checklist	31
Level III Telemark Checklist	33
Cross Country Education Pathway	35
The Skiing Model/ Cross Country Skiing Skills	35
Cross Country Maneuvers	40
Certification	44
Level I Cross Country Checklist	45
Level II Cross Country Checklist	47
Level III Cross Country Checklist	49
Backcountry Ski Instructor Education Pathway	51
Prerequisites	51
Certification	52
Backcountry Skills	53
Backcountry Ski Instructor Checklist	54
References	56
Your Nordic Representatives	57
Appendix 1 - Descriptors for Telemark Student Levels	58
Appendix 2 - PSIA National Telemark Certification Skiing Standards 2006	60
Appendix 3 - PSIA National Cross Country Cert. Skiing Stds. 2006 (DRAFT)	61

Preface

PSIA-NRM has adapted this Handbook from the Rocky Mountain Division. Thank you for the permission to do so. The Nordic Handbook has been prepared to help PSIA-NRM members understand the process of becoming a certified Nordic instructor and to answer some of the most common questions asked by potential candidates. Most professions measure proficiency with some type of certification. Ski instruction is no exception. We believe that Nordic certification is a process which is well worth pursuing. As you prepare, you will practice to become a better teacher and a better skier. Study this handbook, the *Nordic Technical Manual*, the *Core Concepts Manual* as well as other PSIA and snow sport oriented publications to improve your technical understanding of the sport. Clinic with other instructors, and learn to give and receive feedback. As you read this, your certification process has begun!

Nordic Education Pathways

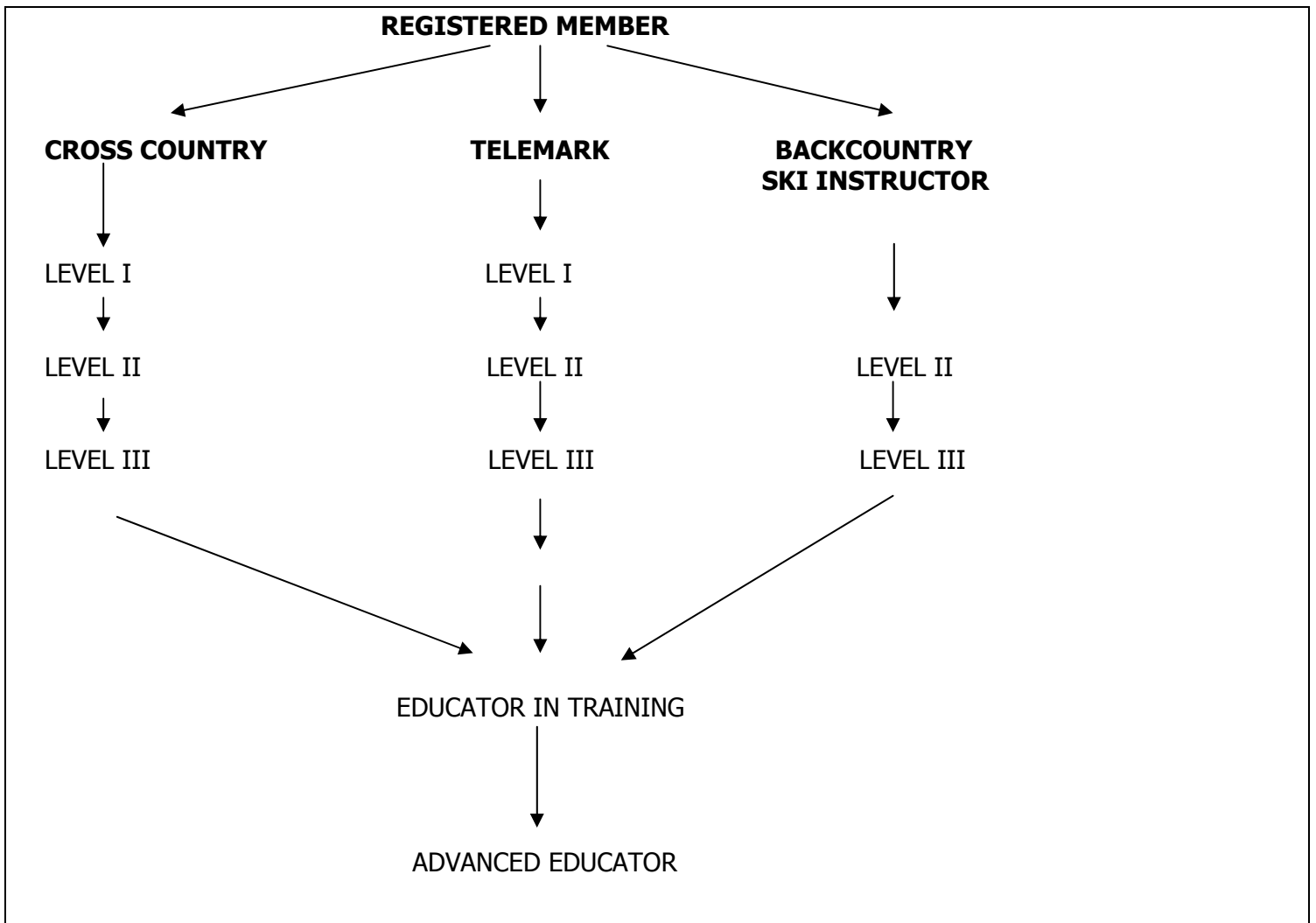
The term "Nordic" defines the broad category of skiers who slide on the snow with only the toe end of their boots attached to the ski. As Nordic skiing has evolved, the ski industry has countered by producing a wide variety of equipment to help us to ski as efficiently as possible. Technological advances have especially enticed many alpine and snowboard enthusiasts to try, and then to "convert" to telemark skiing.

At this writing there are three main areas of specialization in the Nordic world: Cross Country (formerly Nordic Track), Telemark (formerly Nordic Downhill) and Backcountry. Performed either on groomed cross country trails, un-groomed trails or wherever there is snow, "cross country" in this guide refers to that type of skiing, where the forward movement is primarily skier powered. This includes all classical and skating techniques, as well as some uphill and downhill techniques. "Telemark" refers to the telemark and alpine techniques used to ski on groomed and un-groomed trails. "Backcountry Nordic skiing" utilizes all the maneuvers of both cross country and telemark skiing.

What is PSIA-NRM Nordic Certification?

The Cross Country and Telemark programs are designed to train and certify current and potential instructors in these disciplines. Candidates should be proficient skiers and completely familiar with the American Teaching System (ATS) and its application in actual teaching situations. The Backcountry Ski Instructor Certification program is intended to certify proficient ski instructors who are well qualified to lead backcountry ski tours in the sometimes hostile winter environment. Providing back country clients with a safe, rewarding and educational skiing experience requires in-depth knowledge and experience in the areas of: leadership; backcountry navigation and route finding; emergency medicine; avalanche recognition, avoidance and rescue; equipment repair; wilderness snow camping; nutrition and meal planning; skiing skills; and teaching skill.

Nordic Education Pathways Map



Purpose of PSIA Certification

The certification/certification processes offered by PSIA serve:

- The skiing public by ensuring that they may be provided with the most professional instruction available.
- The Nordic professional by providing instruction to develop teaching and skiing skills and provides a certification process which functions as a method of evaluating instructor abilities.
- Government agencies by providing a certification standard for issuing commercial use permits (in some divisions).

PSIA-NRM Membership

A candidate for any type of certification must be a registered, dues-paying member of PSIA-NRM-AASI and must meet all of the prerequisites for the desired certification level.

Becoming a Registered Member of PSIA-NRM

- Register with PSIA/AASI - Northern Rocky Mountain. You can obtain downloadable application forms and information from www.psia-nrm.org or at the PSIA-NRM office: P.O. Box 11392 Bozeman, MT 59719 or call 406-581-6139.
- Pay yearly dues in the amount of \$75.00 with \$35.00 covering PSIA/AASI - Northern Rocky Mountain dues and \$40.00 covering PSIA/AASI (the national organization) dues. Dues are collected annually with the renewal date being the last day of the month you joined. For existing members, the deadline for payment in the Northern Rocky Mountain office is June 30th.
- Membership and certification in PSIA may be maintained even if you are no longer teaching at a ski school as long as clinic credits and dues are current.

Transferring PSIA membership from another division

- Contact your current division of PSIA/AASI and have them forward certification of your membership status to the Northern Rocky Mountain office.
- Payment of applicable fees and dues:
 - \$35.00 PSIA/AASI - Northern Rocky Mountain dues for the season applying
 - \$40.00 PSIA/AASI National dues for the season applying (if not already paid)
 - \$10.00 PSIA/AASI late fees if applicable (\$5 to National, \$5 to NRM)
- You may also maintain a dual membership with PSIA/AASI - Northern Rocky Mountain and another division. You will need to establish one division as your "primary" division, and pay both national and divisional dues to that division. Then you may add a dual membership to another division by paying their divisional dues. You will then be a member of both divisions and receive mailings and member benefits to both divisions.
- To be considered Nordic Education Staff with NRM, you must have your primary membership with NRM.

Maintaining Member status

- If you are a registered member, your only requirement is to pay your dues.
- If you are certified at any level, in addition to paying your yearly dues on time, you must also attend at least two days of clinics for credit every other year. As a LI, the requirement is one clinic day every two years.
- Credits are not accumulative, i.e. if you attend more than the required clinics in a period of time, the extra credits do not roll over to cover additional years.

Benefits of being a registered PSIA-NRM member

- An active voice: A registered member is entitled to vote in PSIA-NRM general elections.
- Current members who hold Level II or higher certification are eligible to serve on the Board of Directors by vote of the general membership.

- Top quality educational events and training: A registered member can attend any type of training event offered by PSIA i.e. Nordic, alpine, snowboard, adaptive, or kids. Clinics chosen should be suitable to your ability level.
- Discounted lift tickets at some Northern Rocky Mountain member schools.
- Scholarship programs.
- PSIA accessories catalogue purchases, online catalog and various professional purchasing privileges from sponsors such as Subaru, Patagonia and more. See www.psia-nrm.org for a complete listing of benefits.
- Publications: quarterly *Professional Skier* and quarterly *Northern Rocky News*.
- PSIA website access with the curriculum guide, downloadable educational material, on-line registration etc.

Nordic Event Schedule and Fees

Please refer to the website or *PSIA-NRM Northern Rocky News* (available from the PSIA-NRM office or on-line at www.psia-nrm.org) for a schedule of events, pertinent application forms and current event prices. Checks should be made payable to PSIA-NRM and specified as for the type of Nordic event. Payment can also be made by credit card over the phone or on-line via the website. Registration must be received by the PSIA-NRM office, along with full payment of fees, at least TWO WEEKS prior to the event. The deadline dates will be published in the PSIA-NRM *Northern Rocky News* and on the PSIA-NRM website.

Refund Policy/Late Clinic Registration fees

An injured or ill candidate supplying a written doctor's certification may receive a full refund with no penalty. Certification must be submitted within 30 days of the event.

The office will issue a 50% refund, if cancellation is received after the published deadline but before the day of the event. No refund will be issued by the office for no shows and cancellations on the day of the event. No additional fee will be charged if the original participant finds an eligible replacement person to participate in the event.

Those wishing to enroll in an event after the registration deadline listed in the *Northern Rocky News*, may do so provided that there is an opening (a late fee will be charged to all late registrants). On-line registration is only available prior to the registration deadline. After that, applicants must contact the division office to determine if there is space available.

Occasionally Nordic clinics have to be canceled. In order to meet the costs of running an event, there must be a minimum of participants registered by the deadline date, depending on the event. If this quota is not met, those who have registered will receive notification. Those who paid by cash or check will be sent a full refund from the office. Those paying by credit card will receive a full return on their account.

Reciprocity/Transfers

Instructors from other PSIA divisions may participate in a PSIA-NRM clinic or certification exam, provided they meet the following requirements:

1. Must be members in good standing in their own division of PSIA.
2. Must fulfill the requirements of their division to take the clinic or certification exam.
3. If taking an exam, the prep clinic must be taken in Northern Rocky Mountain (if there is a prep clinic offered).
4. Must pay all required fees and register at least two weeks prior to the event.

PSIA-NRM instructors taking exams in other divisions may transfer that certification to PSIA-NRM provided they meet the following requirements:

1. Must be current members in good standing in PSIA-NRM.
2. Must fulfill PSIA-NRM requirements to take the equivalent exam.
3. Must pay all required fees and register per requirements of the other division.

Nordic Education Staff In Training (NES-IT) for Telemark and Cross Country.

For a complete description of this program go to www.psia-nrm.org and click on Nordic. Qualified Candidates for the Nordic Education Staff In Training are recommended to attend the early season NES workshop to start the process and set up the appropriate coaching for attainment.

Nordic Examiners from other divisions

Nordic examiners (Conducting level 1-3 exams) from other divisions wishing to transfer to PSIA-NRM and conduct events in this division are recommended to attend the early season NES workshop in the Northern Rocky Mountain Division, followed by participating in the NES-IT checklist, and getting the ok from the Chief Examiner.

Guidelines for bypassing level 1 Cross Country Certification

There are many people in the Cross Country ski world with various experiences in instruction, coaching, and racing. We would like to be able to accommodate and welcome these people into PSIA-NRM. According to current requirements, everyone pursuing certification must begin the certification process at Level 1. We would like to encourage those who already possess the knowledge and skills necessary to teach Nordic skiing at a higher level than a novice instructor to join our organization and pursue certification by offering the opportunity to directly enter the certification process at the 2/3 level.

PLEASE NOTE: The following are only guidelines. Any person wishing to bypass level 1 certification must contact the PSIA-NRM Nordic Chairperson listed in the "Your Nordic Representatives" section at the end of this Handbook.

MANDATORY PREREQUISITE: Current membership in PSIA-NRM

In order to bypass the Level 1 process and be eligible to attend the Level 2/3 certification YOU MUST:

1. Have one of the following:
 - A. At least 3 seasons of teaching or coaching Cross Country skiing.
 - B. At least 3 seasons of Cross Country Ski Racing experience at a Collegiate or National level.
 - C. At least 3 seasons of Cross Country Ski Coaching experience at a Collegiate or National level.
 - D. Previous PSIA certification at level 1 or above. Please supply proof of certification. (Note: Instructors previously certified in PSIA but not currently active, will need to become paid, active members in PSIA to be eligible for certification.)
2. Contact the PSIA-NRM Nordic Chairperson listed in the "Your Nordic Representatives" section at the end of this Handbook to verify your experience.
3. Attend and complete the level 2/3 per-certification event.
4. Be aware that *if you challenge the level 2/3 certification and do not pass, you will not receive any type of certification!*

The American Teaching System

Student Centered Learning

A program, which aims to train and assess ski instructors, must address three questions. Who are we going to teach? What are we going to teach? And how are we going to teach? The American Teaching System (ATS), consisting of the Learning Partnership and the Skiing Model centered on student goals, needs and abilities, has provided a simple but useful format for any aspiring instructor. ATS still forms the basis for any type of instructor certification. Excellent complete coverage of teaching and technical methodology exists elsewhere in PSIA and snow sport literature. *The Core Concepts* manual, for example, offers a very good discussion of Gardner's multiple intelligence theory, Kolb's learning styles preference theory, and the application of these theories to ski instruction. In addition, in her excellent book entitled *The Open Mind*. Dr. Dawna Markova gives an in depth explanation of the interplay of visual, auditory, and kinesthetic sensory patterns in the 3 states of mental consciousness (Please see the Reference section for a more complete list of helpful publications.)

What follows is a basic outline of the essential information necessary for mastery of each level of the respective Nordic disciplines: cross country, telemark, and backcountry ski instructor. The reader is encouraged to grow by learning as much as possible. All PSIA certified instructors are expected to consistently exemplify the ATS model in every lesson that they teach.

The Learning Partnership

The Learning Partnership of ATS encompasses important concepts for every teacher. In this partnership learning happens because the teacher and the student agree on the goals of the lesson and work together toward accomplishing them. The teacher assesses the student in many areas, identifying the students' Motivational, Understanding and Movement Needs (See Guest Centered Teaching). The instructor then adapts his/her teaching style, the lesson content and the learning environment to what the student asks for and needs. This student-centered learning is in contrast to teacher centered learning where the teacher dictates what must be imparted in a lesson. The merging of Student Behavior and Instructor Behavior into a collaborative effort with a desired outcome is called the Learning Partnership.

Philosophical Basis of ATS

- A. ATS is a teaching and learning process that is
 - 1. Student centered
 - 2. Outcome based
 - 3. Experiential in nature
 - 4. Guest service driven
 - 5. Learning-partnership based
- B. Ultimate goal of instruction: achievement of student desired outcomes
Skiing Model + Teaching Model = Student Outcomes
- C. **Student Behavior + Instructor Behavior = Learning Partnership**

Student Behavior

"Students bring a vast conglomeration of experiences, physical/psychological attributes and attitudes that shape their personal learning requirements and environment to the learning partnership. This information is crucial for instructors, as many of their decisions about HOW to teach are determined by the specific needs of the student. The content of each lesson may be presented in any number of ways. Knowledge about student characteristics, learning preferences, motivation, and attitudes helps instructors to be more precise with what they do and how they teach.

A. Individual characteristics and backgrounds

- Past experiences with learning
- Age, sex, nationality, athletic ability, body type
- Past experiences with skiing
- Intelligence, common sense
- Physical abilities/disabilities
- Level of kinesthetic awareness
- Psychological factors (positive/negative)
- Range of attention (focus, concentration, and distractibility)
- Perceptual, motor and intellectual attributes
- Knowledge and understanding of other sports
- Participation in other sports

B. Learning preferences

- Sensory preference: visual, auditory or kinesthetic (VAK)
- Learning style preference: [innovative learner, analytical learners, active experimenters, dynamic learners
- Gardener's Multiple Intelligence type: Verbal-Linguistic, Logical- Mathematical, Spatial, Bodily-Kinesthetic, Musical-Rhythmic, Interpersonal, Intrapersonal (Core Concepts,2001)]
- Process versus outcome orientation
- Patience (low, medium, high)
- Amount of information needed (low, medium, high)
- Degree of interpersonal control required in the learning environment
- Feedback (intrinsic or extrinsic) and reinforcement (positive, negative, or equal amounts of each) needed
- Whole versus progressive part approach
- Expressiveness (ability to give verbal and physical feedback)
- Gifted/disabled
- Group learning/individual learning

C. Motivation

- Intrinsic/extrinsic factors
- Process or outcome
- Future application and transfer
- Personal goals (style, function, perfection, security, social)
- Individual needs (physiological, security, social, esteem and growth)
- Fear of success and/or failure
- Trying hard and moving rapidly versus proceeding cautiously and accurately
- State of readiness

D. Attitudes and values

- Openness, willingness, ability and capacity to change and grow
- Attitude toward learning, teaching, and instructors” (Stills, 1993)

Student Behavior

- Individual Backgrounds/characteristics
- Learning preferences
- Motivation
- Attitudes and values

The Instructor Behavior

Each instructor brings a full spectrum of behaviors and strategies to the Learning Partnership. These tools enable the instructor to improve student motivation, increase the speed and amount of learning, as well as facilitate the transfer and retention of information. An important aspect of this is the ability to react to new situations requiring creativity, problem solving and decision making. In addition, every instructor will have a preferred teaching style with which they feel most comfortable. A student, however, may respond best to an alternative style of presenting the information. It is, therefore, imperative to learn and utilize each of the primary teaching styles: command, task, reciprocal, guided discovery and problem solving.

Table 1	Primary Teaching Styles	
Teaching Style	Teacher:	Students:
Command	Explains & demonstrates what the students will do; then evaluates each performance	Perform one at a time
Task	Explains & demonstrates task; Designates practice boundaries; Offers individual feedback	Practice within boundaries
Reciprocal	Explains & demonstrates a task; Designates practice boundaries; Explains roles of doer & observer with a specific focus for the observer; Guides and gives feedback.	Chose roles, ski, regroup, exchange information; Switch roles, ski, regroup, exchange information.
Guided Discovery	Presents a series of tasks that explore a spectrum or range of movement; Poses questions after each set of tasks that lead the student to proper conclusion; Does not tell the answer, but guides the discovery process with tasks and questions	Experience movement variations, answer questions about what they experienced and discover the answer.
Problem solving	Poses a problem and sets a framework for the students to work in Accepts all answers that meet the requirements of the problem	Explore, find alternatives and seek answers on their own

From the beginning to the end of a ski lesson the instructor is watching the students ski. Students constantly want to know how they look and what they are “doing wrong”. Thus, a successful instructor must be skilled in **Movement Analysis**. A general, but very effective plan for movement analysis involves 3 basic steps: 1. observation and description, 2. determination of cause and effect relationships, and 3. prescription for change.

Table 2	Movement Analysis
Observation and description	<ul style="list-style-type: none"> ○ Set a task at the ability level of the students. ○ Observe using Bottom-up, Core-out, or Top-down methods explained in the Nordic Technical Manual. ○ Compliment movement that is working well. ○ Make objective statements that describe student skiing, i.e., “Tell a story”. ○ Describe skier movements in terms of the Skiing Skills and/or Movements. e.g., “As you move your balance from foot to foot, you appear to spend more time on your left foot.”
Cause and Effect Relationships	<ul style="list-style-type: none"> ○ Use the Visual Cues sections from the Nordic Technical Manual as a guideline for identifying effective skiing. ○ Determine cause and effect relationships in terms of each of the Skiing Skills and/or Movements. ○ Identify movements to be changed. ○ Explain why things are happening to the student. Be specific and accurate. ○ If nothing is wrong, say so.
Prescription for Change	<ul style="list-style-type: none"> ○ Prioritize movements to be changed and explain to the student using the observed mechanics. ○ Set a goal with the student. ○ Develop an exercise which can help meet that goal. ○ Reinforce improvement.

All of these ideas underscore the ATS Teaching Model as the most important tool for both entry level and seasoned instructors. Incorporating the ideas and practices of countless successful instructors, the Teaching Model is described completely in *The American Teaching System: Alpine Skiing* (Ayers, 1996). The following section is another extract from this important book. Please note: The text has been slightly modified in several places so that terminology will concur with the more recent *Core Concepts* and *Nordic Technical Manual* publications. Asterisks indicate specific parts of the Teaching Model that require **Movement Analysis**.

The ATS Teaching Model

“Introducing the Lesson/Learning Segment”

The instructor (1) establishes and continually builds rapport and trust (both individual and group), (2) creates a fun, open, and supportive learning environment, and (3) clearly defines the general outcomes and process of the learning segment. As an instructor, you are responsible for the activities listed below.

A. Assessing the Student

The instructor continually and accurately assesses the individual student's

- Previous experiences with skiing and other sports
- Ability level*, expectations, goals, motivation, limitations, and concerns
- Learning style profile (mix of dominant and non-dominant styles)
- Desired amount of information at any one time (low, medium, high)
- Preferred type of feedback and reinforcement (positive, negative, or both)
- Patience level
- Process or outcome orientation*
- Attention span and capacity (level of external and internal distraction)
- Willingness, ability and capacity to change

B. Determining Goals and Planning Objectives

The instructor

- Selects appropriate goals based on individual and group abilities and expectations
- Plans learning objectives relevant to the individual and group goals*
- Formulates a logical progression [This may be a linear or “Stepping Stones approach”. *See Nordic Technical Manual* p. 27]
- Chooses appropriate terrain and snow conditions
- Designs practice periods of correct length
- States general goals for the group and specifies goals for individuals

C. Presenting and Sharing Information (ideas, demonstrations, feelings, experiences)

The instructor

- Uses the following four [techniques] to enhance complete learning:
 1. **[Instruct/Present]**-explains the technical, mechanical, and tactical elements in a logical and concise manner as rational for the activities
 2. **[Show/demonstrate]**-creates clear and meaningful images of specific movements and patterns
 3. **[Do]**-develops body awareness and feelings associated with different movements
 4. **[Practice]**-Trial and error-allows students the opportunity to experiment with the information presented
- Responds to individual student needs by
 1. Properly adjusting the pacing of information to student capacities
 2. Scheduling feedback and reinforcement*
 3. Addressing their process or outcome orientation and patience levels
 4. Breaking the lesson into appropriate amounts of practicing, skiing, and information to maintain their attention and motivation

D. Guiding Practice

The instructor

- Sets practice tasks at appropriate levels of difficulty
- Expands the student's process or outcome orientation to include both
- Provides specific and task-relevant feedback to each student*
- Provides the appropriate reinforcement (positive, negative, or equal part of each)*

- Uses random practice for increased learning and retention
- Guides initial practice and sets the students up for meaningful independent practice

E. Checking for Understanding

- Verifies students' level of physical understanding based on demonstrated performances consistent with the lesson objectives*
- Verifies students' level of cognitive understanding based on verbal responses consistent with the lesson objectives

F. Summarizing the Learning Segment

The instructor

- Reviews the learning segment goals and objectives and communicates the degree of accomplishment to the group and individuals
- Previews the next learning segment and encourages further development*
- Establishes independent practice guidelines for each student*

How to Use the Model

There are a few key concepts to keep in mind when using the Instructor Behavior side of the Teaching Modal.

A. This is not a linear progression

The only exception to this would be with inexperienced new-hire instructors who need structure and order as they begin their teaching career. Even then, the goal is to help these new instructors become grounded in the educational concepts as early as possible so they can develop flexibility with the model and customize the application of the model to their students. Instructors may start with 'Introducing the Learning Segment', but the order in which the other elements are used and whether all are used or not, is part of the professional decision-making process. For example, you may demonstrate something before you verbally 'Present Information.' You may 'Check for Understanding' before you 'Plan the Lesson Objectives.' But in both cases, these are decisions that an experienced instructor might make; an inexperienced instructor, on the other hand, may be more conformable adhering to the order and sequence presented here. The degree of flexibility with which you use the model is dependent upon your level of teaching experience. This gives the model great value as a training tool for all levels of instructors and trainees.

B. The model works in a **cyclical fashion.**

This means that after practicing some segment and checking for understanding, you may find yourself going back to demonstrating, presenting information, or possibly even determining goals and planning objectives again.

C. The model can be **used on macro (overview) or micro (detail) levels.**

In other words, the seven actual steps of the model (from "Introducing" through "Summarizing the Learning Segment") can be applied to a single teaching segment or objective, to a half-day class, an all day class, or a three-day lesson package. On the micro level, the cycle can be repeated many times during the course of a lesson.

D. How you use the tools and skills presented in 'Instructor Behavior' is a function of, and a response to 'Student Behavior'.

Always keep in mind the relationship that exists between student behavior and instructor behavior, because they are truly interdependent. The Instructor's ability to effect meaningful change is dependent on his or her ability to accurately assess student's personal learning requirements and then adjust teaching strategies accordingly." (Stills, 1993) Thus **Movement Analysis** is a key part of every lesson.

- E. The instructor can use any teaching style at any point in the lesson. For example, command may be more appropriate at the beginning of a lesson, but an instructor could choose the reciprocal teaching style later in the lesson in order to help all students give and receive feedback as they practice.

Finally, but most important, in any snow sport lesson the priority order is **safety, fun, and then learning**. Instructors should know the Responsibility Code, provide a safe teaching environment for their class and educate students in snow sport safety. Avoid collisions! Monitor all snow sport activity within your teaching area. Choose safe places for your class to stop and safe places for them to ski. (Please refer to the excellent section in the *Core Concepts Manual* entitled, "Managing Risk in the Mountain Environment.")

kid

Safety Programs

- A. Priority order: Safety-Fun-Learning
- B. Snow sport Responsibility Code
- Always stay in control, and be able to stop or avoid other people or objects
 - People ahead of you have the right of way. It is your responsibility to avoid them.
 - You must not stop where you obstruct a trail, or are not visible to oncoming skiers.
 - Whenever starting or merging into a trail, look both directions and yield to others.
 - Observe all posted signs and warnings. Keep off closed trails and out of closed areas.
 - When skiing at a downhill ski area use devices to help prevent runaway equipment.
 - Prior to using any lift, you must have the ability to load, ride and unload safely.



Instructor Behavior Summary

A. Safety

- Priority order: Safety-Fun-Learning
- Know and practice the Snow Sport Responsibility Code

B. The Teaching Model

- Introducing the learning segment-establish rapport: create an open, friendly, trusting environment.
- Assessing the student-interview to determine student profile
- Determining goals and plan objectives-the partnership begins
- Presenting and sharing information-includes demonstrations
- Guiding practice-provide feedback, individual & massed practice
- Checking for understanding,-verbal/physical responses
- Summarizing-review, preview, give individuals tasks to practice

C. Teaching Styles:

- Command
- Task
- Guided discovery
- Reciprocal
- Problem solving

D. Movement Analysis:

- Observation and description
- Cause and effect relationships
- Prescription for change



Movements and Skills in Telemark and Cross Country Skiing

Many candidates for certification have asked the question, "What is the difference between a movement and a skill?" At first glance these terms appear to be synonymous, especially in light of PSIA literature (Porter and Still, 1989) which says that the Skiing Skills consist of Balancing movements, Edging movements, Pressuring movements, and Rotary movements. However, as we study the meaning of these words and their application to snow sports, we will sharpen our understanding of our own skiing and that of our clients. First some definitions:

- **Skill:** dexterity or coordination especially in the execution of learned physical tasks; a learned power of doing something competently: a developed aptitude or **ability**.
- **Movement:** the act or process of moving; especially: **change of place, position or posture** (Webster, 1996).

When the ATM method developed in the 1970's, Horst Abraham identified the 4 Basic Skills of Alpine Skiing as Balance, Edge, Pressure, and Rotary. (Abraham, 1977) Using these skills, ski instructors had the tools to analyze and make conclusions about beginner through expert skiers. We saw that the skill of edging in our beginning student was very weak or undeveloped in comparison to the expert's ability. So we began to tell our student to "edge" more. But what does that mean? How do we "edge" a ski? In order to explain this to a student, we had to break the skill down into a set of movements. Movements are what the student understands. Explaining and demonstrating movements shows our students what they need to **do**.

A definition of skill modified for application in snow sports is: "movement sequences or blends related to a single task."(Levine, 2004) For a skier to have a certain skill such as balance, he/she must perform a set of movements. The skill of balance is an ability common to most snow sports, but the movements required to have balance vary. Balancing movements on cross country skis are considerably more tenuous and different than balancing movements on alpine skis, and drastically different from balancing movements on a snowboard!

Carol Levine, who revised the 1999 revision of *the Vail/Beaver Creek Alpine Instructor Handbook*, explains the importance of understanding the difference between a skill and a movement in terms of teaching and student outcomes:

- **Contemporary teaching:** We teach through movements because of what we know about building a learning environment: how people learn and teach motor skills. Learners can feel, see and do movements. Most people can understand and relate to the simplicity of moving their bodies. We organize the myriad of movements into Movement Pools and Movement Blends.
- **Assess skiing through skill proficiency:** Identifying the Fundamental Skills doesn't tell us how to move, or what parts of the body to move. However, the Skills do define the outcomes of movements. They provide a reference for diagnosing a skier's ability and designing action plans for change and improvement. (Levine, 2004)

How does all of this apply to free heel skiing? Horst's Basic Skills of Alpine Skiing definitely apply to telemark skiing and have been adapted as the Movements of Telemark Skiing: Balancing Movements, Flexing and Extending Movements, Tipping and Twisting Movements and Lead Change Movements. Our students want to know what they have to **do** to make a telemark turn. Addressing Movements facilitates our understanding of the unique features of telemark skiing and gives us tools for instruction.

Horst Abraham's four Basic Skills could also be adapted for cross country skiing and for many years were used in the PSIA Cross Country Skiing Model. These Skills are still useful in evaluating cross country student outcomes on down hills. However, many sources outside of PSIA including coaches and racers have been focusing on skills that are more definitive of diagonal stride and skate skiing. At the Track Examiners College in November 2006, where PSIA and Assistant Coaches of the US Ski Team shared information, PSIA incorporated some of the US Ski Team lingo to simplify the teaching concepts as well as "talk" a more similar language with the racing circuit. We will still be using the 6 skills identified by the authors of the 2005 *Nordic Technical Manual* of Ski-to-Ski Balance, Flexion and Extension, Poling, Relaxation, Rhythm and Edge Control, but incorporate them into 3 major concepts of Body Position, Timing, and Propulsion. (Note: Timing cannot be a movement; it is a skill or ability that a skier has when his/her movements are

timed.) Please note that in The Northern Rocky Mountain division the definitive term "push-off" will be retained as a skill name, and the terms "flexion and extension" will be used to describe the movements associated with this skill.

To summarize: The term skill refers to the ability to execute a task. The term movement explains what the body is supposed to do. The Skiing Skills help us to assess student needs and plan student outcomes. The Movements help us to know what to teach them. It is our hope that this discussion has stimulated your thinking and your skiing.

Skiing Skills and Movements Summary

A skill = an ability that is composed of a set of sport/equipment specific movements.

A movement = a change of place, position or posture of the body. The type of movement required to accomplish a given skill varies with the equipment.

"Basic Skiing Skills" (Horst Abraham, 1977)

- **Balance-** ability to maintain balance while moving
- **Pressure-** ability to increase or decrease pressure on one or both feet/skis
- **Edge-** ability to engage or release edges or to increase and/or decrease edge angle
- **Rotary (Steering)-** ability to turn the skis in the desired direction of travel

These 4 skills can be applied to any snow sport including snow biking and sledding, but the specific body movements required to accomplish a given Skill will vary depending on the equipment used.

Telemark Education Pathway

The Skiing Model/Movements

Balancing Movements

"Balance is a slippery concept. As soon as a skier is balanced for an instant, forces acting on that skier change, requiring further balancing movements. In a constantly changing environment, the skier must continually anticipate and react to changes in order to seek balance in the future. The skier seeks balance in motion because then the movements necessary for turning become minimal and efficient. What this really means is that the skier is moving toward balance, or "near balance"..... Balance on Nordic downhill equipment is more challenging than on alpine gear because the bindings don't keep us from falling forward. We must literally stand on our own two feet. When the skis suddenly slow down, the tele-skier is often seen flying 'over the handle bars'. A very flexible front ankle is required for absorbing sudden shocks to the ski caused by inconsistencies in the snow surface. Shocks not absorbed (properly) are transmitted higher up the body, with undesirable consequences. The telemark stance is fundamentally designed to compensate for the fore-aft instability inherent in free heel skiing." (Franosch, 2003)

Balancing Movements/Stance

A balanced position is necessary to allow access to all other skills

- Stance is not "set" and allows for changes in terrain and turn
- Weight distribution on each foot is natural and not predetermined.
- Hips are centered between the feet (from a profile view).
- Flexibility is evident in all body joints especially the ankles.

Flexing and Extending Movements

"In telemark skiing flexion and extension movements of the ankles, knees, and hip flexors are used to regulate pressure and aid in edging and un-edging. Good skiers regulate the pressures that build up in a turn by progressively flexing or extending their joints in order to maintain and recover balance and momentum, facilitate lead change, and to control turn shape. Flexion and extension is usually tied to the lead change, with the point of greatest extension occurring when the feet are next to each other and the greatest flexion when the lead is longest. Modern telemarkers use a relatively tall stance, long in the torso, using the most flexed position sparingly. The lead, being proportional to the height of stance, should be no longer than what is demanded by the situation. This allows for quick transitions, good balance, and energy efficiency.

Pressure control for telemark skiers involves many of the same elements as for alpine skiers, but with some important differences. The most obvious difference is in foot to foot pressure distribution. Modern telemark technique calls for even weight distribution (whole of the front foot and ball of the back foot) in softer, deeper snow conditions, and more "front footedness" on harder snow. Powder skiers must pressure both skis equally, whereas a telemark racer might have more weight on the front foot. Converts to telemark skiing will require some practice time to feel pressure on the ball of the inside (rear) foot. This sensation is evidence that the inside ski is doing its share of the work to shape the turn.

"As the skier's ankle and knee joints flex during a turn, some pressure is felt on the shin of the front leg against the boot tongue. With stiff plastic boots, some leverage is applied to the fore body of the ski enhancing its ability to carve." (Franosch, 2003)

Flexing and Extending Movements

- Flexing and extending movements are how we
 1. Balance our body weight between our skis.
 2. Manage changes in pressure due to terrain changes.
 3. Manage forces generated from turning
 4. Create and release energy.
- All joints must flex and extend in harmony with each other to balance fore and aft.
- Moving from foot to foot helps adjust lateral balance and fore and aft balance.

Tipping Movements

In contemporary skiing "...each ski has its own sidecut, and can be edged and steered independently.... The telemark turn is technically a parallel turn, with both skis remaining relatively parallel to one another throughout the turn. (For clarity, however, we will continue to refer to "alpine parallel" turns as parallel turns, and turns where the feet shuffle to a telemark stance as a telemark turn). Both skis are edged and un-edged equally. Edge change begins with a rolling of the ankles, followed by the knees (femur rotation in reality), and finally a movement of the hips toward the center of the new turn. As the classic telemark turn comes of age, its mechanics, just like its cousin the parallel, become derived from function rather than some contrived look.

"Modern telemark skiers release and re-engage the edges with one continuous movement that starts at the initiation, and ends in the finishing phase. Usually the lead change movement is continuous as well. While the edge change can occur before, simultaneously with, or after the lead change, the two movements are related, and occur progressively over the course of the entire turn. Indeed, it is the simultaneous lead and edge change that is the hallmark of the accomplished telemark skier. In a series of turns, the feet are shuffling fore and aft, tipping from the big toe side to the little toe side and back, and turning (pointing from one direction to the other) continuously."

(Franosch, 2003)

Tipping Movements

- Tipping the ski begins using the feet then ankles, legs and hips
- Some inclination is contemporary with modern ski design
- Upper legs and thighs aid in creating progressively greater tipping movements as the turn proceeds
- Releasing movements can be done by relaxing or extending to neutralize body angles

Twisting Movements

"Rotary 'twisting' movements are movements that are made relative to an axis. Pivoting and steering are rotary movements made by rotating the femur in the hip socket. Pivoting changes the direction the ski is pointing while steering adjusts the edge angle as well. Rotary turning powers include: leg rotation, hip rotation, and body rotation. The latter two can occur either in the direction of the turn, or counter to that direction. Leg rotation is generally preferred over body rotation as a turning power because it allows the larger mass of the body to remain stable for better balance and efficiency.... Generally as in alpine skiing, rotary turning powers are used more at slow speeds or on challenging terrain, whereas ski snow interaction (edging and pressure) become more dominant at higher speeds and in more consistent snow. Both skis are steered independently, but in parallel orientation to one another." (Franosch, 2003)



Twisting Movements

Twisting movements represent the most effective way of turning the skis in all terrain and conditions.

- Twisting movements originate from the upper legs (femur in the hip socket) with whole legs turning as a result.
- The strongest turning power comes from the thighs.
- Fine tuning occurs in the small muscle groups.
- Leg twisting may be used to guide edged and pressured skis or to pivot flat or un-weighted skis.
- Flexing allows the skier to have more powerful twisting movements

Lead Change Movements

Lead changes are the signature of the telemark skier. Enabling us to make many unique movements which are not possible on fixed heel equipment, lead changes enlarge our repertoire of turn type options.

Lead Change Movements

Lead change movements set telemark skiing apart from other snow sport disciplines.

- Lead change can be executed by advancing the outside foot, retreating the inside foot, or a combination of both (shuffle).
- Lead change can occur earlier or later in the turn to adapt to differing terrain or conditions.
- A functional lead change enables the skier to balance on both feet effectively.
- Lead change facilitates balancing, flexing and extending, twisting, and tipping movements.
- Hips are between the feet regardless of the lead change selected.
- Width of skier stance stays the same for any series of turns.

Maneuvers and Tasks

Wedge Turns

A fundamental turn of free and fixed heel skiing. Link wedge turns with rhythm and control.

Terrain and Tactics: Easy groomed green terrain that provides a comfortable learning environment. Speed control comes from turn shape by completing turns, not by braking. For those using older telemark or cross country equipment, steering is especially important in determining turn shape.

Description:

The feet and legs are turned to create a comfortable "A" shaped wedge position with the skis providing a slightly wider and more stable stance. At turn initiation a slight extension of the uphill leg and slight flexion of the downhill leg move the center of mass toward the fall-line (also called the Gravity Zone). Feet and legs are progressively tipped towards the new direction to utilize ski design, and are progressively twisted under the body to help control turn shape.

- Wedge turn width remains consistent throughout the turn.
- Wedge is formed as a result of twisting legs and skis into a wedge shape rather than pushing skis into a wedge.
- Subtle flexion of the ankles, knees, and hips helps promote active steering of both feet and legs independently of the torso. Gentle extension of these joints returns the skier to neutral.

Basic (Wedge) Telemark

Many people ski using a wedge entry to begin a telemark turn. While those on older telemark gear and cross country equipment often prefer this type of turn, those using modern equipment will find that the wedge entry is no longer necessary and, in fact, is a hindrance to advanced skiing. The description of the Basic Telemark is included here because it is an important maneuver to understand and to recognize in students.

Terrain and Tactics: Green and easy blue terrain

Description:

The initiation of this turn is similar to the Wedge Christie, with the finish of the turn completed by moving into a telemark position. In a tall telemark stance the feet are positioned about a boot length apart and the skis are parallel with respect to each other. From a previous Basic Telemark turn, the skier steers the skis to form a wedge. As the turn progresses, the inside ski is actively guided/steered along with the outside ski moving from wedge to telemark. Matching of the skis occurs at different points with respect to the fall-line depending on terrain and the competence/comfort of the skier.

- At turn initiation as the old outside ski edge is released, the new outside leg twists to form a wedge.
- Inside ski is actively guided from wedge to telemark as turn progresses.
- Matching of the skis occurs before, during or after the fall line (Gravity Zone) depending on terrain and skier preference.

Wedge Christie

A more comfortable, smoother method for turn completion. Experience the transition from a wedge to a parallel turn.

Terrain and Tactics: More difficult green and easy blue terrain. Speed is slightly higher than for wedge turns.

Description:

The wedge christie is similar to the wedge turn, but the skis are matched to parallel as the turn progresses. At turn initiation a slight extension of the uphill leg and slight flexion of the downhill leg move the center of mass toward the fall-line (Gravity Zone). As the turn progresses, the outside leg will become more dominant and the inside leg will be turned at a slightly faster rate causing the skis to match.

- Outside foot and leg turn at a slightly faster rate entering the Gravity Zone to create a gliding wedge. Inside foot and leg turn at a slightly faster rate exiting the Gravity Zone to match skis parallel (Inside foot is not pulled in to match.)
- Timing of the match is dictated by speed, terrain and snow conditions.
- Flexion and extension of all joints may involve a greater range of motion, and more pronounced weight shift due to increased speed and terrain.
- Inside foot, ankle, and lower leg actively roll ski off its inside edge to the outside edge facilitating a steered match.
- No pole touch is required; hands and arms are used to balance torso over active feet and legs.

Open Telemark

Linking telemark turns with rhythm and speed control.

Terrain and Tactics: Blue terrain

Description:

This turn is similar mechanically to the Open Parallel but with the skier moving from one telemark turn into the next. At turn initiation a pole swing and tap will time and direct a movement of the center mass toward the new turn. Both feet/legs steer actively throughout each phase of the turn so that the skis maintain a telemark attitude. Accurate blending of skills enhances consistent turns.

- Skis are parallel with respect to each other throughout the turn.
- Lead change occurs continuously while moving from one telemark stance through a transition to another.
- Feet move past each other in unison.
- At the start and finish of the turn, balance is distributed over the whole front foot and the ball of the back foot.
- Skier's core/hips remain quiet and between the feet (fore/aft) throughout the turn.
- Lateral or side to side distance between the feet is constant for any series of turns.
- Countering develops as needed, but should not be contrived.

Open Parallel

Linking parallel turns with rhythm and speed control.

Terrain and Tactics: Blue terrain. Speed is faster than for the wedge christie. Turn shape controls speed.

Description:

Skis are maintained at a hip width stance. Tipping and twisting movements of both feet/legs occur simultaneously so that the skis are parallel throughout the turn. Pressure dominance shifts from the former outside ski to the "new" outside ski. Knee and ankle flexion develop as the turn progresses.

- A pole swing and tap, time and direct a movement of the center of mass toward the new turn at initiation.
- Edge change (releasing and re-engaging) occurs through tipping versus pushing movements.
- Slightly more dynamic turns require increased range of motion

Dynamic Telemark

The ability to make telemark turns in advanced terrain in a variety of conditions.

Terrain and Tactics: Black terrain

Description:

This turn is very similar to open telemark, but more dynamic. The skier has more speed, more active use of the feet and legs in tipping and turning movements, and earlier edge engagement. The center of mass is continuously and accurately moved into each new turn. Ski design accompanied by efficient skill blending is used to carve and shape turns.

- The range of motion in all areas is greater in order to accommodate the increased forces that develop.
- The feet and legs tip the skis on edge earlier in the arc to take full advantage of the ski design.
- Progressive extending and flexing movements enhance the twisting and tipping of the legs/feet to shape the turn throughout the arc of the turn.

Dynamic Parallel

The ability to parallel on telemark equipment on black runs.

Terrain and Tactics: Blue to black terrain in varying conditions including bumps, crud and powder. Dynamic parallel turns can be short, medium or long radius.

Description:

This turn is very similar to open parallel but more dynamic. The skier has more speed, more active use of the feet and legs in tipping and twisting movements, and earlier edge engagement. Dominance of the outside ski also develops earlier than in open parallel, due to increased speed and more active flexing/extending movements. The center of mass is continuously and accurately moved into each new turn. Ski design accompanied by efficient skill blending is used to carve and shape turns.

- Skier increases the range of motion.
- More dynamic skiing requires more speed.
- Increased tipping movements maximize use of ski design.

Uphill Arc (Parallel Stance)

To create a clean arc by utilizing ski design.

Terrain and Tactics: smooth green to easy blue terrain

Description:

From a straight run or diagonal traverse the skier uses tipping movements and angular flexing movements to progressively engage edges and develop pressure dominance to the outside ski. Skis are kept parallel and leave two continuous, distinct edge tracks in the snow.

- Twisting movements are minimal.
- Skier rides the skis in an arc and slows naturally to a stop.
- Leg flexion maintains balance and manages pressure.

Railroad Track Turns (Telemark/ Parallel Stance)

The sensation of “pure carved” turns. Link medium to long-radius fall line turns exploiting new ski technology.

Terrain and Tactics: Green terrain. Side cut of skis carve two distinct arcs in the snow

Description:

- Link parallel arcs in the snow by simultaneously, and progressively engaging and releasing edges while maintaining matching edge angles.
- Hands, arms, and upper body movements align upper body according to lower body tipping activity.
- No twisting or skidding of the skis.
- No pole use necessary.

Monomark

The sensation of turning while balancing on both feet, using only movements of the feet and legs.

Terrain and Tactics: Green terrain

Description:

In this task the skier assumes and remains in one telemark position, while turning in both directions.

- Active tipping and twisting of the legs and feet are used to guide the skis through the turn.
- The skier must stand on the ball of the back foot as well as on the whole front foot.
- It is essential that the upper body move with the skis and not lead through the turn.
- The upper body should remain stable and balanced between the feet (fore/aft).
- Pole use is optional.

Telemark Side Slip to a Stop/Telemark Hockey Stop

To turn both legs simultaneously, independently of the torso.

Terrain and Tactics: Smooth easy blue terrain

Description:

From a straight run in a relaxed parallel stance the skier simultaneously twists both legs to a telemark position that is perpendicular to the fall line. At this point the skier can chose to abruptly engage the edges and come to a stop in a manner similar to that of a hockey player. If the edges are only partially engaged, the skier sideslips down the fall line and stops by progressively increasing the edge angle.

- Initiation with a slight flexion encourages the simultaneous rotation of both legs across the fall line.
- Upper body remains stable and centered.
- Flexing/extending movements enhance turn mechanics.
- Simultaneous edge change movements are executed with feet, ankles and legs. (releasing/engaging)
- Side slipping in a telemark should occur in a corridor no wider than about 3 meters.
- Telemark sideslips and hockey stops should be practiced in both directions.

Hourglass

Show ability to continuously change the shape of the turn.

Terrain and Tactics: Blue to Black terrain

Description:

This is a series of turns that forms an hourglass pattern. The skier begins with a large radius turn, gradually decreases turn size to a short radius, and then gradually increases the radius back to the size of the original large radius turn.

Pivot Slips (Telemark/Parallel Stance)

Turning and tipping movements while maintaining fore/aft balance over the feet and skis.

Terrain and Tactics: Skiing on smooth, blue/black terrain, continuously link sideslips while staying within a 2 meter corridor. Speed is consistent throughout entire run.

Description:

This task consists of a minimum of four linked telemark or parallel slips. At the beginning of each slip the skis are pivoted 180 degrees to the opposite direction with no intervening straight run. Sideslip portions in each direction should be a minimum distance of 10 feet.

- Slight flexing movements can enhance turning of the feet and legs. Slight extending movements can help facilitate releasing movements. All flexing and extending movements originate from the ground up.
- Pole use is optional and should compliment performance of the overall maneuver.
- Linked sideslips can be in either a telemark or a parallel stance.
- The upper body should remain facing in a downhill direction with the feet and legs turned underneath.
- The hips will turn more when telemark movements are used, than when parallel movements are used.

Shuffle Turns - 500 to 750 to 1000

The shuffle turn is the signature task of telemark skiing. Skiers move both feet back and forth under the body (shuffle), while sliding forward and turning.

Terrain and Tactics: 500-green terrain; 750-blue-green terrain; 1000-blue terrain

Description:

- 500 shuffle-Skier shuffles while traversing, then makes a telemark turn and finally shuffles back across the hill.
- 750 shuffle-Skier shuffles almost constantly throughout the turn. Stalling may occur at edge change, but skier shows continuous shaping of the turn while shuffling.
- 1000 shuffle-Skier shuffles continuously while turning with a good turn arc. No stall or hesitation occurs at edge change.
- In order for both skis to move continuously, balance must be over both skis at all points during the turn.

Reverse Telemark Turns

Some skiers make reverse telemark turns naturally when first learning to free heel ski. As a task doing reverse telemarks teaches versatility and adaptability.

Terrain and Tactics: Green to blue terrain

Description: In this turn the skier's inside foot is forward and flat and the outside foot is back with the heel up. It is exactly opposite of the normal telemark stance in a turn!



Switch Telemark Techniques

With the advent of twin tipped telemark skis and terrain parks, our students are increasingly interested in learning how to ski backwards. In addition, skiing backwards while performing various telemark maneuvers can help accelerate learning the skills needed to manage skiing on the ball of the foot, as well as learning the skills needed to manage for/aft pressure. Finally, the Switch Wedge and Switch Wedge Christie are very useful tools for teaching beginning skiers because they enable the instructor to watch, coach, and move simultaneously with the student.

Terrain and Tactics: Green terrain. Intermediate and advanced telemark students are intrigued by the Basic (Wedge) and Open Switch Telemarks and will enjoy practicing these challenging tasks on easy slopes.

Description: The switch maneuvers are listed below in order of difficulty. Mechanics for each of these maneuvers are similar to the way the maneuvers are performed going forward. The basic difference is the head. First and foremost, you need to watch where you are going!

Switch Wedge Turns

Description: The simplest way to describe a Switch Wedge Turn is to envision the skier facing up hill while standing in the fall line in a "Switch Wedge" position. In this position the tails of the skis form the apex of the wedge, and the feet and legs are turned to create a comfortable "V" shape. Opposing edges of the skis are engaged so that the skier is stationary. To begin moving straight down the hill, the skier releases the edges by sliding the skis into a backwards gliding wedge or "V". While looking over the outside shoulder for safety, the skier then turns by rotating the legs first, followed by the torso. As the skier completes the turn, he/she then looks over the "new" outside shoulder and steers the skis in the opposite direction. Speed control comes from turn shape and skidding. The wedge size remains constant.

- Look over the outside shoulder for safety.
- Rotate the legs first and then the rest of the body. (Whole body rotation is a result of leg steering on opposing edges in a wedge.)
- Control speed using turn shape and skidding.
- Maintain constant wedge size.
- Maintain 50/50 weight distribution as much as possible
- Downhill ski has slightly more pressure at turn completion

Switch Wedge Christie

Description:

The Switch Wedge Christie is similar to the Switch Wedge Turn, but the skis are matched sequentially to an "alpine style" parallel stance during the turn. As the turn progresses, pressure on the outside ski foot will naturally become slightly greater than on the inside ski foot, and the inside leg/foot will be turned at a slightly faster rate than the outside leg/foot. Inside ski foot, ankle, and lower leg actively roll the ski off the inside edge to the outside edge, facilitating a steered match. In switch skiing it is very important to remember to release the inside edge of the inside ski in order to initiate the turn and to prevent ending up flat on your face! A new turn begins as the skier releases the edges and steers the skis into a "V" position.

- Steer the inside foot to match the skis (Don't pull the skis together).
- Actively roll the inside foot, ankle, and lower leg ski to tip the inside ski from the inside edge to the outside edge as you match the skis.
- Time the ski match according to speed, terrain and snow conditions.
- Turn head over outside shoulder for safety and rhythm

Switch Basic (Wedge) Telemark

Description:

A Switch Basic (Wedge) Telemark turn is very similar to a Switch Wedge Christie. Each turn begins in a wedge and ends with both skis skidding on corresponding edges in a telemark position. To initiate a Switch Basic Telemark, release the edges and steer the outside ski faster than the inside ski to a "V" wedge. As the turn progresses from "V" wedge to telemark, actively guide/ steer the inside ski faster than the outside ski to a telemark stance, (i.e. the outside ski foot is flat on the ski and the heel of the inside ski foot is lifted.) Matching of the skis occurs earlier with increasing speed, slope angle, and competence of the skier. Finish the turn with the skis parallel with respect to each other in a telemark stance.

- Initiate the turn by releasing the edges, allow the ski tails to move toward the fall line, and steer the skis into a wedge.
- Match the skis before, during or after the fall line (Gravity Zone) depending on terrain and skier preference.
- Steer the inside ski faster than the outside ski to match the skis in a telemark position.
- Turn the head and shoulders for vision and timing, not for rotational force.

Switch Open Telemark

Description:

This turn is similar mechanically to the Switch Basic (Wedge) Telemark but the "V" wedge entry is eliminated. To initiate a Switch Open Telemark turn, release the edges simultaneously while maintaining a parallel relationship in a telemark stance. Change lead after the turn starts. Turn your head and shoulder during the transition for vision and timing, not for rotational force. Steer both feet/legs actively, and blend movements throughout each phase of the turn and from one lead change to another so that the skis maintain a telemark attitude. Accurate blending of skills will enhance turn consistency.

- Release the edges simultaneously with the ski- tails leading into the new turn.
- Keep the skis parallel with respect to each other throughout the turn.
- Turn the head and shoulders for vision and timing, not for rotational force.
- Change lead continuously while moving from one telemark stance to another.
- Blend lead change and edge change throughout the turn.

Cross Country Techniques

Give the students an introduction to the complete range and versatility of free heel techniques and equipment.

Terrain and Tactics: Flats to easy greens as well as backcountry trails

Description

See Cross Country Maneuvers descriptions for the following techniques:

diagonal stride

double pole

diagonal skating

V1 skating

V2 skating

V2 alternate

Certification

Participants in each exam are expected to come prepared by reviewing this handbook, the booklet, and filling out the workbook (to be reviewed and collected the first day of the exam). Participants in each event will be trained and verified at various tasks and skills. Progress will be recorded over the course of 3 days using individual booklets and workbooks. **Please note. Level II candidates are responsible for the Level I and Level II maneuvers outlined on the respective checklists. Level III candidates may be asked to demonstrate any maneuver on any telemark checklist.** Candidates will receive certification at a given level when they have satisfied all the criteria for that level.



Level 1 Telemark

Prerequisites:

- Current Registered members in PSIA-NRM
- New instructors who teach primarily novice and beginner lessons.

Checklist for Level 1 Telemark

Introduction to the Skiing Model

General Skiing Characteristics

- ❑ Consistently link telemark turns with sustained rhythm on blue groomed terrain i.e. ski at student level 7 (see Appendix 1 at the end of this section).
- ❑ Maintain consistent speed by controlling the shape of turn.
- ❑ Maintain a balanced stance throughout a series of turns.
- ❑ Ski a variety of turn shapes (short, medium, long) in a series of turns while maintaining speed control on groomed green and blue terrain.

Skiing; technical understanding

- ❑ Define and explain the basic ski terminology as described in this handbook and other available PSIA manuals.
- ❑ Define and explain the fundamental movements i.e. **stance & balance, tipping, twisting, and flexion & extension.**
- ❑ Describe each of the Skiing Application Maneuvers at this level in terms of the Fundamental Movements.
- ❑ Identify the phases of a turn.
- ❑ Identify equipment needs for telemark skiers at the beginner level.

Skiing Application

- ❑ Wedge turns
- ❑ Switch Wedge turns
- ❑ Wedge christie
- ❑ Basic (Wedge)Telemark
- ❑ Open telemark on groomed blue terrain with pole swing and touch, edge release and engagement, and smooth transitions from one telemark turn to the next.
- ❑ Open Parallel Turns on groomed blue terrain with pole swing and touch.
- ❑ 500 Shuffle
- ❑ Uphill arc-both directions.
- ❑ Telemark side slip to a stop-both directions.
- ❑ Telemark hockey stop-both directions.

Checklist for Level 1 Telemark

Introduction to the Teaching Model

Professional Knowledge Assessment

- ❑ Recall the Skier's Responsibility Code and discuss how to introduce it when teaching beginners.
- ❑ Recognize all parts of the American Teaching System (*See Core Concepts Manual* and other PSIA publications.)
- ❑ Discuss how to use ATS when teaching beginners.
- ❑ Identify visual, auditory, and kinesthetic (VAK) sensory preferences and give examples of how to recognize a student's learning style preference.
- ❑ Identify styles of teaching and give examples of how to use them.
- ❑ Identify student profile of specific groups such as adults, children, seniors, etc.

Movement Analysis

- ❑ Describe the basic movement patterns in beginner skiers through student level 4.
- ❑ Prepare a lesson plan including exercises and tasks that target student needs and change the skier's performance.

Teaching Assessment

- ❑ Teach student levels 1-4.
- ❑ Handle a class and manage a group's behavior based on student goals taking into consideration energy levels, conditions for that day, and safety.
- ❑ Communicate information using basic techniques such as eye contact, voice inflections, and appropriate pacing of information.

Level III Telemark

Prerequisites:

- Current Registered members in PSIA-NRM who are certified Level I telemark instructors **or** Level II PSIA instructors from another discipline i.e. Alpine, Cross Country, snowboard, etc.
- Experienced instructors who teach primarily beginner and intermediate lessons.
- Ability to telemark ski most of the terrain regularly skied by the general public.

Checklist for Level II Telemark Skiing

General Skiing Characteristics

- Ski at student level 8 (see Appendix 1).
- Show appropriate blending of flexing and extending movements to facilitate edge release/engagement and management of pressure.
- Show simultaneous edge change on blue groomed terrain.
- Ski anywhere, i.e. in a variety of situations including bumps, un-groomed, or powder snow on blue and easy black terrain.
- Demonstrate a variety of telemark and parallel turn shapes such as short-medium-, and long-radius turns with consistent rhythm and turn shape.
- Use ski design and skill blending to shape turns.
- Reduce, generate or maintain speed by adjusting the shape of the turn.
- Demonstrate the ability to brake or glide in a series of turns appropriate to pitch, snow condition, or intent.

Skiing; technical understanding

- Define and interpret all terminology as described in this handbook.
- Describe changing equipment needs as students move through student level 6.
- Understand the application of the Fundamental Movements in the Telemark Maneuvers at this level.
- Identify skill application and explain skill blending, intensity, and skiing characteristics that create balance, turn shape, and speed control in student levels 1 through 6.
- Relate the phases of a turn to forces acting on a skier. Discuss how a skier uses muscular effort, stance, and other internal methods to counteract the forces in skiing.

Skiing Application

- Open stance telemark and parallel
- Switch Wedge Christie
- Dynamic telemark
- Dynamic parallel
- Short radius telemark
- Monomark
- 750 Shuffle
- Linked Telemark side slips-both directions
- Link turns in blue bump terrain while maintaining a balanced stance
- Designated un-groomed crud/powder
- Synchronized skiing
- Hourglass
- 3 telemark turns/3 alpine turns/3 monomark turns/3 reverse telemark turns
- Linked Railroad track turns-telemark and alpine

Checklist for Level II Telemark

Teaching

Professional Knowledge Assessment

- Recall the Skier's Responsibility Code and discuss how to integrate it into lessons for skiers through student level 6.
- Identify the components of the Teaching Model.
- Identify learning style and sensory preferences and know how to teach accordingly.
- Discuss how lateral learning enhances skill development.
- Describe student profiles of specific groups e.g., age or gender-specific (adults, children, seniors) through intermediate level.
- Be able to utilize all teaching styles.

Movement Analysis

- Describe the basic movement patterns in skiers through student level 6.
- Determine cause and effect relationships in terms of skill usage in different phases of the turn in skiers through student level 6.
- Prescribe what a student should work on by prioritizing their skill needs through student level 6.
- Prepare skill development focus, exercises, and tasks that target skiers' needs and change their performance.

Teaching Assessment

- Teach the skiing public through student level 6.
- Determine goals that are mechanically correct and meet expectations of the student (e.g., the Learning Partnership).
- Tailor teaching to meet preferred learning styles and preferences of the students.
- Apply the Teaching Model to meet the needs of the students.

Level III Telemark

Prerequisites:

- Current Registered members in PSIA-NRM who are certified Level I telemark instructors **or** Level II PSIA instructors from another discipline i.e. Alpine, Cross Country, Snowboard, etc.
- Able to teach all levels of telemark lessons and advanced skill clinics.
- Able to demonstrate the Skiing Model skillfully and dynamically and exhibit a mastery of the ATS Teaching Model.
- Able to demonstrate a high level of personal skiing ability on any terrain normally skied by the general public.

Checklist for Level III Telemark

Skiing

General Skiing Characteristics

- Ski at student level 9
- Show appropriately timed lateral leg extension.
- Show appropriate skill blending on all mountain terrain and all snow conditions.
- Reduce, generate or maintain speed through turn shape without interrupting overall flow or rhythm.
- Ski a variety of dynamic telemark and parallel turn shapes such as short, medium, and long and apply them to different mountain situations.
- Demonstrate different types of skill blending in maneuvers, exercises, tasks, and turns upon request and as applied in different mountain situations.
- Maintain turning and speed control while skiing in any snow condition (e.g. powder, crud, bumps, ice, hard snow, or chopped-up snow).

Skiing Application

- Open stance telemark and parallel
- Switch Basic (Wedge) Christie
- Linked telemark turns in black bumps
- Pivot slips-telemark and alpine
- Dynamic telemark turns
- Short radius telemark turns
- Monomarks
- 1000 shuffle
- Synchronized skiing
- Designated un-groomed crud/powder
- Hourglass
- 3 telemark turns/3 alpine turns/3 monomark turns/3 reverse telemark turns
- Linked pivot slips-telemark and alpine
- Linked railroad track turns-telemark and alpine

Checklist for Level III Telemark

Skiing; technical understanding

- Apply the skiing-related terms from the Nordic Handbook and ATS Alpine Manual and show understanding through performance.
- Relate specific skiing terminology to students in plain and simple language.
- Describe skill blending in skiing.
- Describe how skill blending relates to different situations and conditions as well as how it relates to different types of skiers including: seniors, men, women, children, top athletes, and adaptive skiers.
- Relate skill blending to various internal and external forces generated in a variety of skiing situations.
- Describe, analyze, and prescribe equipment variables in advanced skiing.

Teaching

Professional Knowledge Assessment

- Discuss how to integrate the Skier's Responsibility Code into beginning through advanced levels.
- Describe and demonstrate a mastery of all teaching styles.
- Show ability to accurately assess learning style and sensory preferences.
- Describe elements of student learning and instructor teaching.
- Relate how these elements can contribute to both positive and negative experiences for students.

Movement Analysis

- Describe the basic movement patterns in skiers through advanced level.
- Determine cause and effect relationships based on stance, skill blending, tactics, skill tendencies, and other factors as related to the phases of the turn in skiers through the advanced level.
- Prescribe what a student should work on by prioritizing their skill needs through the advanced level.
- Prepare a skill development plan, focusing on exercises, tasks and drills to target the skiers' needs and change their behavior.

Teaching Assessment

- Teach to student level 9 (see Appendix 1).
- Use the Teaching Model in all levels.
- Individualize group and semi-private lessons by using a variety of teaching styles and methodologies.
- Achieve student goals during lessons utilizing a variety of strategies.
- Apply various forms of reinforcement, practice, and feedback to gain the best performance in students.



Cross Country Education Pathway

"Nordic skiing involves a whole range of body movements that depend on human energy in addition to gravity to achieve locomotion, the movement of the skis and skier across a frozen surface." (Franosch, 2003)

For learning and teaching Cross Country Skiing, PSIA-NRM uses a three-pronged approach (see *PSIA Nordic Technical Manual*, 2005 for more details). First is the Skills Concept, which examines skiing in terms of groups of movements that are necessary to create and control forward motion. (Remember that a skill is the ability to execute a task and is composed of a set of defining movements. See "Skills and Movements in Telemark and Cross Country Skiing" in this Handbook.) As a student acquires these skiing skills, the instructor can lead the students along a "Stepping Stones" path that will help them combine movements into maneuvers that produce forward motion. During this process, "Visual Cues" help the instructor analyze the skier's movements and determine which Stepping Stones are appropriate to help the students improve their skills.

Below is a summary of the Skiing Skills for Cross Country Skiing, followed by the maneuvers produced by the appropriate combination of these Skills.

The Skiing Model/Cross Country Skiing Skills

Cross country skiing is essentially a one-legged sport. Forward motion happens by combining the push of muscles (flexion and extension) and the pull of gravity (falling forward). As in running and skating, this combination causes the body to move forward from foot to foot. A strong push from foot to foot results in a one-legged glide: the stronger the push and the better the balance, the longer the glide. The push from foot to foot has a symmetrical rhythm, with the same amount of time being spent on each leg/foot. Consequently, each leg goes through a cycle of work and relaxation (rest) that allows the skier to maintain continuous forward motion. Pushing on the poles with the arms compliments the work of the legs, enhancing and prolonging glide. Longer glide increases the muscle relaxation/recovery time between each leg's push-off, decreasing the work and increasing the fun—with energy left over for dancing! If the push-off is forward off a flat ski, it is referred to as "diagonal stride" or "classic" skiing. If the push-off is sideways off an edged ski, it is called "skate skiing".

Ski-to-Ski Balance

Ski-to-ski balance is the most important of the Cross Country Skiing skills. With effective Ski-to-Ski Balance, gliding is effortless. Without effective Ski-to-Ski Balance, the skier is stuck in a laborious shuffle that taxes the muscles and numbs the brain.

Important words that describe balance are static, dynamic, and near. To practice static balance stand in one place, on one ski for as long as possible. Experiment with different poses and positions of the free leg as well

as of the torso. Transfer weight to the other ski and practice the same thing on that side. Next, to get the feel of dynamic or moving Ski-to-Ski Balance, stand on one ski and let the hips and torso (core) fall forward. As the core moves ahead, swing the free leg forward under the hip. Just before it lands, push-off the weighted ski. When the forward swinging ski lands on the snow, the next glide immediately begins. This “graceful coordination of losing [falling forward] and regaining balance [gliding on one ski]” is called “near balance” in the *Nordic Technical Manual*. (Crocket, 2005) In addition, other body movements aid balance and prolong gliding. These include: slightly flexing the ankle, knee, and hip of the landing leg, keeping the back and shoulders relaxed and slightly rounded, and aligning the core at least briefly over the ski. A vigorous but relaxed arm swing, with the arms symmetrical to each other (swinging as far back as forward) and opposite the legs, increases balance and adds forward momentum.

The goal is to get the longest glide possible per stride. This gives the free and easy floating sensation that is the hallmark of cross-country skiing. Longer glides allow each leg some rest every stride, making cross-country skiing fun, fast, efficient, and relaxing.

"Complete weight transfer is accomplished when nose, knee and foot are aligned in classical. In skating there is a big debate about whether or not full weight transfer is needed. Nevertheless, weight transfer is an important part of skating regardless if it is complete or not." (Nystad, 2003)

Ski-to-Ski Balance

- Skier's balance moves from foot to foot.
- The core is in continuous forward motion.
- The core leads; the feet follow. "Near" balance is maintained as the skier falls forward from the ankles in the direction of next ski placement with the center of mass ahead of the feet.
- Ankle, knee and hip are slightly flexed on landing; extended for push-off.
- The body is relaxed and supported by the skeleton.
- The back and shoulders are rounded.

Push-off (Flexion and Extension)

The push-off is a unique cross country skiing skill that requires a blending of flexing and extending movements. These movements, bending and straightening the legs, are what provide the power to move from ski to ski. The more push/extension there is, the more speed/power can be generated. Increasing extension requires increasing flexion (more bend at the ankle, knee, and hip)—the more flexion the better. Quick flexion is better still, producing more power with less energy. Dropping quickly (pre-load) stretches the gluteal, quadriceps and calf muscles triggering an elastic rebound that adds snap and power to the extension, i.e., “collapse and explode.” Conversely, flexing slowly keeps the gluteal, quadriceps and calf muscles under tension. Slowly flexing muscles are partially contracted because they are supporting the body's weight. This uses energy without producing forward motion. In addition, it's harder for slowly flexing muscles to reverse and become quickly extending muscles. Without flexion and extension, moving from ski-to-ski tends to be a passive, side-wards movement resulting from loss of balance. With flexion and extension, moving from ski-to-ski is a purposeful, dynamic forward movement that propels one down the track with grace and beauty.

To get the most power, the flexion needs to be quick and at the maximum just prior to the lean, so that the leg can immediately extend to power and complete the movement that the forward lean initiated—moving

from ski to ski. The extension needs to push the core/torso in the direction of the next ski placement, without bouncing or twisting. In diagonal stride, besides triggering an elastic rebound in the muscles, a quick drop also helps plant the ski to attain a good grip (whether wax or pattern base) and provide a stable platform from which to push-off. The bulk of the weight should be on the heel when the ski lands, on the whole foot during flexion, and off the whole foot for most of the extension, keeping the heel on the snow as long as possible and pushing off the ball of the foot only at the end. In skating, when the ski contacts the snow, during flexion, and for most of the extension, the weight should be on the whole foot, with the final push-off through the heel. In summary, moving forward on skis is initiated by complete flexion, directed by leaning (falling) in the direction of travel, powered by a strong extension, and facilitated by effective ski-to-ski balance.

"One should also here mention timing. The push off needs to happen first. Then as a result of the push off, the weight transfer is initiated. The energy of the push off should be directed so that the power and speed forward along the track is maximized. This might involve a different body stance depending on the incline of a hill etc."(Nystad, 2003)

Push-off (Flexion and Extension)

- Push-off equals quick leg flexion immediately followed by powerful leg extension
- Flexion at the ankle, knee and hip is equal and simultaneous.
- The quicker and more complete the flexion, the more powerful the extension/push-off
- Complete weight transfer from ski to ski maximizes push-off
- The body lean from the ankle and the extension of the leg *push* the core/torso in the direction of the next ski's glide.
- Quiet upper body is maintained.

"Poling is also a major source of propulsion. The propulsion from poling; either classic ... or double pole techniques ...starts with the big muscles first. Initiation of the technique begins from the abs, then back, then shoulders, then arms, then hands, and lastly the fingers. All of these muscle groups transmit the energy through the tools, the ski poles.... The movement patterns of the upper body are much different from the active legwork of the lower body. When the two movements flow together, the dancing on skis starts to get effortless. When the technique and movements are well organized it's inspiring to watch and experience." (Franosch)

Poling compliments the push-off in cross country skiing and increases forward momentum. In classical and skate skiing there are a variety of poling techniques used in coordinating the push from the poles with the push from the legs. These are described in detail in the cross country skiing maneuvers section. Poling is adjusted to the skier's speed and to the terrain. In cross country skiing poles are not for balance, but for push!

When skiing up hills or in "slow" snow where there is little glide, the arms and legs work together to increase the glide. In these conditions, it is important that the arm(s) and leg push at the same time and that the ski and pole(s) leave the snow nearly simultaneously. In "faster" snow or down hills, pushing with just the arms (double poling) or alternating arms and leg (leg push-double pole) is often sufficient to keep up momentum. When double poling, the most power is generated by falling forward at the ankles onto the poles, flexing the abdominal muscles in a strong but short abdominal crunch, and pushing consecutively with the back, shoulders, arms, hands, fingers.

The tempo and amount of completion of the poling varies with the terrain; uphill terrain or “slower” snow requires faster tempo with less completion of the motion. The skier may only “fall” forward onto the poles and have a short abdominal crunch. When on “faster” snow or going down hill, the tempo is slower and poling motions are complete including not only the fall onto the poles and the abdominal crunch, but also muscle power from the back, shoulders, arms, and hands.

Poling

- Poles are used to propel the skier in the direction of the gliding ski(s).
- ANRM swing is forward and backward from the shoulder joints in a pendulum motion.
- Arms are flexed at the elbow.
- Downward and backward pressure is applied to the poles using the weight of the upper body and the muscles (in order) of the abs, back, shoulders, and arms.
- Length of pole push is directly proportional to the length of the glide.
- Upper and lower body movements compliment each other, both pushing at the same time to move the core/torso forward.

Rhythm (Timing)

We live in a world of rhythms: the rhythm of the seasons, the rhythm of night and day, the rhythm of our breathing and of our beating heart. What all these rhythms have in common is that they are cyclic: being repeated over and over. In the same way cross country skiing has the rhythm of moving cyclically from ski to ski over and over again.

Maintaining a consistent rhythm is one of the hallmarks of efficient skiing, moving smoothly from ski-to-ski and maneuver-to-maneuver. The goal is to maintain momentum. Consequently, as discussed in the section on Poling, the tempo or rate of the rhythm must change with the terrain and snow conditions: less glide requires quicker tempo and faster glide allows for slower tempos.

Timing, a subset of rhythm, is how we blend the movements of flexing, falling towards the new gliding ski, extending (push-off), gliding and poling to produce efficient motion forward in the repetitive cycle. Timing is subtle. The primary concern is that the arm(s) and leg work together to push the core in the desired direction. Timing becomes intuitive with practice. When the timing is appropriate for the conditions and maneuver, the rhythm is natural and effective.

“This is a relatively easy task for diagonal skiing. Diagonal skiing means that left arm/right leg work together, and right arm and left leg work together. The diagonal arm/leg should work in sync. Hence if one is working, the other should work as well. In skating it is primarily the same...legs and arms work together.” (Nystad, 2003)

Rhythm

- Is produced by consistent cadence of repetitive body movements.
- Coordinates movements to produce efficient forward travel.
- Cycles all body movements efficiently.
- The cycle is: glide/balance; push off; weight transfer...
glide/balance: push off/weight transfer... etc.
- Varies. Tempo depends on terrain, snow conditions and desired

Edge Control

In order to push the core from ski-to-ski, there has to be a stable platform from which to push. In diagonal stride on level ground the platform is created by the quick drop to a flexed position on a flat ski. However, if there is any side tilt to the snow surface, a flat ski will slide in the direction of the tilt. In this situation keeping the skis slightly edged prevents sideslip. This is a very subtle move that needs to be practiced consciously until it becomes instinctive. In skating, a good edge set is the only way to create a platform from which to push. In snow/terrain conditions requiring a quick tempo, the ski-to-ski movement is essentially from inside edge to inside edge. In conditions allowing more glide, it is more efficient to land on a flat ski for the glide, but the ski must roll to the inside edge for the extension/push-off to be effective.

Edge Control

- Flat ski(s) for glide and for the diagonal stride push-off on level ground.
- Edged ski(s) for skate push-off and for control on tilted diagonal track and down hills.

Relaxation

During the rhythm of moving from ski-to-ski, each leg and arm should go through a work-relax cycle. The work phase of the cycle (flexion, forward fall, and extension/push-off) provides the power to move the core forward. The relaxation phase of the cycle (glide) provides rest and recovery for the arm/leg so they can repeat the work phase. Without the relaxation phase in the cycle, skiing 100 meters is difficult; 10 kilometers impossible.

Several factors contribute to the ability to produce both power and relaxation. Number one is the first Cross Country Skiing Skill mentioned: ski-to-ski balance. Having ski-to-ski balance and being able to balance on a gliding ski provides the non-working leg rest and relaxation. Without that balance the work-relax cycle becomes a work-stagger cycle as the skier wobbles from side to side struggling to acquire balance, giving no time for the weary limbs to rest. Maintaining a skeletal stance also enhances relaxation. This means letting the skeleton do most of the work to support the body and using muscles only to power forward movements. Thus non-motor muscles (neck, shoulders, torso) remain relaxed. Finally, mental/emotional tension often triggers muscular tension, leading to awkward movement and fatigue. Consequently, it is of fundamental importance for an instructor to set a relaxed and stress-free learning environment, i.e., one that is supportive and appropriately paced.

Relaxation

- Allows the skeleton to support the body and the muscles to move the body.
- Permits each muscle to go through a work-relax cycle.
- Emphasizes the relax/glide phase of the cycle.
- Creates a tension free environment for yourself and your students.

Cross Country Maneuvers

Diagonal Stride

Guest Outcome: Experience propulsion on cross country skis.

Terrain and Tactics: Beginners learn the diagonal stride on easy green terrain usually using waxless skis. More proficient skiers, choosing either waxed or waxless skis, utilize the diagonal stride primarily on up-hills or slow snow.

Description:

The difference between a beginner's shuffle and a racer's dynamic movements is in the blending of the Cross Country Skiing Skills. Ideally, the skier will be completely balanced on one ski with all of his/her weight on that ski. When it comes time for the push off the skier should flex ankle, knee, and hip quickly to pre-load and create an effective ski set, then push off producing glide. With the transfer of weight, the center of mass aligns over the new gliding ski. The poling actions coordinate with the movement of the rest of the body. The timing of the poling complements the push-off in maintaining momentum and should be appropriate for the speed, intensity and terrain. In diagonal stride the right arm and left leg work together and the left arm and right leg work together. The arms should swing from the shoulder joint, reaching forward not upward in order to make sure the skier's momentum continues efficiently in a forward direction. On steeper up-hills the stride and poling action will be compressed with a quicker tempo.

- Stride begins with a falling forward from the ankle.
- Effective ski set (also known as wax set on waxed skis) is followed by an active push-off (quick flexion immediately followed by powerful extension.)
- Complete weight transfer follows push-off.
- Center of mass is aligned over the gliding ski.
- Pole timing compliments push-off.

Double Pole/Kick Double Pole

Guest Outcome: Learn alternative classic techniques for flats, slight up-hills, and down-hills.

Terrain and Tactics: Easy green tracks and rolling terrain. Alternating diagonal stride and double pole teaches the student to chose "strokes" according to speed, terrain and preference.

Description:

These techniques are used primarily for maintaining or increasing speed on fast flat tracks or slight up or down-hills. The main focus is to provide an effective application of power to the poles via upper body compression. In double pole the movement begins with a "falling forward" motion from the ankles. The

abdominal muscles contract as the skier plants both poles firmly and bends forward from the waist. The arms are slightly bent at the elbow and swing in a pendulum motion from the shoulder joint. During the recovery phase, the center of mass moves ahead of the feet in the direction of travel for optimal glide. For even more speed, a wax set (ski set on pattern based skis), and push-off or "kick" (flexion and extension of one leg) may be added. This technique is referred to as the "kick double pole" or double pole with a kick. To create maximum power the skier slides the kicking foot slightly ahead of the other foot just prior to push-off. Subsequent extension adds propulsion.

- Falling forward from the ankles is key for beginning this movement.
- Downward pressure is applied to both poles simultaneously.
- Abdominal muscles are actively contracted during poling ("the crunch").
- In kick double pole the active push-off increases propulsion.

Step Turns and Skate Turns

Guest Outcome: Learn a simple but effective way to change direction.

Terrain and Tactics: Green to blue groomed down hills with corners, no tracks. Wide-open skating lanes are great for teaching this to beginners.

Description:

A step turn is a simple and effective way for a skier in motion to change direction. From a parallel stance the ski tips are separated in a series of "V" steps. For maximum efficiency the skier moves from edge to edge as he or she steps. At faster speeds the skier's upper body is inclined and slightly rotated over the stepping ski

- Series of V steps, each step being initiated with a lifting of the ski tip
- Skis are stepped from edge to edge.
- As skier proficiency improves, the instructor can increase speed and slope angle.

A skate turn has all the features of a step turn, and in addition utilizes a strong push-off instead of just a step in order to increase speed and momentum.

Skating without poles

Guest Outcome: Produce natural skating movements without the complication of using poles.

Terrain and Tactics: Firm snow (compacted by machine or nature) when speed is too fast for poling; Cones can be set up in a course for students to follow.

Description:

This is the basic ski skating technique. The skier "falls to the side" in the direction of the ski to be weighted, which lands slightly ahead of the currently weighted foot. Flexion followed by an explosive extension off the whole foot (the skate-push-off) propels the skier on to the "new" gliding ski. At the beginning of the glide the ski is flat and is then progressively edged throughout the gliding phase.

- Initiated by falling to the side in the direction of ski to be weighted
- Knee, ankle and hip flex in preparation for the push-off.
- Push-off is from the whole foot, with the finish of the push being off the heel.
- Gliding ski is initially flat and progressively edged
- The skier pushes laterally off the skating foot and extends as far forward as possible. The push-off foot should end up even with the skier's hips rather than behind them.

Diagonal Skate

Guest Outcome: Combine and transfer guest ability to herringbone and diagonal stride to learn a faster way to move uphill.

Terrain and Tactics: Used in high resistance situations (e.g. steep up-hills, slow snow conditions etc.)

Description:

The "cross lateral" poling action allows for a very quick tempo, with the opposite pole and ski landing at the same time. Accurate ski recovery is combined with an aggressive step up the hill. Movement of the center of mass is in the primary direction of travel.

- The skier steps up the hill with center of mass over or ahead of the feet, i.e. flex at the ankles to push knees and hips forward.
- Pole usage is identical to that of the diagonal stride.
- Knee, ankle and leg flex in preparation for the push-off.

V1 Skate

Guest Outcome: By combining and transferring the abilities of double poling and skating without poles, the guest can learn an efficient V- skating technique.

Terrain and Tactics: Up-hills on firm snow (compacted by machine or nature).

Description:

Utilizing a quick tempo, the V1 allows for effective application of power to the poles and to the skis. The poles are planted at the same time as the "push-off ski", creating a three point platform. A strong skate and pole push produce a weight transfer to the glide ski. For very steep up-hills the poling tempo is increased and the feet are recovered by actively stepping them up the hill.

- Poles and the skating ski plant and push together from a three-point platform.
- A strong skate and arm push-off is followed by weight transfer to the gliding ski.
- Feet actively step uphill on steep hills.
- Push-off is from the whole foot.
- Once one poling cycle is complete another begins, with about the same amount of time being spent on the push leg as on the glide leg.

V2 and V2 Alternate Skate

Guest Outcome: Learn alternative skating techniques used at higher speeds.

Terrain and Tactics: Firm snow (compacted by machine or nature), on all terrain but steep up-hills.

Description:

These techniques make use of a strong double pole action which starts over the gliding ski, and finishes with a strong skate and pole push to a balanced position on the new gliding ski. With the V2 there is a pole push on each side; with the V2 Alternate, one of the pole actions is left out and replaced by an active swing of the poles. Effective alignment of the body over the gliding ski is crucial to allow time for the recovery of the poles. The power output of the poles combined with the skating movement make these the fastest techniques.

- Balance over gliding ski is essential.
- Strong double pole push is in the direction of travel.
- With a strong skate and pole push the skier moves to effectively align his/her body over the new gliding ski.
- All movement is forward down the track.

Down-hills and Turning

Guest Outcome: Successfully and confidently negotiate down hills and corners.

Terrain and Tactics: Any snow covered terrain with ups and downs.

Description:

There are a broad range of techniques available to provide speed control and direction changes, ranging from the gliding and braking wedge to advanced christie and telemark turns. A candidate should be prepared to demonstrate a variety of these maneuvers. See Telemark Maneuvers for complete descriptions of these.

- Gliding and braking wedge
- Half Wedge (one ski in the track and one ski brushing the snow in a half wedge position)
- Wedge Christie
- Parallel turns
- Basic Telemark turn

Certification

Entry level, registered members of PSIA can begin the Cross Country Certification process with the 2 day, Level 1 Certification Exam. Participants will receive feedback on personal skiing and teaching skills throughout the exam process. More advanced candidates can either challenge or take the level 2/3 Certification Exam. See the *Northern Rocky News* or website for dates and fees. Advanced candidates will receive certification at a given level when they have satisfied all the criteria for that level.



Level 1 Cross Country

Prerequisites:

- Current Registered members in PSIA-NRM
- New instructors who teach primarily novice and beginner lessons.

A Level 1 Cross Country candidate is responsible for all of the information on the following checklist. At the Certification Event, candidates will be able to explore ATS principles and practice Level 1 maneuvers. Candidates will be evaluated on their ability to apply the Cross Country Skiing Skills to these Level 1 maneuvers.

Checklist for Level 1 Cross Country

Introduction to the Skiing Model

General Skiing Characteristics

- Maintain balance in all maneuvers.
- Demonstrate a blending of skills: ski to ski balance, push-off, poling, relaxation, rhythm, edge control (within Body Position, Timing, and Propulsion)
- Demonstrate smooth transitions from one technique to another.
- Ski all cross country terrain and trail conditions described as green or blue.

Skiing; technical understanding

- Define and explain the Fundamental Skills of cross country skiing as described in this handbook i.e. ski to ski balance, edge control, poling etc.
- Identify equipment needs for skiers at the beginner level.
- Explain the basics of waxing classic skis.
- Explain the characteristics of skating skis.
- Recognize the following techniques: uphill diagonal, double pole, double pole with kick, skating turn, wedge christie, basic telemark, V2 skate and V2 alternate skate.
- Describe the diagonal stride using the Fundamental Skills.
- Describe a V1 skate using the Fundamental Skills.

Skiing Application

Ski the following techniques. Identify the appropriate terrain for each. Identify and describe the Cross Country Fundamental Skills involved in each.

- diagonal stride
- double pole
- herringbone
- step turn
- wedge
- wedge turn
- no pole skate
- diagonal V-skate
- V1 skate
- uphill diagonal stride
- transitions

Checklist for Level 1 Cross Country

Introduction to the Teaching Model

Professional Knowledge Assessment

- ❑ Recall the Skier's Responsibility Code and discuss how to introduce it when teaching beginners.
- ❑ Recognize all parts of the American Teaching System (See *Core Concepts Manual* and other PSIA publications). Discuss how to use ATS when teaching beginners.
- ❑ Identify visual, auditory, and kinesthetic (VAK) sensory preferences and give examples of how to recognize a student's learning style preference.
- ❑ Identify styles of teaching and give examples of how to use them.
- ❑ Identify student profile of specific groups...adults, children, seniors, etc.

Movement Analysis

- ❑ Describe the basic movement patterns in beginner skiers.
- ❑ Determine cause and effect relationships in terms of the Cross Country Fundamental Skills in beginner skiers.
- ❑ Prescribe what a beginning student should work on by prioritizing their skill needs.
- ❑ Prepare skill development based lesson plans.

Teaching Assessment

- ❑ Teach the skiing public from the beginner through the low intermediate levels.
- ❑ Handle a class and manage a group's behaviors based on student goals taking into consideration energy levels, conditions for that day, and safety.
- ❑ Communicate information using basic techniques such as eye contact, voice inflections, and appropriate pacing of information.

Level II Cross Country

Prerequisites:

Certified level I Cross Country Instructor **or** Certified level II in a cross discipline i.e. Alpine, Snowboard, Children's, or Adaptive.

These instructors teach primarily beginner and intermediate lessons. They should be able to demonstrate an understanding of the ATS Teaching Model and demonstrate the Skiing Model (in that discipline) at a Level II standard. The Level II candidate should be able to ski most of the terrain regularly skied by the general public.

Checklist for Level II Cross Country

Skiing

General Skiing Characteristics

- ❑ Ski the following techniques: diagonal stride, uphill diagonal stride, double pole, double pole with kick, skating turn, herringbone, step turn, wedge, wedge turn, wedge christie, no pole skate, V1 skate, V2 skate, V2 alternate skate and diagonal V-skate.
- ❑ Apply appropriate tactics and demonstrate a variety of skill applications according to the situation.
- ❑ Ski all terrain and trail conditions described as green, blue, and easy black.

Skiing; technical understanding

- ❑ Define and interpret the Cross Country Fundamental Skills, and apply them for understanding, analyzing, and teaching skiers up to intermediate level.
- ❑ Identify skill application and explain skill blending, intensity and skiing characteristics that create balance and propulsion through the intermediate level.
- ❑ Describe the Cross Country Maneuvers in terms of the Fundamental Skills.
- ❑ Examine the similarities of the application of the Fundamental Skills in the Cross Country Maneuvers.
- ❑ Describe skill development in the Cross Country Maneuvers at this level and discuss how lateral learning enhances development.
- ❑ Describe changing equipment needs as students advance from beginner through intermediate level.
- ❑ Explain the basics of waxing classic and skating skis.

Checklist for Level II Cross Country

Skiing Application

Ski each of the following techniques on beginning to intermediate terrain using an appropriate blending of the Fundamental Skills.

- diagonal stride
- uphill diagonal
- double pole
- kick double pole
- step turn
- wedge
- wedge turn
- wedge christie
- basic telemark
- no pole skate
- V1 skate
- V2 skate
- V2 alternate
- transitions

Teaching

Professional Knowledge Assessment

- Recall the Skier's Responsibility Code and discuss how to introduce it when teaching beginners and intermediates.
- Identify the components of the Teaching Model.
- Identify and match learning style preferences and teaching styles.
- Describe student profiles of specific groups (e.g., age or gender specific) through intermediate levels.

Movement Analysis

- Describe the basic movement patterns in skiers through the intermediate level.
- Determine cause and effect relationships in terms of the Cross Country Fundamental Skills in skiers through the intermediate level.
- Prescribe what a beginning student should work on by prioritizing their skill needs through intermediate level.
- Prepare skill development focus, exercises, and tasks that target skiers' needs and improve skiing.

Teaching Assessment

- Teach the skiing public through the intermediate level.
- Determine goals that are mechanically correct and meet expectations of the student (i.e., the Learning Partnership).
- Tailor teaching styles to meet preferred learning styles of the students.
- Apply the Teaching Model effectively to match the needs of the students.

Level III Cross Country

Prerequisites:

Certified level I or II Cross Country Instructor **or** Certified level II in a cross discipline i.e. Alpine, Snowboard, Children's, or Adaptive.

Candidates for Level III Cross Country Certification are able to teach all levels of lessons and advanced clinics. They exhibit a mastery of the ATS Teaching Model and are able to demonstrate the Skiing Model skillfully and dynamically. These instructors should also be able to demonstrate a high level of personal skiing ability on any terrain normally skied by the general public.

Checklist for Level III Cross Country

Skiing

General Skiing Characteristics

- ❑ Ski the following techniques: diagonal stride, uphill diagonal stride, double pole, double pole with kick, skating turn, herringbone, step turn, V1 skate, V2 skate, V2 alternate skate and diagonal V-skate, no pole skate as well as, wedge turn, wedge christie, basic telemark and open parallel.
- ❑ Ski all terrain and trail conditions.
- ❑ Ski with dynamic rhythm and flow.
- ❑ Demonstrate appropriate skill blending in techniques, exercises and tasks depending on the situation.

Skiing; technical understanding

- ❑ Show an understanding of Cross Country Fundamental Skills and Maneuvers through performance.
- ❑ Relate specific skiing terminology to any level student in plain, simple language.
- ❑ Describe how skill blending relates to different maneuvers, situations and conditions as well as how it relates to different types of skiers including: seniors, men, women, children, top athletes, and adaptive skiers.
- ❑ Relate skill blending to various internal and external forces generated in a variety of skiing situations.
- ❑ Describe, analyze, and prescribe equipment in advanced skiing. Talk at length about waxing for maximum performance in classic and skating.

Checklist for Level III Cross Country

Skiing Application

- ❑ All classic (traditional) and skating (freestyle) techniques and their variations (see "Free Skiing" above).
- ❑ Wedge turn, wedge christie, basic telemark, open parallel turns, open telemark turns.
- ❑ Demonstrate on any trail.
- ❑ Demonstrate efficient and effective transitions between techniques.
- ❑ Demonstrate an appropriate and dynamic blending of skills.

Teaching

Professional Knowledge Assessment

- ❑ Discuss how to integrate the Skier's Responsibility Code into all levels.
- ❑ Describe how to use a variety of teaching styles in response to the different learning style preferences encountered in a group lesson to individualize the lesson for the students.
- ❑ Describe elements of student learning and instructor teaching. Relate how instructors can contribute to both positive and negative experiences for students.

Movement Analysis

- ❑ Describe the basic movement patterns in skiers through advanced level.
- ❑ Determine cause and effect relationships based on stance, skill blending, tactics, skill deficiencies and proficiencies, and other factors through the advanced level.
- ❑ Prescribe what a student should work on by prioritizing their skill needs through the advanced level.
- ❑ Prepare a skill development plan, focusing on tasks, exercises and drills to target the skiers' needs and change their behaviors.

Teaching Assessment

- ❑ Teach the skiing public through the advanced level.
- ❑ Use the Teaching Model in all levels.
- ❑ Individualize group and semi-private lessons by using a variety of teaching styles and methodologies.
- ❑ Arrive at specific student goals during lessons utilizing a variety of strategies.
- ❑ Apply various forms of reinforcement, practice, and feedback to gain the best performance from students.

Backcountry Education Pathway

"Though not outrageously difficult, wilderness skiing is one of the more demanding, more esoteric, least obvious ways of behaving in a wild environment. Almost certainly this is why it offers so much and why it is practiced by so few... (Tejada-Flores and Steck, 1972)

Providing clients with the safe, rewarding and educational backcountry skiing experience they expect requires in-depth knowledge and expertise. The extent to which an instructor can meet the diverse levels of expectations is directly related to the instructor's familiarity with the backcountry and the skills acquired while spending time there. The purpose of the Backcountry Ski Instructor (BSI) Education Pathway is to educate ski instructors in winter backcountry skills and to verify that their proficiency in those skills is high enough to safely teach in the sometimes hostile winter backcountry.

"A professional accepts the role of leader, the trust of his followers and the responsibility for safe travel. Perhaps one of the most gratifying rewards a guide can receive from his group of followers at the end of a tour is a warmly genuine expression that says, 'let's do this again—soon.'" (Mirick, 1993)

Certification Prerequisites:

1. Able to ski or snowshoe/snowboard a minimum of 6 miles up hill in the backcountry with an overnight pack.
2. Know contents of 1995 PSIA *The American Teaching System: Nordic Skiing* manual, and *Snow Sense* (5th edition, 2001, by Fredston & Fesler),
3. PSIA Level I certification in Cross Country {preferred}, Telemark, Alpine or Snowboard.
4. Current CPR certification.
5. **Level II:** Completion of Level I avalanche course or PSIA-NRM Avalanche course.
6. **Level III:** completion of Level II avalanche course.
7. **Level II:** current Red Cross Wilderness First Aid Certification
8. **Level III:** current Wilderness First Responder certification (courses by WMA, WMI, and SOLO preferred).
9. Skiing ability equivalent to at least PSIA Level II Cross Country standard.
10. Submission of completed study guide 2 weeks prior to certification event. Note: Study Guide will be sent to candidates on application for certification. It consists of essay questions designed to enhance a candidate's backcountry knowledge and will require considerable time and effort to complete.
11. Submission of skiing experience resume 2 weeks prior to certification event.
12. Submission of 2 letters from people involved in areas of Nordic skiing vouching for candidate's experience 2 weeks prior to certification event.

Certification

Due to the remote nature of many overnight tours, knowledge and continual use of the Backcountry Skills by the instructor may mean the difference between an enjoyable winter learning experience and disaster.

Candidates for all levels of Backcountry Ski Instructor certification attend a 3-day/2-night certification exam. Over the course of the exam, candidates will be continuously evaluated on their knowledge and ability to effectively apply the Skills of Backcountry Skiing. Candidates will be scored on a basis of 0 to 9 points and will be certified at a level consistent with their performance.

Certification Levels:

BSI Level II: certification score 4-6 (Day Tour Leader)

BSI Level III: certification score 7-9 (Overnight Tour Leader)



Backcountry Skills

"Wilderness skiing is a passport that lets one travel freely from the season-less city into a 'beyond', generally so difficult of access and seemingly so hostile, that it has been spared the invasions which have nearly urbanized the American outdoors in summer."(Tejada-Flores and Steck, 1972)

The remoteness of the backcountry places many more demands on the client and the instructor.

The instructor in addition to teaching appropriate skiing techniques must also become:

- A trail designer with the ability to navigate and select routes using map & compass
- A trail groomer with the endurance to break trail when your clients are tired
- A lodge builder and manager by providing shelter, nutrition, and sanitation
- A repair shop equipped with a repair kit and the ability to use it effectively,
- The ski patrol qualified to administer first aid as well as to recognize and avoid avalanche danger

"For backcountry ski instructors, monitoring their students is merely the beginning of ensuring a safe, enjoyable wilderness experience. The backcountry ski instructor also needs to constantly monitor the environment. 'Are there settling cracks on the slope above? Is there enough snow in that timber patch ahead to cover fallen logs or do we need to ski around? If the storm closes in, what compass bearing do we follow to get to the cars? Does the map show this as the meadow that precedes the hut or the one that ends in the willow thicket? Will we need to change wax before we start up this hill? Would that last storm have deposited a dangerous slab on east facing slopes? Which skiers are skiing well enough that they could carry some of the weaker skier's gear?' "(Walters, 2003)

The previous quotation underscores the importance of the eight fundamental Skills of the Backcountry Instructor: **leadership; backcountry navigation and route finding; emergency medicine; avalanche recognition and avoidance; rescue and evacuation; wilderness skills of snow camping, nutrition and equipment repair; skiing skills; and teaching skills** (which include the ability to teach all aspects of safe wilderness travel). Because many excellent, detailed technical references have been written about each one of these topics, the candidate must assume the responsibility to read extensively and become proficient in these areas. In addition, there are numerous clinics which should be attended in preparation for certification, as well as to refresh and update current skills. What follows is a checklist outlining the important aspects of each Backcountry Skill area.



Checklist for Backcountry Ski Instructor-All Levels

"The backcountry ski instructor is able to ..."

Leadership

- ❑ Provide a safe, enjoyable, and meaningful experience for all participants.
- ❑ Maintain control of the group in a firm but friendly manner.
- ❑ Set a pace, with rest stops, appropriate for the terrain and abilities of the group.
- ❑ Utilize the skills of others to enhance the trip for all.
- ❑ Demonstrate use of the five P's.(Prior planning prevents poor performance.)
- ❑ Conduct oneself in a "professional" manner (punctual, organized, positive attitude, supportive, etc.).
- ❑ Demonstrate different leadership styles as dictated by the situation.

Backcountry Navigation and Route Finding

- ❑ Utilize a map to plan the route for a backcountry trip.
- ❑ Utilize a map and terrain features to ascertain location.
- ❑ Utilize a map and compass to ascertain location.
- ❑ Follow a bearing.
- ❑ Demonstrate ability to communicate locations with regionally appropriate cartographic systems.

Avalanche Awareness skills

- ❑ Demonstrate an understanding of snow properties.
- ❑ Recognize avalanche terrain and plan a route to eliminate or minimize risk.
- ❑ Make a reasonable avalanche stability evaluation based on snow pit data, Rutsch Block testing, and other available evidence.
- ❑ Demonstrate approved procedures for avalanche rescue.

Wilderness skills:

Snow camping

- ❑ Demonstrate appropriate techniques for Leave NO Trace travel and camping
- ❑ Recognize and understand importance of changing weather conditions and adjust plans accordingly.
- ❑ Choose suitable sites for temporary and overnight snow shelters and build those shelters.
- ❑ Build a fire in the snow.

Nutrition and meal planning

- ❑ Plan a menu and prepare meals with an appropriate mix of food groups for taste and adequate nutrition for energy and warmth, with consideration for special needs.

Equipment

- ❑ Advise clients as to appropriate equipment
- ❑ Repair or compensate for most equipment in the field in a timely manner

Emergency Medicine

- ❑ Utilize appropriate methods for avoiding common winter emergencies, including: frostbite, hypothermia, dehydration, snow blindness, sunburn, blisters, AMS, HAPE, exhaustion, anaphylaxis, etc.
- ❑ Demonstrate approved procedures for stabilizing common winter emergencies, including: frostbite, hypothermia, dehydration, snow blindness, sunburn, blisters, AMS, HAPE, exhaustion, fractures, lacerations, dislocations, impaled objects, diabetic consequences anaphylaxis, etc.

Skiing

- ❑ Show appropriate technique on all terrain, except the most extreme.
- ❑ Demonstrate appropriate tactical choices, as dictated by terrain.
- ❑ Generate, reduce or maintain speed without interrupting overall flow or rhythm with appropriate blend of skills.
- ❑ Utilize appropriate grip technology—hard wax, klister or skins.
- ❑ Link turns in a technique appropriate for the snow condition and slope.
- ❑ Demonstrate adequate endurance with a reserve of energy for emergencies.
- ❑ Ski cross country techniques including: diagonal stride, double poling, double pole with kick.
- ❑ Ski uphill skills including: uphill diagonal, herringbone, traverse, side step, forward side step, and kick turn.
- ❑ Ski downhill skills including: straight run, step turns, half wedge, braking wedge, wedge turns, wedge christie, basic telemark, open stance parallel and open stance telemark.

Teaching

- ❑ Describe all aspects of ATS and be able to apply the PSIA Teaching Model to teach all the different aspects of backcountry travel.
- ❑ Individualize group teaching and develop the individual cognitive, affective and physical needs of students by adjusting teaching styles and behaviors.
- ❑ Apply teaching for transfer, practice, reinforcement, feedback and appropriate activities to anchor learning.
- ❑ Teach appropriate travel techniques for rolling terrain, steep up-hills, and down-hills
- ❑ Teach wilderness skills, including navigation, Leave No Trace travel, avalanche recognition, avoidance and stability evaluation, snow shelter and fire building emergency rescue and evacuation.

Rescue and Evacuation

- ❑ Demonstrate appropriate group handling skills while dealing with emergency situations
- ❑ Demonstrate appropriate evacuation procedures.
- ❑ Demonstrate appropriate procedures to contact and communicate with rescue agencies.

References:

- Abraham, Horst, *The American Teaching Method, Part II*, Progression and Ski Mechanic, CO: PSIA, 1977.
- Ayers, Rebecca (ed.), *Alpine Manual*. Lakewood, Colorado: Professional Ski Instructors of America Education Foundation, 1996.
- Ayers, Rebecca (ed.) *Nordic Technical Manual Skiing and Teaching Skills*. Lakewood, Colorado: American Snowsports Education Association Education Foundation, 2005.
- Crawford, David (ed.), *The American Teaching System: Nordic Skiing*, Lakewood, Colorado: Professional Ski Instructors of America, Inc., 1995.
- Drennan, Dale, *Movements and Skills in Telemark and Cross Country Skiing in The Nordic Handbook*, Steamboat Springs, Colorado: PSIA-NRM, 2006.
- Fredston, Jill A and Doug Fesler. *Snow Sense*, 5th ed. Anchorage, Alaska: Alaska gneiss_ski@earthlink.net Mountain Safety Center, Inc. 2001.
- Franosch, Urmas, Nordic education team member, personal communication, May 2003.
- Levine, Carol, Vail Beaver Creek Ski School, email communication, Oct. 2004.
- Loring, Maggie. *Core Concepts for Snowsport Instructors*. USA: American Web, Inc, 2001.
- Markova, Dawna. *The Open Mind*. Boston, Massachusetts: Conari Press, 1996.
- Mirick, Richard. *Mountain Ski Tour Guide*, Steamboat Springs, Colorado: PSIA-NRM, 1993.
- Nystad, Knut, Denver University Nordic team coach, e-mail communication. July 2003.
- Peterson, Kim et al. *Guest Centered Teaching Workbook*. Winter Park, Colorado: Winter Park Recreational Association, 2001.
- Porter, Mike and Steve Still, *American Teaching System Handbook for Ski Teaching*, 1989, Vail, Co: Vail Associates, Inc. 1989.
- Still, Steven. *The American Teaching System*, 2nd ed. USA: Professional Ski Instructors of America, 1993.
- Tejada-Flores, Lito and Allen Steck. *Wilderness Skiing*, San Francisco: Sierra Club, 1972.
- Walters, Ken. *Backcountry Ski Instructor Manual*, Steamboat Springs. Colorado: PSIA-NRM, 2004.
- Webster, Merriam, *Webster's Collegiate Dictionary Tenth Edition*, 1996.



Acknowledgements

PSIA-NRM has adapted this Handbook from the Rocky Mountain Division. Thank you for the permission to do so. The following Rocky Mountain PSIA advanced educators have contributed ideas, information, and input into this document: Patti Banks, Brian Blackstock, Dale Drennan, Jana Hlavaty, Jon Kreamelmeyer, Jennifer Johnson, Charlie MacArthur, Louisa Morrissey, Jim Sanders, Jim Shaw, Lee Sullivan, Ken Walters and Deb Willits. Special thanks to Carolyn Krueger from the PSIA-RM office for membership information and proofreading.

Your Nordic Representatives

Nordic Chairperson: Angela Patnode
Chief Examiner - Telemark: Colin Craig
Chief Examiner - Cross Country: Herb Davis
Backcountry Program: Dudley Improta

Edited for PSIA-NRM by Angela Patnode, Herb Davis, Ralph Thornten, Colin Craig and the Big Dawg (Randy P. Wall) 2006

Compiled, organized, contributed to and edited by Dale Drennan;
November 2003/ revised 2005

Movements and Skills in Telemark and Cross Country Skiing by D. Drennan 11/04 revised 11/05.



Appendix 1 - Descriptors for Telemark Student Levels

Level	General Descriptors	Lead Change Movements	Edging Movements	Development Exercise
Level 1 First time tele-marker	This is a time of developing balance and exploring range of movement available on telemark equipment. The student may have experienced other disciplines of sliding.	No lead change at this stage	Edges used to sidestep and herringbone	Walk, stop and climb initially in boots only then with skis
Level 2 – Learning to Turn	Balancing abilities continue to improve. The student discovers turning movements by learning to turn the legs independently of each other and the upper body.	Lead 500 shuffle – Shuffling skis between turns is explored as a function of creating stability in the fore and aft plane.	Skis are relatively flat	Shuffle feet in traverse and straight run.
Level 3 – Basic Telemark Turns	Skier is making individual telemark turns with skidding during the completion phase of the turn. Skier may be able to connect turns with a period of instability due to rebalancing between turns. A converging relationship between skis may exist at turn initiation.	Range of movement is often used up in one large movement at the beginning of the turn.	Slight edge angle develops as a result of turning	500 shuffle – shuffle skis between turns
Level 4 – Linked Telemark Turns	The student can make linked telemark turns and is exploring all green terrain. Turn shape is used for speed control and skis are working towards maintaining a parallel relationship.	The skier may exhaust lead change prior to, or in order to initiate the new turn; or may create lead change at the very end of turn.	Some use of edges in the completion phase of the turn is evident.	Telemark sideslips

Level	General Descriptors	Lead Change Movements	Edging Movements	Development Exercise
Level 5 – Telemark turns on all green and some blue terrain	Skier makes round skidded turns with pole touch on green and some blue terrain. The skier begins to use side cut of the ski to shape the second half of the turn.	The student is demonstrating a smooth lead change timed with edge release.	The skier has the ability to tip the ski on edge at some point after the gravity zone.	Monomarks
Level 6 – Introduction to bumps and other conditions on blue terrain	With a solid telemark turn and pole touch the student is starting to explore all blue terrain including bumps.	The skier is beginning to demonstrate a smooth and progressive lead change.	The skier times the release of the old edges with the beginning of the lead change. On groomed terrain skier is able to engage the edges shortly after the gravity zone through the turn completion.	750 Shuffle – shuffling skis almost consistently throughout the turn.
Level 7 – Linked controlled telemark turns on all blue and some black terrain	Able to make telemark turns on all blue terrain including bumps, the skier shows fore and aft stability and a solid pole touch.	A smooth, progressive lead change is exhibited on groomed blue terrain.	The skier can tip the skis on edge in the gravity zone.	Short and quick telemark turns keeping a quiet upper body, without a pole touch.
Level 8 – Explore the mountain.	With the ability to ski comfortably on any blue and most black slopes, the student's timing of lead change, pole touch and edge release is being refined.	The skier displays a smooth and progressive lead change on groomed blue and black terrain and on blue bumps.	The student is beginning to explore the effect of tipping the skis onto edge prior to the gravity zone.	1000 Shuffle – continuously shuffling and turning
Level 9 – Master of the Mountain	The skier can ski any turn, any time and anywhere in any condition.	Displaying a smooth, progressive lead change on all terrain, skier chooses an early or late lead change depending on the situation.	The skier is able to tip the skis onto edge prior to the gravity zone.	Ski blue bumps with no poles.

Appendix 2 - PSIA National Telemark Certification Skiing Standards 2006

● Level I –Beginner Zone

The candidate is able to...

■ Level II –Intermediate Zone

and the candidate is able to...




◆ Level III –Advanced Zone

and the candidate is able to...

Balance & Stance	<ul style="list-style-type: none"> ● Maintain lateral and fore-aft balance with hips between feet throughout the entire turn ● Weight the whole front foot and ball of the back foot (Tele) and over both feet (alpine) ● Round the lower back slightly, keep elbows in front of the spine and look ahead 	<ul style="list-style-type: none"> ■ Maintain lateral and fore-aft balance with hips between the feet throughout the turn and turn transitions ■ Regain balance in minor situations in which balance is compromised ■ Adjust visual focus further ahead with increasing speed 	<ul style="list-style-type: none"> ◆ Maintain lateral and fore-aft balance with hips between the feet through turn transitions in all terrain and snow conditions ◆ Utilize fine motor adjustments to anticipate ski reaction and create balance adjustments, minimizing the interruption of rhythm and flow ◆ Employ any skill with either leg at any point during the turn
Lead Change	<ul style="list-style-type: none"> ● Blend lead change movements with edge release movements ● Perform a lead change that allows the skier to edge, turn and pressure both feet effectively 	<ul style="list-style-type: none"> ■ Perform a lead change with edge change at the same time ■ Perform a lead change with continuous motion from one telemark stance to another 	<ul style="list-style-type: none"> ◆ Blend simultaneous lead change and edge change with rotary and pressuring movements ◆ Vary lead change and timing to adapt to changing terrain and conditions
Edging Movements	<ul style="list-style-type: none"> ● Show tipping of the skis starting from the feet to match edge angles in the finish phase of the turn ● Demonstrate the use of ski design 	<ul style="list-style-type: none"> ■ Continue tipping of the skis starting from the feet while engaging the new edges simultaneously, with matching edge angles during the shaping phase ■ Utilize the ski design as a component of turn shape and speed control ■ Move the center of mass inside the turn in the shaping phase 	<ul style="list-style-type: none"> ◆ Demonstrate progressive tipping of the skis from the feet up while simultaneously engaging both edges in the initiation phase ◆ Utilize ski design as the major component controlling turn shape in most conditions in most situations ◆ Move the center of mass inside the turn in the initiation phase
Rotary Movements	<ul style="list-style-type: none"> ● Turn both feet to assist in turn initiation and shaping ● Maintain a parallel relationship with the skis in the finish phase of the turn 	<ul style="list-style-type: none"> ■ Make rotational movements of the lower body complement edging and pressuring relationships to assist edge engagement and direction change ■ Maintain a parallel relationship with the skis throughout the shaping and finish phases of the turn 	<ul style="list-style-type: none"> ◆ Use rotational movements of the lower body in conjunction with edging and pressure control movements through the turn unless required by terrain or task ◆ Maintain a parallel relationship with the skis and consistent width track throughout the turn and turn transitions
Pressure Control	<ul style="list-style-type: none"> ● Demonstrate flexion and extension movements during the finishing phase of the turn ● Maintain pressure on both feet through the shaping phase 	<ul style="list-style-type: none"> ■ Manage pressure via flexion and extension to enhance turn shaping through minor terrain variations with minimal interruption ■ Pressure both feet throughout the turn in order to maintain ski-snow contact with both skis in intermediate terrain 	<ul style="list-style-type: none"> ◆ Actively manage pressure and turn forces throughout the turn and through turn transitions while maintaining turn shape and accuracy ◆ Regulate pressure distribution between both feet throughout the turn in all conditions ◆ Maintain ski-snow contact unless tactics/conditions demand otherwise

Refer to the *Nordic Technical Manual* (2005) under *Visual Cues for Effective Telemark Skiing* for further detail on technique

Appendix 3 - PSIA National Cross Country Certification Skiing Standards 2006 (DRAFT)

	 Level I Beginner Zone <i>The candidate is able to...</i>	 Level II Intermediate Zone <i>The candidate is able to...</i>	 Level III Advanced Zone <i>The candidate is able to...</i>
Body Position	Ski with the core over the base of support seen by shin angle appropriate to torso	Ski with the core over the base of support seen by shin angle matching torso	Ski with the core in front of the base of support seen by shin angle matching torso
	Balance and glide on one ski	Vary the duration of balance and glide on one ski	Actively balance and glide on one ski for any duration
	Ski with a naturally rounded back in an athletic stance	Ski with naturally rounded back and tail tucked under most of the time	Ski with naturally rounded back and tail consistently tucked under
	Ski with a stable 'panel' (torso) oriented in the direction of travel in one of the three: twisting, tilting, hinging at the waist	Ski with a stable panel in two of the three: twisting, tilting, hinging at the waist	Ski with a stable panel controlling twisting, tilting, and hinging at the waist
Timing	Demonstrate 3 techniques to get around and recognize all of the techniques	Demonstrate all of the techniques and switch techniques and tempo with terrain changes	Demonstrate all of the techniques and switch techniques and tempo seamlessly with terrain changes
	Time core, poling and leg movements for the terrain and technique	Time core, poling and leg movements to enhance forward motion	Time core, poling and leg movements precisely to enhance forward motion appropriate to technique and terrain
Propulsion	CL Transfer weight completely SK Transfer weight completely (laterally)	CL Transfer weight as the feet pass SK Transfer weight actively from whole foot to whole foot	CL Transfer weight after the feet pass SK Transfer weight precisely and powerfully from whole foot to whole foot with full extension
	CL Compress the ski with body weight to create grip SK Engage the ski edge with body movement to create purchase	CL Compress the ski with flexion and extension to create grip SK Push off of the ski edge with extension to create purchase	CL Compress the ski with flexion and extension to create grip and enhance power SK Push off of the ski edge with extension to create purchase and increase glide
	CL Pendulum the leg forward Demonstrate flexion/extension	CL Actively pendulum the leg to enhance forward motion Demonstrate flexion and extension dictated by terrain	CL Powerfully pendulum the leg to enhance forward motion and compression Use full range of flexion and extension movements as dictated by terrain to generate power
	Engage poles then core muscles	Engage core muscles as poles engage	Engage core muscles as poles engage
	Demonstrate propulsion from poling with pole release and arm extension	Demonstrate propulsion from poling with pole release, arm extension and retrieval appropriate to terrain and technique	Increase propulsion by pole push and pole retrieval