

MARQUETTE MOUNTAIN

NEW MEMBER

TOBOGGAN WORKBOOK

NATIONAL TRANSPORTATION PROJECT

TOBOGGAN "WHITE BOOK" OUTLINE

INTRODUCTION

Welcome to the National Ski Patrol Training Video. This video is intended to compliment the National Ski Patrol Transportation Manual, Senior Manual and various Professional Ski Instructors of America educational materials. The primary purpose of this video is to serve as a training tool for NSP toboggan trainer's ski and board school members actively working with patrollers to improve their alpine skiing and toboggan handling skills. It is not a "get all jazzed up about skiing" video. It is a tool that can be used in all levels of training ranging from candidate, to senior, to certified, to on the hill refreshers and Toboggan Enhancement Seminars. However it's primary focus is the new instructor.

This project complements the "New Patroller Portfolio."

Please use the video in conjunction with this video discussion guide. The guide is designed to help you more effectively use the video. The guide follows along with the video. The text from the video and the discussion guide contains additional comments about the skills being demonstrated in the video segment.

While viewing the various clips focus on the specific movements that are occurring. In a majority of the clips there is a primary focus on a specific skill or movement that can be isolated. Try to identify the focus and watch the movements captured on the video. Watch to see the blending and unblending of these movements.

Each video segment is preceded by text highlighting the skill being demonstrated in the video clip. In some cases, additional comments will appear on the video. Learn from the segment as it pertains to specific skills (Balancing Movements, Rotary Movements, Edging Movements and Pressure Control Movements). Think of this as how to use a variety of different movements as they apply to different levels of skiers/snowboarders, terrain, snow conditions and desired outcomes.

This is a Supplement to the PSIA-C Portfolio

It is important to understand that these tasks are only vehicles through which you should use to assess your basic skiing skills. Do not just practice the demonstrations and skiing tasks. Tasks are used to assess movements and skill applications and how they relate to effective and ineffective movements & skill applications.

Focus on the body movements in skiing that are involved. These movements are the ones that can be felt and performed.

TOBOGGAN HANDLING

Alpine ski maneuvers essential to toboggan handling

Instructors Initials	MANUEVER
	Turning around without poles (moguls, packed slope, moderately steep)
	Uphill sidestep (steep terrain)
	Downhill sidestep (difficult terrain)
	Herringbone ascent (moderate terrain)
	Fall-line traverse
	Falling Leaf
	Traverse/Edge Release/Traverse/Kick turn
	Traverse with varying leg wide lifting uphill ski
	Fall-line sideslip with poles held at mid-shaft
	Wedge, wedge transitions, gliding wedge turn
	Stem/step turn from wedge
	Parallel turns
	Sideslip transitions
	Moving direction changes
	Skating
	Transitions
	Hockey Stops

Snowboard maneuvers essential to toboggan handling

Instructors Initials	MANUEVER
	Uphill Climb
	Downhill sidestep on difficult terrain (hop)
	Herringbone ascent (moderate terrain) (one foot out of binding)
	Fall-line traverse
	Traverse/Edge Release/Traverse
	Falling Leaf
	Fall-line sideslip
	Parallel turns
	Sideslip transitions
	Moving direction changes
	Skating
	Transitions
	Hockey Stops

Nordic ski maneuvers essential for toboggan handling

Instructors Initials	MANUEVER
	Kick turn without poles (moderately steep, packed slope)
	Kick turn without poles (moguls)
	Uphill sidestep (steep terrain)
	Downhill sidestep (difficult terrain)
	Herringbone ascent (moderate terrain)
	Diagonal stride with and without poles
	Fall-line traverse (climbing and descending, varied width between skis and lifting the uphill ski off the snow).
	Fall-line sideslip (holding poles at mid-shaft)
	Falling leaf sideslip (holding poles at mid-shaft)
	Wedge, wedge transitions, gliding wedge turn
	Stem/step turn from wedge
	Parallel turn
	Sideslip transitions
	Moving direction changes
	Skating

TOBOGGAN CHECKLISTS

Daily Toboggan Checklist

**Instructors
Initials**

	Remove the toboggan from Storage
	Inspect the control Surface for Ice and Snow, and clear them as required.
	Inspect the shell, frame, and fins for structural integrity.
	Inspect the handles, handle locks, captive bolts, lynch pins, and rope-carrying handles, looking for defects in welds, joints, fasteners, anchor points, and other stress points
	Verify that the chain break and leash are functioning and secure.
	Verify that the tail rope is secured, and not frayed, and appropriate length.
	Inspect the fins and ensure that they are secure and free of defects.
	Inspect all straps and buckles.
	Inspect the contents of the rescue pack to ensure that all the required supplies are in there and in good condition.
	Follow all local procedures for repairing equipment.
	Check the contents of portable toboggan.

Quick Checklist Procedure for Toboggan in Standby Location

Instructors
Initials

	Inspect the toboggan components
	Unlock the handles and check that pins are securely fastened.
	Position the chain brake (normally off)
	Inspect the handles; handle locks, and rope carrying handles, looking for defects at the welds.
	Check to ensure that the rescue pack and straps are secured in the toboggan.
	Secure the tail rope or rear handles in the toboggan.
	Check and clear running surface

INCIDENT SCENE MANAGEMENT

Instructors Initials

Instructors Initials

Instructors Initials

	Alpine & Telemark Skiing		Snowboarding		Cross Country Skiing
	Approach		Approach		Approach (can be uphill or downhill)
	Securing the toboggan using an anchoring device		Securing the toboggan using an anchoring device		Securing the toboggan using an anchoring device
	Marking the scene		Marking the scene		Marking the scene
	Anchoring the skis		Anchoring the snowboard		Anchoring the skis
	Loading the patient		Loading the patient		Loading the patient
					Preparing to build an improvised shelter to protect the patient in severe weather or prolonged rescue (refer to Mountain Travel and Rescue (NSP 1995))

FRONT OPERATOR MANEUVERS

Instructors Initials	Instructors Initials	Instructors Initials	
	Alpine & Telemark Skiing	Snowboarding	Cross Country Skiing
	Align the toboggan perpendicular to the fall line.	Align the toboggan perpendicular to the fall line.	Align the toboggan perpendicular to the fall line.
	Remove the braking device	Set the braking device	Set the braking device
	Remove you uphill ski and place the tail in the uphill carry handle on the front of the toboggan, perpendicular to the fall line.	Take your rear fool out of the binding.	Remove your uphill ski and place the tail in the uphill carry handles on the front of the toboggan, perpendicular to the fall line.
	Slid out of the handles and move along the downhill side of the toboggan to the rear (maintain contact with the toboggan	When you need to back a toboggan into position, place the tail of the toboggan level with the desired location, pushing it like a wheelbarrow	Slide out of the handles and move along the downhill side of the toboggan to the rear (maintain contact with the toboggan).
	Remove the downhill ski and place it in the uphill loop at the back of the toboggan, perpendicular to the fall line, when at the rear of the toboggan.	Slide out of the handles, align the toboggan perpendicular to the fall line, and move along the downhill side of the toboggan (maintain contact with the toboggan).	Remove the downhill ski and place the uphill loop at the back of the toboggan perpendicular to the fall line.
	Lock the handles in preparation for running the unloaded toboggan	Jam the toboggan handles into the snow	Lock the handles in preparation for running the loaded toboggan.
	Undo the patient tie downs and open the rescue pack.	Remove the Snowboard completely.	Undo the patient tie-downs and open the rescue pack.
	Mark the incident to alert the public, if necessary.	If possible, wedge the snowboard along the downhill side of the toboggan	Mark the incident site to alert the public, if necessary
		Use the patient's equipment to anchor the toboggan: if skis put them through the loops;	

		if a snowboard, jam the board between the front of the toboggan and it's crossbar.	
		Lock the toboggan handles in preparation for running the loaded toboggan	
		Undo the patient tie-downs	
		Mark the incident site to alert the public, if necessary.	

FRONT OPERATOR, LOADED TOBOGGAN

Instructors Initials

Instructors Initials

Instructors Initials

	Alpine & Telemark Skiing		Snowboarding		Cross Country Skiing
	Traverse		Traverse		Traverse
	Decent and ascent		Descent and ascent		Descent and ascent
	- Transitions (Turns) - Wedge - Step - Parallel - Telemark - Pivot slip		Switch		Moving belay (wide, narrow trail, and side hill).
	Sideslip		Sideslip		Static belay (raising and lowering).
	Falling leaf		Transitions (Turns)		Transitions (Turns) - Wedge - Step - Parallel - Telemark
	Static direction change		Pivot slip		Sideslip
	Power stop		Side slip		Falling leaf (may be difficult or impossible on wax less cross-country skis).
			Falling leaf		Static direction change
			Power stop		Power stop

TAIL ROPE/REAR OPERATOR, LOADED TOBOGGAN

Instructors Initials

Instructors Initials

Instructors Initials

	Alpine & Telemark Skiing		Snowboarding		Cross-country skiing
	Traverse		Traverse		Traverse
	Descent		Descent		Descent an ascent
	Moving direction change		Moving direction change		Moving direction change
	Falling leaf to diagonal falling leaf		Sideslip to skidded turn		Sideslip to a wedge turn
	Static belay		Falling leaf to diagonal falling leaf		Falling leaf to diagonal falling leaf
			Static belay		Static belay

Moving Direction Changes (Front, Tail Rope and/or Rear Operators) *Changing Directions on Varied Terrain*

Instructors
Initials

	With a front operator and tail rope/rear operator, practice transitions with a loaded toboggan on unchallenging terrain. Practice using a wedge or switch to control your speed during moving direction changes. Use a sideslip
	With a front operator and tail rope/rear operator, practice descent and traverse maneuvers with a loaded toboggan on varying terrain (starting with unchallenging terrain and progressing to more challenging terrain, smooth and moguled, etc.) Practice under different snow conditions.
	Have the tail rope/rear operator hold the loaded toboggan on belay while the front operator performs the following tasks: anchoring the toboggan, changing direction in difficult terrain, and dropping the chain.

Mogul Conditions

Instructors
Initials

	Practice techniques to descend smoothly through moguls with a loaded toboggan. Focus on route selection and how to utilize the fins, the chain brake, and the handles to maintain speed control.
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Study Questions

Equipment

1. Identify the types of toboggans in common use and as used at the home area (*Alpine Ski and Toboggan Training Manual, Unit 1; Nordic Training Manual, Unit 1*)
2. Describe how each toboggan component contributes to effective operation (*Alpine Ski and Toboggan Training Manual, Unit 1; Nordic Training Manual, Unit 1*)
3. Inspect a toboggan stored on the mountain utilizing a systematic check of its components for safety and function (*Alpine Ski and Toboggan Training Manual, Unit 2; Nordic Training Manual, Unit 1*)

Individual skill requirements

1. Identify the purpose, goal, and risks involved for each skill activity
2. Demonstrate skiing maneuvers essential to toboggan operations without a toboggan on varying terrain/snow conditions progressing from easier to more difficult (*Alpine Ski and Toboggan Training Manual, Lesson Guide 3; Nordic Training Manual, Lesson Guide 2*)
3. Demonstrate competency with empty toboggan on varying terrain/snow conditions progressing from easier to more difficult (*Alpine Ski and Toboggan Training Manual, Lesson Guide 3; Nordic Training Manual, Lesson Guide 3*)
4. Demonstrate competency with loaded toboggan on varying terrain/snow conditions progressing from easier to more difficult (*Alpine Ski and Toboggan Training Manual, Lesson Guide; Nordic Training Manual, Lesson Guide 5*)
5. Demonstrate exchanging operator position from driver to tail roper under a variety of terrain and snow conditions (*Alpine Ski and Toboggan Training Manual, Unit 9*)
6. Demonstrate a static belay from a tail rope position to control descent of a loaded toboggan down a difficult section of slope at the home area (*Ski and Toboggan Training Manual, Unit 10*)

The following three objectives should be based on equipment in use at the area.

1. Demonstrate operating the front of a loaded toboggan providing for a safe, smooth, and controlled descent (*Alpine Ski and Toboggan Training Manual*, Lesson Guide 6; *Nordic Training Manual*, Lesson Guide 5)
2. Operate the tail rope of a loaded toboggan providing for a safe, smooth, and controlled descent (*Alpine Ski and Toboggan Training Manual*, Unit 7; *Nordic Training Manual*, Lesson Guide 7)
3. Operate the front and back of a loaded four-handled toboggan providing for a safe, smooth, and controlled descent as dictated by terrain, snow, and weather conditions (*Alpine Ski and Toboggan Training Manual*, Unit 8; *Nordic Training Manual*; Lesson Guide 5, 7)

OPERATORS MANUAL

FOR INSTRUCTORS USE

References:

Alpine Ski and Toboggan Training Manual

Nordic Training Manual

Toboggan-manufacturers' operation manuals

PSIA materials

PSIA Alpine Technical Manual

AASI Snowboard Manual

AASI Snowboard Video

PSIA ATS Snowboard Handbook

American Teaching System: Nordic Skiing

ATS Nordic Handbook

SUGGESTED MATERIALS AND EQUIPMENT

Home area toboggans

Toboggan equipment packs

Toboggan riders

Equipment for toboggan drills

ESSENTIAL CONTENT

(Please refer to the appropriate instructor manuals for comprehensive information)

- I. Equipment
 - A. Types of toboggans used at the home area
 - B. Toboggan construction
 - C. Toboggan components
 1. Braking device
 2. Locks
 3. Fins
 4. Shell configuration
 5. Handles
 6. Patient straps
- II. Toboggan storage, inspection, and setup procedures
 - A. Toboggan shelters
 - B. Toboggan inspection
- III. Operating the front of a loaded two-handled toboggan
 - A. General principles
 - B. Route selection

- C. Traversing
 - D. Descending the fall line
 - E. Moving direction changes
 - F. Static direction changes
 - G. Toboggan maneuvers in varying conditions
- IV. Operating the tail rope of a loaded two-handled toboggan
- A. General principles
 - B. Handling the rope
 - C. Descending and traversing the fall line
 - D. Moving direction changes
- V. Operating a four-handled toboggan (where appropriate)
- A. General principles
 - B. Traversing off the fall line
 - C. Descending the slope on or near the fall line
 - D. Moving direction changes
 - E. Static direction changes
 - F. Power stops and parking
 - G. Adapting to terrain and snow conditions
- VI. Operator position change
- A. General principles
- VII. Static belay techniques
- A. Alpine
 - 1. Tail rope position for control of loaded toboggan
 - B. Nordic
 - 1. Raising and lowering
 - 2. Moving belays—wide and narrow trail and across a side hill

Tasks

Diagonal Falling Leaf

A maneuver in which the skier/rider sideslips forward and backwards but makes an overall direction change while moving down the fall line. The diagonal falling leaf is typically used in deep, heavy snow conditions

Falling Leaf

What: A maneuver in which the skier/rider sideslips forward and backwards while traveling directly down the hill in an imaginary corridor.

Why:

How:

- With your skis across the slope, stand balanced on your uphill edges with slightly flexed ankles and knees.
- Simultaneously release your edges just enough to begin side-slipping and move your torso slightly ahead of your feet. You will begin to move forward diagonally to gravity; now move your torso slightly behind your feet and move backward diagonally to gravity.
- Begin to make alternating redirections that sweep forward and backward, similar to the manner a leaf falls from a tree.
- After exploring these movements, do five redirections and, on a frontward movement, fully release the edges to allow the skis to turn so you face across the hill in the other direction.
- Now start doing sets of five redirections followed by one turn so you experience these moves in both directions
- Finally, focus on the sensation of having your body slightly ahead of your feet as the skis enter a turn so you feel like you're "dropping" into gravity.

Balance & Directional Movements:

Rotary Control Movements

Edge Control Movements

Pressure Control Movements

Functional Body Alignment

Where:

Hockey Stop (Emergency or Power Stop ???)

What:

Why:

How:

Balance & Directional Movements:

Rotary Control Movements

Edge Control Movements

Pressure Control Movements

Functional Body Alignment

Where:

Transitions (need to adjust wording include snowboarding)

What: Sideslips linked by 180 degree steered transitions of both skis

Why: Develop the ability to isolate rotary movements and steer the feet and legs precisely, continuously, and independently of the upper body.

How: Sideslip as fast as possible then release and steer the skis down the hill to start the transition phase. Start each steered transition by tipping feet/ankles, leading with release of the downhill ski, and continue tipping both feet/ankles as the legs rotate and steer through each transition in a slow and continuous manner.

Balance & Directional Movements:

Continuous movement of the Center of Mass maintains fore/aft and lateral balance over a constantly moving Base of Support. Balancing movements anticipate changes in forces and speed to help the skier maintain a path of travel with the defined fallline corridor.

Rotary Control Movements:

Rotational movements of the legs within the hip socket result in an apparent separation between the upper and lower body. Independent rotation/steering of both legs is utilized in this task.

Edge Control Movements:

Utilize progressive and simultaneous adjustment in the edge angle of both skis. Edge release and re-engagement should move to the new edges simultaneously versus sequentially.

Pressure Control Movements:

Adjust the distribution of pressure along the length of the skis (fore/aft balance) to maintain your path in the defined corridor. Manage foot-to-foot (lateral balance) to enable you to utilize the edging and rotary movements necessary to perform this skiing task.

Functional Body Alignment:

Stability and discipline in the core enable steering and tipping movements of the feet and legs. Turn transitions: the lower body releases and realigns with the upper body. Functional open stance: the hips and shoulders should face down hill, while the femurs turn within the hip socket; this results in skiing in and of counter.

Where: Steep blue, well groomed pitch with consistent fall line. Performed in approximate 8' corridor directly down the fall line.

Self-Assessment of Transitions

- 1) Simultaneous tipping movements originate in feet and ankles (same edge angles, parallel leg shafts)
Occurs in the femur turns in the hip socket.
- 2) Transition focus is on flattening the skis by tipping feet/ankles to release and change edges to start the next turn.
- 3) Turn transitions: the lower body releases and realigns with the upper body. The hips and shoulders should face down hill; this results in skiing in and of counter.
- 4) The rotational movements of the femurs within the hip sockets result in separation between the upper and lower body. The skis & legs turn together under a disciplined, stable core.
- 5) The use of fore aft and lateral balancing movements and pressure control, allows the skier to steer both skis and maintain a fall line path within a defined corridor.
- 6) Isolate rotary movements and steer the feet and legs precisely, continuously, and independently of the upper body.

Transitions (Toboggan Specific) think of it as using more defensive skiing techniques to handle a toboggan. It can also be thought of as these are fundamental skills and movements that were with traditional skis.

- Skier establishes a platform
- Uses unweighting, gross vertical movements
- There is a stepping–rotary push off movement
- Is outside ski dominant
- Skidding is a fundamental skill
- Stance is more over the top
- Uses slight rotary movements of upper body
- Typically there is pivoting, more heel displacement
- Use s post fallline edge engagement

Transitions

- Work through the why, how, what, when, where
- Show the Skills concept & Skiing concepts
- Stance & Balance & Directional Movements
- The skier is in balance when they can have a positive, selective effect on any of the skills with either leg at any time.
- The position of the hips over the feet (fore/aft)
- The flexing activity originates from the ankle to support movements through the boot cuffs. Settling in the knees and hips could necessitate a re-centering move, diverging ski tips and/or a sequential edge release.
- Directional Movements
- Rotary Movements (rotation of the femurs)
- Edging Movements
- The positive engagement of the ski tips should draw you into the turn versus displacing the tails to start the turn
- Focus on moving forward, in the direction of the new turn and through the boot cuffs.
- Both skis should move to there edges
- Pressure management incorporates aspects of fore/aft adjustments as well as lateral movements
- Contrast the different approaches to Pivots (Transitions)
- Unweighting Options (down/up)
- Skiing we strive to release the tip of the ski to create earlier edging.
- In toboggan handling - in some cases (snow conditions/terrain) may dictate the type of transition that is needed.
- Contrast the difference between pivot (skiing specific) vs. wedge entry (toboggan specific).

- In all cases it is important to keep the CM Lower avoid being top heavy to prevent toboggan from pushing you off balance thus causing you to momentarily pick up speed.
- Stand more over the downhill ski-create angles with body to increase edging & pressure ranges.
- Tail Operator-show the importance of being one step behind.
- Need to be smooth and maintain constant speed throughout the transition (pivot). This is important because you do not want to pick up speed during the vulnerable part of the transition. Picking up speed will necessitate increased edging and pressure to bring the toboggan back under control.
- Show the defensive position-alignment of: skis, knees, and hips. Shoulders and hands.
- Show how splitting the skis and opening up the hips allows for more edging and pressure ranges when needed.

THIS IS A FALL LINE MANEUVER! The series of transitions should remain in the fall line. A wedge should be used to initiate transitions, but not carried through the fall line. Speed should remain consistent. Transitions are most easily initiated by: releasing edges into a sideslip, guiding tips into the fall line, and possibly using wedge to change direction. This is a good test of fundamentals; Poor edge control causes inconsistent speed, poor pressure control causes inability to stay in the fall line, poor control of rotary movement shows up in the transition itself.

Teaches a fundamental maneuver of direction change used in toboggan handling.
Hints: Keep your shoulders pointed in a downhill direction. Look ahead instead of at your ski tips during this maneuver. Keep feet shoulder width apart during sideslip portion of event. Step into and out of wedge to minimize the time spent in maneuver.

Sideslip

What:

Why:

How:

- Point your skis across the slope of the hill. Keep your skis perpendicular to the fall line.
- Start with the uphill edge of both skis in the snow.
- Roll off your edges and onto the bases of your skis.
- Slide sideways down the hill. As you slide, push snow with your downhill ski/board slow your pace.
- Feather off your bases to your edges and back to moderate your speed while sliding down the hill.
- Engage your uphill edges to slow down.
- Maintain a comfortable stance when sideslipping.
- Come to a stop.
- Resume sideslipping until you get to a point where you feel comfortable making turns again.

Balance & Directional Movements:

Rotary Control Movements

Edge Control Movements

Pressure Control Movements

Functional Body Alignment

Where:

Traverse

What: A directional maneuver in which the skier or rider moves across the slope, that is the skis/board moves perpendicular to the fallline. Generally a traverse is used to control speed.

Why:

How:

Balance & Directional Movements:

Rotary Control Movements

Edge Control Movements

Pressure Control Movements

Functional Body Alignment

Where:

Forward Side Slip Kick Turn

TRAINING EXERCISES

Toboggan Manual pg 77-86

Chain Break

A chain that is attached to each side of the toboggan near the base of the front handles. When the toboggan is moving and the chain is down, it slides underneath the shell and creates friction against the snow surface for additional braking. When the chain is not being used the operator secures it to the crossbar.

Chopsticks Drill

A simulated toboggan exercise designed to improve front operator skills. Two Patrollers ski while holding two poles taped together on either side to simulate a toboggan. Rather than act a tail operator, the person in the back uses his/her weight to push the front operator. Creating the effect of a loaded toboggan. The front operator is responsible for direction and speed.

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CLINIC LOG NOTES

DATE	NOTES

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