The Nordic Handbook
Rocky Mountain Division- PSIA-AASI

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Nordic Handbook-Part 1

Nordic Skiing, PSIA Membership, and ATS

What Does PSIA Certification Mean?

If you have come to the PSIA Nordic educational materials website to peruse *the Nordic Handbook*, you are probably already a very good skier. Most likely, you ski fast, and you ski well; moreover, whether on the hill or in the track, your friends respect your ability. Perhaps now you are seeking Nordic certification as a further affirmation of your skiing prowess. Please be aware that pursuing PSIA certification as a ski instructor is not simply an affirmation that you are a good skier. ***PSIA certification involves studying and understanding specific educational materials*** which have been carefully developed over time by many dedicated skiing professionals. These materials reflect an agreed-upon belief system of what constitutes good skiing and good teaching techniques. They are not the only ways to teach and to ski but they represent systems and mechanics that are well proven to be fundamental and effective. It is our hope that in pursuing PSIA certification, you will enhance and add to the effective knowledge, skills, and strengths you already possess, as opposed to replacing one belief system with another.

If you do not study the PSIA materials or attend the pre exam events, you probably will not achieve your desired level of certification -- not because you are a bad skier, but because you are not prepared. An analogous situation would be that of a college student who is well versed in political science. This student enrolls in a political science class, but does not buy the text book, do the homework, or attend any lectures. He/she simply goes to the final and still expects to do well. Unfortunately, this student has failed to recognize that the exam is based on the course content, not his/her personal knowledge. In a similar way, some candidates for PSIA certification have simply attended the certification event expecting to pass on their skiing ability alone without properly preparing. These candidates are usually very disappointed with their results.

Attaining PSIA certification indicates that you understand the PSIA course content for a given level, that you have done your homework and are well prepared, and that you have mastered the PSIA skiing standards for that level. The *Nordic Handbook* provides the basic course content for three levels of Telemark and Cross Country certification in the Rocky Mountain Division of PSIA. In addition, in order be fully prepared, candidates for certification should also read the *Core Concepts Manual*, and the *Nordic Technical Manual.* (Please see the list of references.) These manuals will help you complete the workbooks. Finally, the pre exam courses will help you to practice and receive feedback on your teaching and on all aspects of your skiing including drills and maneuvers that help people learn how to ski effectively.

Pursuing PSIA certification requires work on your part, but the effort is well worth the journey because you will become an even better skier and educator than you already are and probably have a lot of fun along the way. So what are you waiting for? Turn the page and get started!

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Preface

The *Nordic Handbook* has been prepared to help PSIA-RM 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 *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

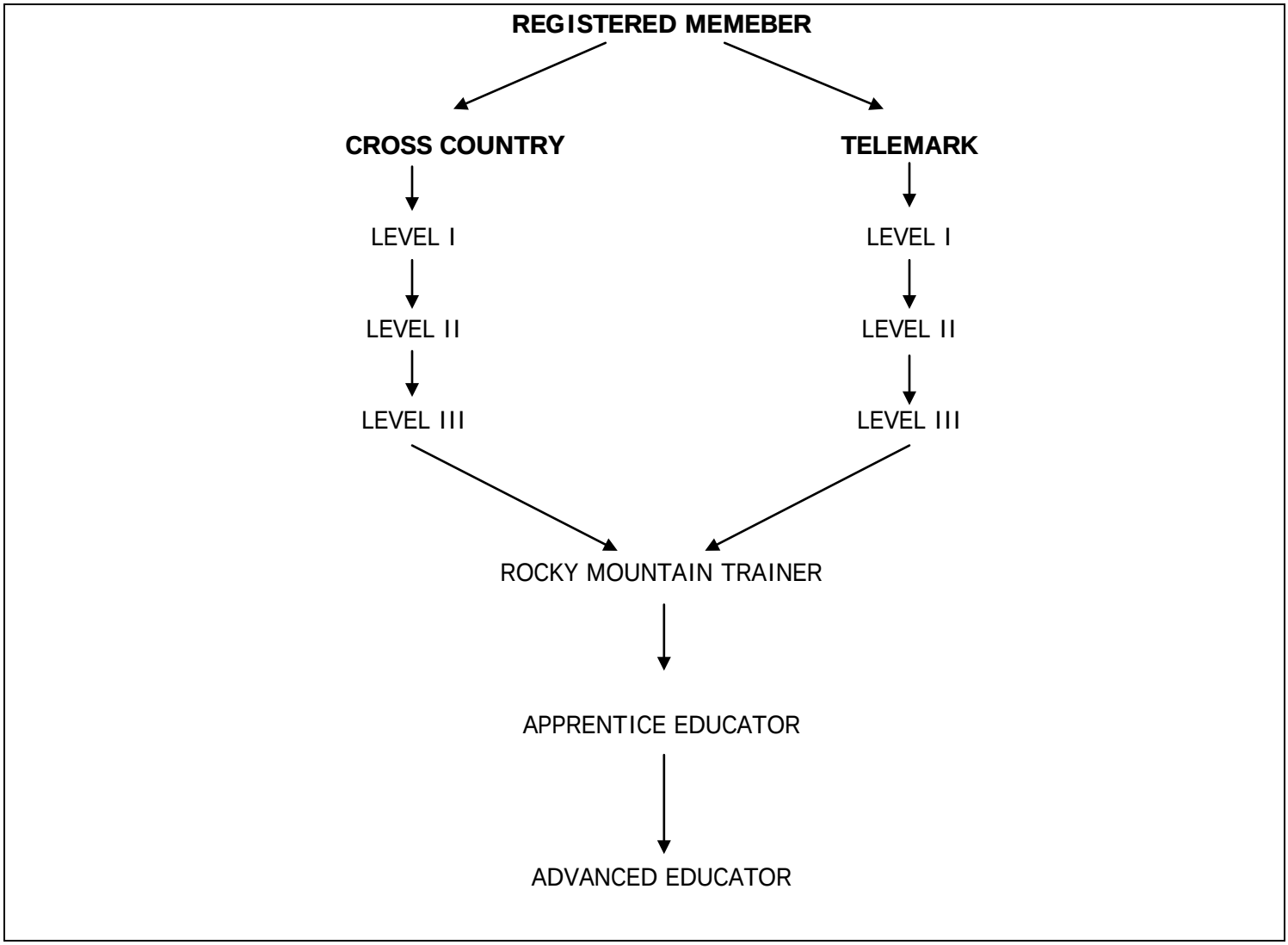
The term "Nordic" defines the broad category of skiers who slide on the snow with only the toe end of their boots attached to the ski. As Nordic skiing has evolved, the ski industry has countered by producing a wide variety of equipment to help us to ski as efficiently as possible. Technological advances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

At this writing, there are two main areas of specialization in the Nordic world: cross country (also known as Nordic track) and telemark (also known as Nordic downhill). 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.

What is PSIA-RM Nordic Certification?

The PSIA-RM 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.

Nordic Education Pathways Map



Purpose of PSIA Certification

The certification/verification processes offered by PSIA serve:

- The skiing public by ensuring that they will be provided with the most professional instruction available.
- The Nordic professional by providing training to develop teaching and skiing skills and by providing 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-RM Membership

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

Becoming a Registered Member of PSIA-RM

- Register with PSIA-Rocky Mountain-AASI. If you are employed by member ski school, application forms and information are available from your snow sport school director. If you teach for a ski club or you are a volunteer, contact the PSIA-Rocky Mountain-AASI office directly at PSIA-RM office PO Box 775143, Steamboat Springs, CO. 80477 or (970) 879-8335. You can also obtain downloadable application forms and information from www.psia-rm.org.
- Pay yearly dues in the amount of $111.00 with $50.00 covering PSIA-Rocky Mountain-AASI dues and $61.00 covering PSIA/AASI (the national organization) dues. Dues are collected on a yearly basis. The deadline for payment in the Rocky Mountain office is June 30th.
- Membership 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 verification of your membership status to the Rocky Mountain Office.

- Submit a letter of verification of employment from the PSIA-Rocky Mountain-AASI member school director for whom you are or will be employed.

- Payment of applicable fees and dues:
  - $50.00 PSIA-Rocky Mountain-AASI dues for the season applying
  - $61.00 PSIA/AASI National dues for the season applying (if not already paid)
  - $10.00 PSIA/AASI National late fees if applicable

- You may also maintain a dual membership with PSIA-Rocky Mountain-AASI and another division. Typically National and Divisional dues should be paid in the division where you are living and working with Divisional dues only being paid to the other division if you would like to continue to receive their benefits and mailings. All dues can be paid on-line at the PSIA national website www.thesnowpros.org.

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 twelve hours (two days) of clinics for credit every other year.

Benefits of being a registered PSIA-RM member

- An active voice: A registered member is entitled to vote in PSIA-RM general elections. (Certified instructors with active status in good standing are eligible to hold office 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 with membership as the only prerequisite; i.e. Nordic, alpine, snowboard, adaptive,

kids or seniors.
- Discounted lift tickets at many Rocky Mountain member schools
- Scholarship programs
- PSIA accessories catalogue purchases
- Publications: monthly *32 Degrees: The Journal of Professional Snowsports Instruction* and quarterly *From Instructor to Instructor*
- PSIA website access with event calendar, downloadable educational material, on-line registration etc.
- Various additional discounts: See www.psia-rm.org for a complete listing of benefits.

Nordic Event Schedule and Fees

Please refer to www.psia-rm.org for a schedule of events, pertinent application forms and current event prices. Checks should be made payable to PSIA-RM and specified for the type of Nordic event. Payment can also be made by fax or online at www.thesnowpros.org with a Visa or Master Card. No telephone transactions please. Registration must be received by the PSIA-RM office, along with full payment of fees, at least THREE WEEKS prior to the event. The deadline dates will be published in the PSIA-RM Event Calendar.

Refund Policy/Late Clinic Registration fees

An injured or ill candidate supplying a written doctor's verification may receive a full refund with no penalty. Verification 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; substitutions must be made at least one week prior to the event.

Those wishing to enroll in an event after the registration deadline listed in the *Master Event List* may do so provided that there is an opening. (A late of $10 per clinic day will be charged to all late registrants.)

Occasionally Nordic clinics have to be cancelled. In order to meet the costs of running an event, there must be a minimum of 7 participants registered by the deadline date. 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-RM clinic or verification event, 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 verification event.
3. Must pay all required fees and register at least four weeks prior to the exam; three weeks prior to clinic.
4. Must submit written permission from home division with exam application.

PSIA-RM instructors taking exams in other divisions may transfer that certification to PSIA-RM provided they meet the following requirements:
1. Must be current members in good standing in PSIA-RM.
2. Must fulfill PSIA-RM requirements to take the equivalent exam.
3. Written permission must be obtained from the PSIA-RM office and sent with application to the other division.
4. Must pay all required fees and register per requirements of the other division.

Telemark and Cross Country Rocky Mountain Trainer

For complete descriptions of these programs go to www.psia-rm.org and click on Nordic. Qualified Candidates for Rocky Mountain Trainer must attend an early season RMT 401 workshop and then be verified as a Trainer at the end of the season verification event.

Nordic examiners from other divisions

Nordic examiners from other divisions wishing to transfer to PSIA-RM and conduct events in this division must attain Rocky Mountain Trainer (RMT) in the Rocky Mountain Division. Attending the early season RMT workshop in preparation for RMT verification is recommended but not mandatory. The Verification event fee is waived for transferring examiners if enough paying candidates attend. Upon verification, the transferring examiner then follows the steps outlined for Rocky Mountain Trainer.

Approval to bypass Cross Country pre-certification clinics

Beginning in the 2006-2007 season, the Cross Country Level 1 and Level 2/3 pre-certification clinics are no longer recommended, but **required for all candidates** wishing to participate in the subsequent certification event. Experienced cross country instructors who believe that they qualify for bypassing either the Level 1 or the Level 2/3 pre-certification clinic, should contact the PSIA– RM Nordic Chairperson listed in the "Your Nordic Representatives" section at the end of this Handbook. Approval will be granted or denied on a case by case basis.

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-RM. 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 –RM Nordic Chairperson listed in the "Your Nordic Representatives" section at the end of this Handbook.

MANDATORY PRE-REQUISITE: Current membership in PSIA-RM

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 2 seasons of teaching or coaching Cross Country skiing.
   B. At least 2 seasons of Cross Country Ski Racing experience at a Collegiate or National level.
   C. At least 2 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 –RM 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 pre-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 verification. 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: telemark and cross country. 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 *(* See *Core Concepts*.)
- 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 receiving 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 one 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**
Observe and Describe	o Set a task which relates to the student's intent and which is at the ability level of the students. o Observe using Bottom-up, Core-out, or Top-down methods explained in the Nordic Technical Manual. o Make objective statements that describe student skiing, i.e., "Tell a story" of the phases of the turn or the phases of the XC Skiing Cycle. o 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." o Be sure to pay attention to what the body is doing AND what the skis are doing
Determine Cause and Effect Relationships	o Use the Visual Cues sections from the *Nordic Technical Manual* and the National Telemark and XC Matrices as guidelines for identifying effective skiing. o Compliment movement that is working well. o Identify movements to be changed and describe in terms of a specific body part and a specific skill. o Relate recommended changes to either the phase of the turn or the phases of the XC skiing Cycle o Explain why things are happening to the student. Be specific and accurate. o Be sure to include what body movements the student is doing and how these affect the skis. o If nothing is wrong, say so.
Prescribe Change	o Prioritize movements to be changed and how the movement change will affect the ski performance. o Set a goal with the student. o Develop an exercise which can help meet that goal. o 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

1. Introducing the Lesson/Learning Segment

The instructor

- Establishes and continually builds rapport and trust (both individual and group)
- Creates a fun, open, and supportive learning environment,
- Clearly defines the general outcomes and process of the learning segment.

As an instructor, you are responsible for the activities listed below.

2. 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

3. 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

4. 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

5. 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* [**Please note**. *Check with students about when and how they would like to receive feedback. Some students do not want feedback until they have practiced a bit. Other students prefer to receive feedback privately. All feedback should be delivered with a positive component.]*
- 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

6. 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

7. 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 chose 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.")

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 on-coming 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-providing 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:

- Observe and describe
- Determine cause and effect relationships
- Prescribe 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 Movements and Twisting Movements and Lead Change Movements. Added to those are Lead Change Movements which set telemark skiing apart from Alpine skiing. Therefore, a focus on Movements for the Telemark Skiing Model section of this Handbook seems most appropriate. 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. In preparing the Skiing Model section for the 2003/2004 Nordic Handbooks the Rocky Mountain Nordic Education staff together with Knut Nystad, Denver University Nordic Team coach, determined that a more useful approach for cross country skiing was to use the Skiing Skills of Athletic Stance/Balance, Push-off, Poling and Timing. All of these are skills with subsets of movements that define them. (Note: Timing cannot be a movement; it is a skill or ability that a skier has when his/her movements are timed.) More recently, the authors of the 2005 *Nordic Technical Manual* have identified six skills for cross country skiing: Ski-to Ski- Balance; Flexion and Extension; Poling; Relaxation; Rhythm: and Edge Control. While some of the skill categories remain the same or seem to correlate, this renaming of the Skills for Cross Country skiing requires a fresh look at the movements associated with each skill. (See *Cross Country Education Pathway/The Skiing Model: The Skiing Skills* in this Handbook.) Please note that in The 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.

End Part 1

PSIA- RM Nordic Handbook

Part 2

Telemark Education Pathway

http://www.vintagewinter.com

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.

Telemark Certification Skiing Standards

	● **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	● 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	■ 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**	◆ 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	● Blend lead change movements with **edge release movements** ● **Perform a lead change that allows the skier to edge, turn and pressure both feet effectively**	■ Perform a lead change with **edge change at the same time** ■ Perform a **lead change with continuous motion from one telemark stance to another**	◆ 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	● 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	■ 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	◆ 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	● Turn both feet **to assist in turn initiation and shaping** ● Maintain a parallel relationship with the skis **in the finish phase of the turn**	■ 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**	◆ 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	● Demonstrate flexion and extension movements **during the finishing phase of the turn** ● Maintain pressure on both feet **through the shaping phase**	■ 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**	◆ 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

Maneuvers and Tasks

Note: The **Fresh In Tele Gence DVD** available from the psia-rm.org website is an excellent resource for additional information regarding the telemark maneuvers and tasks.

Wedge Turns

Guest Outcome: Learn 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 maintain a comfortable "A" shaped wedge position with the skis providing a slightly wider and more stable stance than when skis are parallel. 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 size (ski separation, angle of skis to each other) is dependent on terrain and speed. Wedge size remains consistent throughout the turn.
- Skier's core/hips remain quiet and between the feet (fore/aft) throughout the turn
- Turning is accomplished primarily by twisting the feet and legs (leg steering)
- When transitioning the skis from a parallel relationship to a wedge, the 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.

Wedge Christie

Guest Outcome: Learn 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 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 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 <u>not</u> 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.

Wedge Christie Telemark

Guest Outcome: 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 Wedge Christie 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 Wedge Christie 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 wedge is formed as a result of actively twisting both legs and skis, outside ski twists slightly faster than the inside ski.
- Inside ski is actively guided from wedge to telemark (twists faster than the outside ski) as turn progresses.
- Matching of the skis occurs before, during or after the fall line (Gravity Zone) depending on terrain and skier preference.

Basic Telemark

Guest Outcome: Experience linking telemark turns with rhythm and speed control.

Terrain and Tactics: Blue terrain

Description:
This turn is similar mechanically to the Basic 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. 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.
- Pressure is maintained over the whole front foot and the ball of the back foot, except when the feet are passing.
- 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.

Basic Parallel

Guest Outcome: Experience 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 shifts passively from the former outside ski to the "new" outside ski as a result of the turning forces. 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

Short Radius Telemark

Guest Outcome: Learn the ability to make short radius telemark turns in advanced terrain in a variety of conditions.

Terrain and Tactics: Moderate blue and black terrain in varying conditions including bumps, crud and powder

Description:
This turn is a blended turn similar to the Basic Telemark, but more dynamic with a shorter radius. The center of mass is continuously and accurately moved into each new turn. Ski design accompanied by efficient skill blending is used to shape turns.

- 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.
- Turn shape is created by ski design along with greater tipping of the skis earlier in the turn.
- Center of mass moves across the hill – not just down the hill
- Maneuver is generally performed in a corridor approximately one snowcat grooming track in width.

Medium Radius Telemark

Guest Outcome: Extract maximum performance from ski design with lots of inclination and speed.

Terrain and Tactics: Blue and moderate black primarily groomed terrain

Description:
This turn is significantly more dynamic than the Basic Telemark. The skier has more speed, has more active use of the feet and legs for tipping and flexing/extending movements, and has an earlier edge engagement. The center of mass is continuously and accurately directed throughout the turn. Ski design is the primary mechanism used to carve and shape turns.

- The primary movements for turning are tipping and flexing/extending.
- The feet and legs tip the skis on edge early in the arc to take full advantage of the ski design.
- Maneuver is as carved as possible and is generally performed in a corridor around three snowcat grooming tracks in width.

Medium Radius Parallel

Guest Outcome: Develop parallel to the next level. Increase carving intensity.

Terrain and Tactics: Blue and moderate black primarily groomed terrain

Description:
This turn is significantly more dynamic than the Basic Parallel. The skier has more speed, has more active use of the feet and legs for tipping and flexing/extending movements, and has an earlier edge engagement. The center of mass is continuously and accurately directed throughout the turn. Ski design is the primary mechanism used to carve and shape turns.

- The primary movements for turning are tipping and flexing/extending.
- The feet and legs tip the skis on edge early in the arc to take full advantage of the ski design.
- Efficiency and powerful edging is enhanced by maintaining a long outside leg.
- Maneuver is as carved as possible and is generally performed in a corridor around three snowcat grooming tracks in width.

Uphill Arc (Telemark/ Parallel Stance)

Guest Outcome: Learn 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. Skis are kept parallel and leave two continuous, distinct edge tracks in the snow.

- Twisting movements are minimal.
- Tipping movements originate in the feet and legs.
- 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)

Guest Outcome: Experience the sensation of “pure carved” turns.

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.
- Tipping movements originate in the feet and legs.
- 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.
- Turns are not “finished” – maneuver is performed in a corridor approximately one snowcat grooming track in width.

Monomark

Guest Outcome: Experience 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 (always keeping the same ski forward), 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 maintains pressure on the ball of the back foot and 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

Guest Outcome: Learn to tip both legs simultaneously and slide sideways.

Terrain and Tactics: Smooth blue terrain

Description:
The skier slides sideways (sideslips) in a telemark stance down the fall line. The skis remain perpendicular to the fall line while sliding.

- A telemark stance is maintained while side slipping - skis are kept perpendicular to the fall line.
- Upper body stays oriented down the hill.
- Simultaneous edge release movements originate from the feet and legs. (releasing/engaging)
- Telemark side slip is performed in a corridor no wider than about 3 meters.
- Telemark side slips should be practiced in both directions.

Telemark Hockey Stop

Outcome: Learn to turn and tip both legs simultaneously and stop, 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 and moves to a telemark stance with the skis perpendicular to the fall line. As the skis become perpendicular to the fall line, the skier abruptly additionally engage the edges and comes to a stop in a manner similar to that of a hockey player.

- Initiation with a slight flexion encourages the simultaneous rotation of both legs across the fall line.
- The upper body remains stable, centered, and throughout the maneuver, stays oriented generally down the hill.
- Flexing/extending movements enhance turn mechanics.
- Simultaneous edge change movements originate from the feet and legs. (releasing/engaging)
- The skier remains in a corridor with minimal lateral displacement.
- Telemark hockey stops should be practiced in both directions.

Hourglass

Guest Outcome: 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)

Guest Outcome: Explore 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.

- Twisting movements originate in the feet and legs. Leg rotation is the primary twisting movement.
- Slight flexing/extending movements can facilitate tipping and twisting movements.
- Pole swing/touch complements the rotary movements.
- The upper body faces generally in a downhill direction while the feet and legs turn underneath.
- The hips rotate more performing telemark pivot slips than when performing alpine pivot slips.

Shuffle Turns - 500 to 750 to 1000

Guest Outcome: The shuffle turn is a 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

Guest Outcome: Some guests 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: At turn initiation the skiers "new" outside ski is forward and the "new" inside ski is back. At turn completion the "old" outside ski is back and the "old" inside ski is forward. Which ski leads at points during the turn is exactly opposite of the normal telemark turn!

Switch Telemark Techniques

Guest Outcome: 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 Switch Wedge Christie and Switch Basic Telemark turns 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 main 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 Wedge Christie Telemark

Description:
A Switch Wedge Christie 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 Wedge Christie 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 Basic Telemark

Description:
This turn is similar mechanically to the Switch Wedge Christie Telemark but the **"V"** wedge entry is eliminated. To initiate a Switch Basic 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

Guest Outcome: 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

Verification

Candidates for certification must attend a three day Verification Event. Entry level, registered members of PSIA should attend the Level 1 Instructor Training Series. Candidates for Levels 2 and 3 must attend the Instructor Training Series 2/3. Participants in each event will be trained and verified at various tasks and skills. Progress will be recorded by the candidates and the verifier over the course of 3 days using individual booklets. ***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.

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.

Level 1 Telemark

Pre-requisites:

- Current Registered members in PSIA-RM
- 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 skiing Movements i.e. **stance & balance, tipping, twisting, and flexion & extension.**
- ❑ Describe each of the Skiing Application Maneuvers at this level in terms of the skiing 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
- ❑ Wedge Christie Telemark
- ❑ Basic telemark on groomed blue terrain with pole swing and touch, edge release and engagement, and smooth transitions from one telemark turn to the next.
- ❑ Basic 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.
- ❑ Monomark- both sides

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.
- Include in your description both the movements of the body and the performance of the skis.
- Your description should be specific to one skill pool and a particular point in the turn (phase).
- 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 II Telemark

Prerequisites:

- Current Registered members in PSIA-RM 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 skiing 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

- ❑ Basic telemark and basic 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 movement patterns in skiers through student level 6.
- ❑ Include in your description both the movements of the body and the performance of the skis.
- ❑ Your description should be specific to one skill/movement pool and should describe the changes that take place in the chosen skill/movement pool through the phases of the turn.
- ❑ Determine the cause and effect relationships between the body movements and the ski performance both in and through the phases of the turn.
- ❑ Describe the “more ideal” body movements and ski performance you would like to see through the phases of the turn including the relationship between the body movements and the ski performance.
- ❑ 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-RM who are certified Level l telemark instructors **or** Level ll 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 lll 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

- ❑ Basic telemark and basic parallel
- ❑ Switch Wedge Christie telemark
- ❑ 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 movement patterns in skiers through student level 9.
- ❑ Include in your description both the movements of the body and the performance of the skis.
- ❑ Your description should **prioritize** one skill/movement pool and should describe the changes that take place in the chosen skill/movement pool through the phases of the turn.
- ❑ Within the prioritized skill/movement pool, determine the cause and effect relationships between the body movements and the ski performance both in and through the phases of the turn.
- ❑ Also, describe a cause and effect relationship between the one skill/movement pool and a second skill/movement pool at some point in the turn with respect to both ski performance and body movements.
- ❑ Describe the “more ideal” body movements and ski performance you would like to see through the phases of the turn. Include the relationship between the body movements and the ski performance with respect to both of the skill/movement pools that you described.
- ❑ 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.

End Part 2

PSIA- RM Nordic Handbook

Part 3

Cross Country Education Pathway

http://www.vintagewinter.com

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)

Terminology Turmoil

The range, efficiency, and beauty of cross country skiing have inspired instructors and coaches world wide to describe the body movements of Nordic skiing with numerous systems of terminology. For learning and teaching Cross Country Skiing, PSIA-RM has been using the three-pronged approach as outlined in the 2005 *PSIA Nordic Technical Manual*: the Skills Concept, the Stepping Stones, and the Visual Cues. The Skills Concept 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 the six Cross Country (XC) 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, the "Visual Cues" help the instructor analyze the skier's movements and determine which Stepping Stones are appropriate to help the students improve their skills. In the *Nordic Technical Manual*, the names for the XC Skiing Skills and the Visual Cues are synonymous.

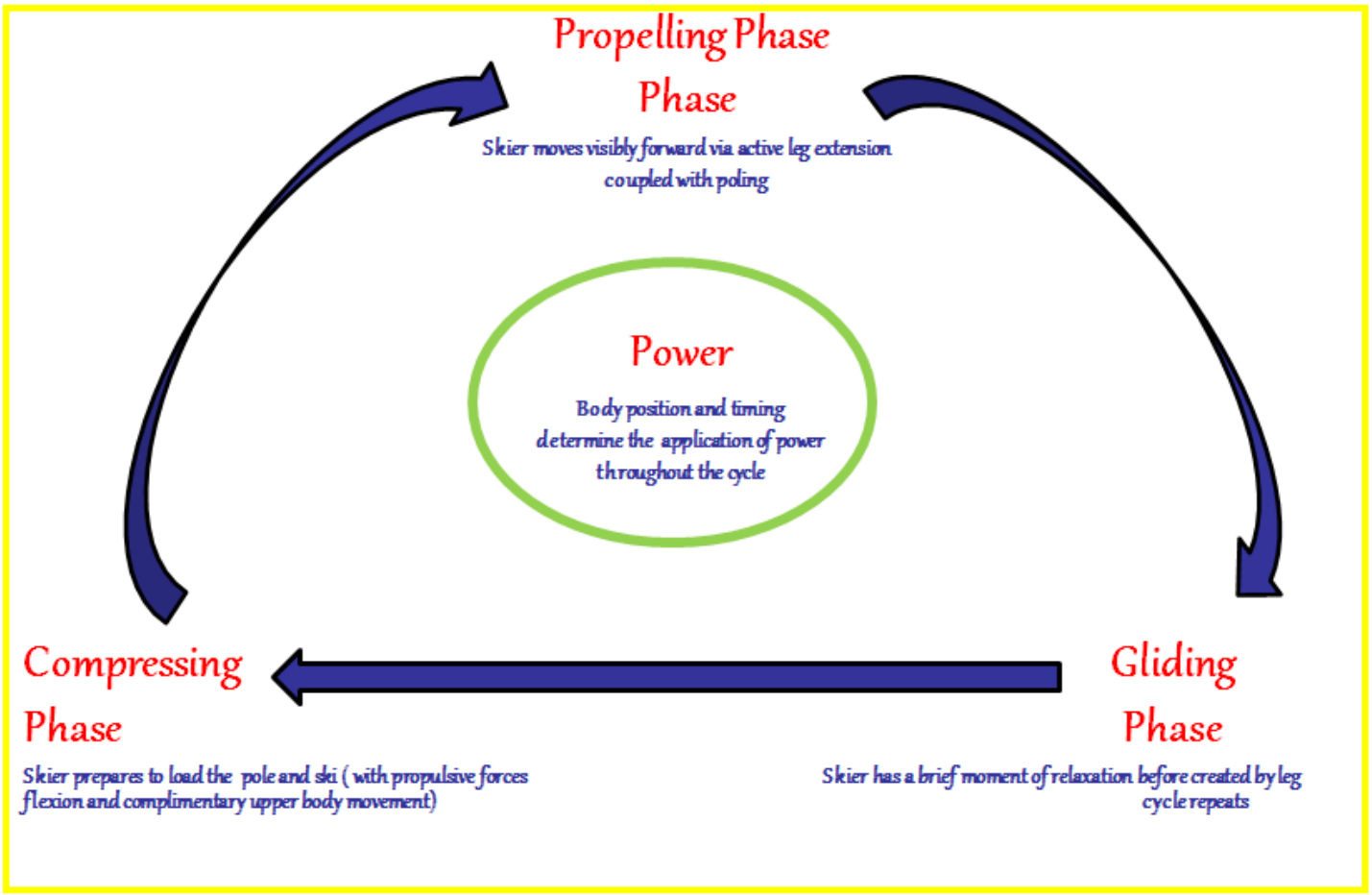
In 2006 representatives from PSIA's nine divisions met at Copper Mountain, Colorado. Their purpose was to ski together and determine a national set of certification standards. After lots of skiing and discussion, they created the PSIA National Cross Country Certification Skiing Standards, which is included in this handbook. These standards, also called the XC Matrix, use only three Visual Cues, instead of the six used in the *Nordic Technical Manual,* to describe the three levels of instructor skiing. The result of all this is that we now have quite a bit of terminology to talk about skiing. Nevertheless, the XC Skiing Skills and the Visual Cues are useful tools because they offer to two different perspectives on skiing. The Skiing Skills help us explain how we **do** skiing movements. The Visual Cues help us describe what we **see** when people ski. Below is a chart to help you understand the interrelationship of the Skiing Skills and the Visual Cues.

Visual Cue (XC Matrix)	**XC Skiing Skill** *(Nordic Technical* Manual**)**
#1 Body Position	Ski to Ski Balance Relaxation/glide
#2 Propulsion	Push off (flexion/extension) Poling Edge Control
#3 Timing	Rhythm

The following section, the XC Skiing Model, consists of:

1. The Cross Country Skiing Cycle
2. A summary of the Six XC Skiing Skills and Visual Cues
3. The PSIA National Cross Country Certification Skiing Standards aka the XC Matrix. This matrix serves an assessment tool based on the Visual Cues.
4. The Cross Country Maneuvers with descriptions in terms of the XC Skiing Skills and Visual Cues

The Cycle Of Cross Country Skiing



The repetitive Cycle of Cross Country Skiing revolves around the three phases: Compressing, Propelling, and Gliding. Essentially, each phase of the Skiing Cycle represents a part of the skier's "system" of Propulsion. In the Compressing Phase, the skier "loads" the ski and the pole with the propulsive forces created by leg flexion and complementary upper body movement. In the Propelling Phase, the skier moves visibly forward via active leg extension coupled with pole pushing. Gliding is the phase in which the skier has a brief moment of relaxation before the cycle repeats. We can give feedback on Power in terms of Body Position and Timing with respect to each of these phases.

The Skiing Model / Cross Country Skiing Skills

Cross country skiing in a nutshell (Terms in bold will be discussed in the text that follows.): 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 complements 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.

Relaxation

During the rhythm of moving from ski-to-ski, each leg and arm should alternate between working and relaxing. Working (forward fall, push-off) provides the power to move the core forward. Relaxation while gliding provides rest and recovery for the arm/leg so they can repeat the work segment. Without relaxation, 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 alternation becomes a work-stagger 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 rotation.
- Emphasizes the Glide Phase of the Cycle of Cross Country Skiing
- Creates a tension free environment for yourself and your students. ☺

Visual Cue #1 Body Position: Accurately describing **Body Position** can help determine the degree of balance in a skier. Use the Movement Analysis Triangle at the end of this section in conjunction with the XC

Matrix to assess balance in relation to each of the three phases of the Cross Country Skiing Cycle. As your student skis by, ask yourself:

- Is the back rounded? Where is the core in relation to the base of support?
- Is the torso panel stable?
- Does the shin angle match the torso angle?
- Is the student able to glide in balance on one foot?
- Overall, does he or she look tense or relaxed?

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

"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 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).
- Arm 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.

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.

Visual Cues #2 Propulsion: The term Propulsion, borrowed from Physics, is defined as "the *force or system* that moves something forward" (Longman). Skiers employ a "system" that combines leg push-off and poling to move forward .The best way to assess a skier's "system" of Propulsion is to analyze the skier in terms of the Cycle of Cross Country Skiing (See Movement Analysis Triangle). Essentially, each phase of the Skiing Cycle represents a part of the skier's "system" of Propulsion. In first phase or Compression, the skier "loads" the ski and the pole with the propulsive forces created by leg flexion and complementary upper body movements. Next, in the Propulsion Phase, the skier moves visibly forward via active leg extension coupled with pole pushing. Finally, in the Glide Phase the skier has a brief moment of relaxation before the cycle repeats. Important questions to ask about Propulsion are the following:

- In classic skiing Is the ski **compressing** efficiently into the snow by de-cambering to gain grip**?**
- For classic and skating, is the skier using the full range leg flexion and extension movements?
- For classic and skating, is the skier swinging the free leg through from the knee or from the hip?
- In skate skiing, is the ski rolling to a higher edge angle as the leg is extending?
- In poling, does the arm swing originate from the elbow or the shoulder?
- Are the core muscles engaged as the poles engage?
- Are the overall movements complimentary? Efficient? Powerful?

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 (The Cycle of Cross Country Skiing). 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.
- Continuously moves through the 3 phases of the Cross Country Skiing Cycle: Compression, Propulsion, and Glide.
- Varies. Tempo depends on terrain, snow conditions and desired

Visual Cue #3 Timing: The Visual Cue of **Timing** focuses our attention on the moment of weight transfer, on poling, as well as on the skier's ability to switch techniques and tempo. Observe timing with respect to the Cycle of Cross Country Skiing.

- For classic skiing ask: does the skier transfer weight before, at, or after the feet pass?
- For skate skiing ask: is the weight transferred precisely and powerfully from whole foot to whole foot with full extension?
- Overall, are core, poling, and leg movements timed precisely to enhance forward motion and appropriate to technique and terrain?

Visual Cue	*Skiing Skill*	***PSIA National XC Classic Skiing Standards***		
		● Level I Beginner Zone	**▪ Level II Intermediate Zone**	**◆ Level III Advanced Zone**
		The candidate is able to…	*The candidate is able to…*	*The candidate is able to…*
Body Position	***Ski to Ski Balance, Relaxation /Glide***	Ski with the core over the base of support seen by shin angle **appropriate to** torso angle	Ski with the core over the base of support seen by shin angle matching torso angle	Ski with the core **in front of** the base of support seen by shin angle matching torso angle
		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**
Propulsion	***Push off, Poling, Edge Control***	Compress the ski with body weight to **create grip**	Compress the ski with **flexion and extension movements to create grip**	**Show two cycles of flexion and extension movements per stride to create grip and enhance glide**
		Swing the leg forward	Forward leg swing **adds to the glide**	Forward leg swing adds to the glide and **carries the core forward**
		Demonstrate flexion/extension	Demonstrate flexion and extension **to match terrain**	Demonstrate flexion and extension matched to terrain that **adds to the glide and moves the core forward**
		Use one muscle group for propulsion	**Combine two or more** muscle groups for propulsion	Movement of core occurs with leg extension
		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, by combining all major muscle groups
Timing	***Rhythm***	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
		Transfer weight **completely**	Transfer weight **as the feet pass** Ski push/Pole push completed together	Transfer weight **after the feet pass**

Visual Cue	*Skiing Skill*	***PSIA National XC Skate Skiing Standards***		
		• Level I **Beginner Zone**	**▪ Level II** **Intermediate Zone**	**◆ Level III** **Advanced Zone**
		The candidate is able to…	*The candidate is able to…*	*The candidate is able to…*
Body Position	***Ski to Ski Balance, Relaxation /Glide***	Ski with the core over the base of support seen by shin angle **appropriate to** torso angle	Ski with the core over the base of support seen by shin angle matching torso angle	Ski with the core **in front of** the base of support seen by shin angle matching torso angle
		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**
Propulsion	***Push off, Poling, Edge Control***	Edge the ski Edging effective enough for propulsion down the track without poles	Edge the ski **with inclination**	Edge the ski by **movement of the core in the direction of travel as the ski moves forward and away from the core**
		Demonstrate flexion/extension	Demonstrate flexion and extension **to match terrain**	Demonstrate flexion and extension matched to terrain that **adds to the glide and moves the core forward**
		Use one muscle group for propulsion	**Combine two or more** muscle groups for propulsion	Movement of core occurs with leg extension
		Engage poles then core muscles	**Engage core muscles as poles engage**	Engage core muscles as poles engage
Timing	***Rhythm***	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, by combining all major muscle groups
		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
		Transfer weight **completely** (laterally)	Transfer weight **actively from whole foot to whole foot** **Sk** Ski push/Pole push completed together	Transfer weight **precisely and powerfully from whole foot to whole foot with full extension**

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 movements of good stroking on ice skates are applied directly to ski skating without poles. The skier "falls forward" 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 forward in 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. (In some situations the skier may choose to place the gliding ski on the outside edge first, then flatten the ski and finally move to the inside edge as the glide slows down.)
- 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.

Marathon Skate

Guest Outcome: Learn a basic skating stroke and stepping stone for learning the V1 skate

Terrain and Tactics: Groomed snow with a skating lane beside a track.

Description:
This technique can best be described as a strong skate push-off added to an effective double pole movement. The skating foot is angled away from the track and positioned to the side and slightly in front of the glide foot during the move to transfer weight. Although some weight should remain on the in-track ski, the more weight that is transferred to the skating ski, the more power the skate can generate. The skating ski maintains an appropriate angle to the track relative to the speed, intensity and terrain, and is progressively edged during the skate-push-off.

- Glide ski remains in the track or pointing forward if there is no track.
- Partial weight transfer to the skating ski
- Skating ski maintains appropriate angle to the track.
- Skating ski is progressively edged.
- Strong double pole is coordinated with the skate to yield complete weight transfer to the gliding ski.

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 the gliding ski.
- 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.

Hockey Stop

Guest Outcomes: Learn how to stop quickly. Used as an exercise, helps students develop sensations for gross twisting and tipping movements, balance, and upper/lower body independence.

Terrain and Tactics: outside of tracks, firm snow (compacted by machine or nature).

Description:
From a straight run in a relaxed parallel stance, twist both legs simultaneously to a sideslip that is perpendicular to the line of travel. Utilize a quick pivoting movement of the legs and feet underneath a stable body. At this point, engage the edges and come to a skidded stop. Edges can be engaged crisply for a rapid stop or more progressively for a side slip to a stop.

- Initiation with a slight flexion encourages the simultaneous rotation of both legs.
- With "Cross Country camber" skis, another initiation option is to extend the legs quickly to lighten the skis just before pivoting. This helps facilitate the pivoting of the legs and skis.
- Simultaneous edge change movements from flat skis to engaged edges are executed with feet, ankles, and legs.
- The upper body should remain facing the direction of travel.

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 many 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 Turn
- Parallel turns
- Wedge Christie Telemark turn

Certification

Entry level, registered members of PSIA can begin the Cross Country Certification process with the 2 day, Level 1 Certification Preparation clinic. Attending this event is strongly recommended since participants will receive feedback on personal skiing and teaching skills, as well as other important information regarding Level 1 Cross Country Certification. Level 1 Candidates should then continue to practice and study in preparation for participating in a 1 day Level 1 Certification event scheduled during the season. Candidates for advanced levels must attend the Cross Country Instructor Training: Levels II / III Certification Preparation. This is a two day event which is scheduled early in the season. Following a recommended period of practice and study, the advanced candidate then participates in the advanced instructor Certification Event, offered later in the season. See the *Master Event List* for dates and fees. Advanced candidates will receive certification at a given level when they have satisfied all the criteria for that level.

(Foster 79)

Level 1 Cross Country

Pre-requisites:

- Current Registered members in PSIA-RM
- 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 Verification 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 skiing skills (ski to ski balance, push-off, poling, relaxation, rhythm, edge control).
- ❑ 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 Cross Country Skiing Skills and the XC Skiing Cycle 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, Wedge Christie telemark, V2 skate and V2 alternate skate.
- ❑ Describe the diagonal stride using the Cross Country Skiing Skills.
- ❑ Describe a V1 skate using the Cross Country Skiing Skills.

Skiing Application

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

- ❑ diagonal stride
- ❑ double pole
- ❑ herringbone
- ❑ step turn
- ❑ wedge
- ❑ wedge turn
- ❑ marathon 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

- ❑ Use the Visual Cues, Cross Country Skiing Cycle, and the XC skiing skills to describe the basic movement patterns in beginner skiers.
- ❑ Determine cause and effect relationships based on the skiing model 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

Pre-requisites:
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 a moderate understanding of the ATS Teaching Model and demonstrate the Skiing Model (in that discipline) at a moderate 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, Hockey stop, marathon 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 Skiing Skills, The Cross Country Skiing Cycle 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 Cross Country Skiing 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.

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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 Cross Country Skiing Skills.

- ❑ diagonal stride
- ❑ uphill diagonal
- ❑ double pole
- ❑ kick double pole
- ❑ step turn
- ❑ wedge turn
- ❑ Hockey stop
- ❑ marathon 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

- ❑ Use the Visual Cues, The Cross CountrySkiing Cycle, and the XC skiing skills to describe the basic movement patterns in skiers through the intermediate level.
- ❑ Determine cause and effect relationships based on the skiing model 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 IIl Cross Country

Pre-requisites:
Certified level l or ll Cross Country Instructor **or** Certified level ll in a cross discipline i.e. Alpine, Snowboard, Children's, or Adaptive.

Candidates for Level lll 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 lll 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, marathon skate and their variations, as well as, wedge turn and basic 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 Skiing Skills, Cross Country Skiing Cycle 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, Basic parallel 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

- ❑ Use the Visual Cues, Cross Country Skiing Cycle, and the XC skiing skills to describe the basic movement patterns in skiers through advanced level.
- ❑ Determine cause and effect relationships based on the skiing model 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.

References:

Abraham, Horst. *The American Teaching Method, Part II*, Progression and ki 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.

Barnes, Bob. *The Complete Encyclopedia of Skiing, 3rd Edition*. Silverthorne, Colorado: The Snowline Press, 1999.

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-RM, 2006.

Foster, Mary H. "Skadi Hunting in the Mountains." from *Asgard Stories: Tales from Norse Mythology'*. Silver, Burdett and Company, 1901.

Fredston, Jill A and Doug Fesler*. Snow Sense*, 5th ed. Anchorage, Alaska: Alaska 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.

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.

Schrupp, Wendy, Rebecca Ayers, and Jessie Halverson (ed.). *Children's Instruction Manual.* Lakewood, Colorado: American Snowsports Education Foundation, 2008.

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.

Webster, Merriam, *Webster's Collegiate Dictionary Tenth Edition*, 1996.

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Your Nordic Representatives

Nordic Chairperson: Jim Shaw: jshaw@rkymtnhi.com
Nordic Demo Team Representatives: Ross Matlock: rjmmatlock@hotmail.com; Jim Shaw: jshaw@rkymtnhi.com

Complied, organized, contributed to and edited by Dale Drennan; d2skier@sbcglobal.net
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