ROCKY MOUNTAIN DIVISION
Professional Ski Instructors of America
American Association of Snowboard Instructors

Revision 08-01-2020

Guide for Teaching Students Ski Biking

The information in this document is provided only as a guideline. Although every effort has been made in preparing and assembling this guideline, with a goal of providing timely, complete, and accurate information, PSIA makes no claims, promises, or guarantees about the timeliness, accuracy, completeness, or adequacy of the contents of this guideline, and PSIA assumes no liability or responsibility and expressly disclaims liability for any errors and omissions in its contents.

Local regulations and safety guidelines take precedence over this information. It is in your best interest to exercise due diligence in determining the appropriateness of the information for your particular circumstances. In addition, please take into account any and all factors that may affect your lesson. This includes, but is not limited to the health, well-being, and fitness of the student; weather conditions; terrain; other people on the slope; your own abilities, as well as those of your student and anyone who may accompany you.

This guideline provides diagrams from third party sources. The content of any such third-party diagrams are not within our control, and we cannot and will not take responsibility for the information in them, nor should any references to them be considered any endorsement by PSIA.

Ski bikes have been around for a long time. US ski resorts first introduced ski bikes as a fun, new "sliding toy" with many resorts making them available for rent to the general skiing public. They are relatively easy to learn but may require innovative solutions for lift riding and safe transport uphill. Some areas do not allow ski bikes for the general public because of lift or general slope traffic issues but will allow them on the mountain as adaptive devices.

It soon became apparent the ski bike is an excellent piece of adaptive equipment allowing people with certain disabilities access to a fun day on the slopes. Because you sit on the bike and can steer the bike with your whole body, arms, feet and legs, it allows people with trouble standing or limited leg strength the chance to enjoy their day on the slopes. A ski bike is a great way to fill the gap between stand-up and sit-down skiing.

Ski bikes require a certain amount of balance and leg/arm coordination in order to maneuver safely in a mountain environment. Controlling speed on a ski bike requires the ability to turn the bike across and/or slightly back up hill. Because of this, the ski bike may be very easy to learn for someone who has already skied or snowboarded and understands how to make turns for speed control. Ski bikes can be ridden independently or tethered if needed.

Diagnoses Common to Students Ski Biking

This category includes a vast number of diagnoses including the following:

- Amputation
- Balance impairment
- Brain injury
- Cerebrovascular Accident (CVA/stroke)
- Multiple sclerosis (MS)
- Muscular or strength problems
- Temporary disabilities (knee injuries or hip replacement)

Student Assessment

Thorough student assessments are necessary to determine proper equipment for students. Determining factors are mobility, balance, coordination, strength, endurance, range of motion, strength of limbs, and level of injury. Assessments should explore students' diagnosis. However, complete and detailed assessments go beyond this and are imperative to determine the physical, cognitive, and emotional strengths and weaknesses of each person. A thorough check of current medications provides important information relative to stamina and sensitivity to the environment, as well as attentiveness and interpersonal skills. Treat every student as an individual; the strengths and challenges of individuals, even with the same diagnosis, can vary dramatically from student to student.

The physical assessment (i.e., mobility, balance, coordination, strength, endurance, range of motion, ability to rotate leg(s), and strength of limbs) provides helpful insight. The assessment provides indications to the equipment needed to create a successful learning environment. Even after an assessment is completed, adjustments may need to be made, due to students' abilities demonstrated throughout the lesson.

A review of current medications should be discussed during the assessment. Medications taken by students can have an impact and need to be reviewed. It is important to learn about any medication effects students may experience or are experiencing. Side effects of medications can, for example, make someone more susceptible to bruising or bleeding, listless, slow to respond, nervous, sensitive to the sun, or muscularly weak. Accurate timing of medication administration is important to prevent adverse reactions due to lack of medication, or low medication levels in the body. Instructors should not administer medications unless qualified to do so and program, school, and/or resort policies permit.

In addition to the physical analysis, a cognitive and affective assessment should also take place. This helps to determine if students have specific triggers that could cause hyper-reactivity and more as well as other activities they participate in, likes, dislikes, motivations, goals, and fears. This provides a platform from which to design the lesson plan. Determination of learning preference is ongoing throughout the assessment process and during the lesson. Students learning preferences can be matched with a complementary teaching styles and an acceptable pace, which is based upon the cognitive, affective, and physical assessments.

It is valuable to know other sports activities in which students participate and other interests they have. Bicycle riding indicates some balance, judgement abilities, and/or upper body strength. Ball activities indicate eye-hand coordination and some spatial judgment. Knowledge of sports, activities, and interests, plus information about students daily schedule can help you assess both physical and cognitive abilities. This may also be useful while teaching and the use of teaching for transfer.

Skill development needs to be modified to align with the physical and cognitive abilities of

students. Matching learning preferences with teaching styles enhance the learning environment for students. Frequent demonstrations and a focus on small, obtainable goals and accomplishments is one of the most successful teaching strategies. Providing individual positive feedback along the way helps to maintain motivation and interest. As with all students, those who have cognitive diagnoses benefit from an individual assessment and tailored lessons.

In addition to students, other resources may offer valuable insights. Parents/guardians, spouses, or other caregivers can provide detailed information regarding students physical abilities and cognitive processing strengths and needs. This information may assist with your initial assessment of students. Just be sure not to ignore students as you are gathering additional information.

One-on-one phone conversations are extremely valuable prior to the actual lesson. The more communication and assessment done up front, the better!

Finally, it is extremely important to help this group of skiers develop sound fundamental skills. The lesson plan follows the alpine skill development progression with obvious modifications to maximize students' physical abilities. The focus is the development of the three skills supported by the five fundamentals, regardless of where the movements originate.

Equipment and Set Up

Take time to initially assess students to determine which type of equipment is best. Do not rush the set up for first time skiers! Proper time spent during the initial set up will equal success and enjoyment for students in the long term.

The ski bike is essentially a modified bicycle frame with handlebars and a long seat. The front fork of the bicycle is attached to a small ski that turns in conjunction with the handlebars. The rest of the bicycle frame is attached to a second ski (without turning power) that primarily supports the weight of the skier. Skiers using the ski bike can wear specialized "mini skis" on regular ski boots or snowboard boots called foot skis. These "mini skis" should have a retention system (strap around the ankle, clip to buckle, etc.) to prevent runaway equipment. The skier's legs help balance and steer the bike as the mini skis glide along the snow.

Safety Issues and Lift Evacuations

Be aware of these points to keep students mono-skiing safe:

- Your Responsibility Code applies to all skiers, including those ski biking.
- Instructors must understand the hand signals for communication with lift operators (i.e., slow, stop, maintain speed). Some hand signals may differ by ski area.
- Evacuation is always directed by Ski Patrol and it is at their discretion to use an alternate system.

General Overview of Lift Loading Procedures

There are several ways to load a ski bike depending on the brand of bike and the ski area policy, since the skiers have mini foot skis attached to their boots. Depending on the manufacturer's guidelines the ski bike is placed onto the seat next to the rider or held on their lap for the duration of the lift ride. Most ski bikes do not come with straps and carabiners to attach the bike to the lift while riding the chair – this is something that should be added if the ski area policy requires it. Some ski bikes are designed to load with the rider staying seated on the bike. Always familiarize yourself with the ski bike manufacturer's instructions and the ski area lift policies and procedures before attempting to ride the lift with a ski bike.

Skill Development for Common Ski Bike Outcomes

Local regulations and safety guidelines take precedence over this information. It is in your best interest to exercise due diligence in determining the appropriateness of the information for your particular circumstances. In addition, please take into account any and all factors that may affect your lesson. This includes but is not limited to the health, well-being, and fitness of the student, weather conditions, terrain, other people on the slope, your own abilities, as well as those of students and anyone who may accompany you.

<u>Beginner / Novice Zone Outcomes</u>

Level 1: Welcome to skiing / Build the foundation

- Perform student assessment.
- Discuss medical history.
- Determine and share goals.
- Select, introduce, and set up equipment.
- Agree on student / instructor communication and safety.
- Perform static balance exercises and develop athletic stance, indoors.

Level 2: Introduction to Flats

Note: Some students' stamina may limit their ability to work on straight runs and flats for extended periods of time. Plan your lesson accordingly.

- Attaching the foot skis, practice pushing, turning, pivoting, and balancing drills on flats.
- Learn how to mount and dismount the ski bike on "mini foot skis."
- Learn how to safely fall and get up.
- Learn to slide at slow speed.
- Begin to understand the fall line and terrain changes.
- Glide and slide across the slope.
- Perform a straight run to a terrain-assisted stop.

Level 3: Introduction to Turning

- Develop stopping and slowing skills via turn shape.
- Turn left and right to a stop.
    - Turn left and right through balance and turning movements. At slow speeds only, the turn of your handlebar will cause your snow bike to turn and thus point across the fall line to decrease speed.
    - At slow speeds, practice turning handlebars and allowing the head and torso to follow into steered turns. Abruptly turning the handlebars at high speeds might cause a crash, similar to riding on a bike. With increased speed the turning will happen. Slightly flexed arms and shoulder similar to a position on a bike.
- Perform linked turns.
- Begin to vary shape and size of turns.
- Perform garlands and fan progression.
- Learn how to ride chairlift.
- Learn lift loading and unloading independently and/or instructor assisted.

- Review lift evacuation procedures.
- Develop greater skill blending.

Intermediate Zone Outcomes

Level 4: Mastering Green Terrain

- Explore beginner terrain – go for lots of quality mileage!
- **Introduce skidded turns!** This is the most important aspect of successfully controlling speed on a ski bike once going up the mountain on steeper and/or more narrow runs. Start skidding the "tail" of bike out by flattening the ski and using hips/torso to initiate rotation.
- Learn counter steering.
- Develop a short-radius braking turn.
- Vary turn shape and size for terrain and condition.
- Explore a variety of snow conditions.

Level 5: Developing and Enhance Intermediate Movement Control

- Refine proper body movement and position.
- Develop short and medium radius skidded turns with speed control.
- Perform edge control exercises.
- Perform rotary control exercises.
- Master independent lift loading and unloading if applicable.

Level 6: Anchor Intermediate Skills and Movements

- Practice skidded short and medium radius turns with speed control.
- Ski varying snow conditions.
- Refine body movements.
- Practice hip and whole-body angulations.
- Introduce more carving in turns to facilitate carrying speeds over flat.