

Winter Sports for the Amputee Athlete

by Doug Pringle

Organized participation in winter sports by people with disabilities has a relatively short history. It began in the early 1950s when amputee veterans of World War II began to experiment with skiing despite the loss of limbs. The West Germans are credited with the invention of the outrigger, a crutch with ski tips attached, which are used as balance assistors. This invention helped popularize the sport and several amputee ski clubs were formed in the United States.

During the late 50s and early 60s, amputee skiing was the mainstay of the sport. It was during the late sixties and early seventies that others with one "bad" leg, such as polio victims, began to ski using the technique developed for amputees. It was also during this time that amputees began experimenting with skiing with a prosthesis.

Simultaneously, visually impaired people began to participate and the sport began to include more than amputees. In the late 70s, the major innovation was development of the "Four-Track" technique, which allowed many types of severely disabled people to ski.

The 1980s have contributed the technique known as 'sit skiing.' This technique allows people who are wheelchair bound to participate in the sport.

The benefits of participation in skiing are numerous. Physically the participant develops stamina, strength, balance, and coordination. These are all valuable physical traits for a person trying to compensate for a physical problem.

Psychologically, participants begin to develop a positive self-image and a "can do" attitude. This positive thought cycle carries over into other aspects of life such as education and employment.

Skiing offers a unique opportunity as a sport that can be done with family and friends in a facility open to the public. In that sense it is a mainstreamed activity done with everyone else rather than in a special facility.

Finally, there is something wonderful and invigorating about the freedom of movement, speed, risk, and the natural environment of skiing. All these add to the experience.

Skiing is the only winter sport offered to people with disabilities through formal programs. These programs offer adaptive equipment, qualified instruction and a competition system. Participation in other winter sports is not extensive.

Downhill Skiing

Alpine Skiing

Alpine (or downhill) skiing is the most popular winter sport of people with disabilities in the United States. There are approximately 10,000 disabled skiers. The sport offers unique benefits to participants who are mobility impaired, not the least of which is that gravity supplies the means for movement.

The development of adaptive equipment and techniques has made it possible for even the severely disabled to participate. Adaptive skiing is divided into five major categories or techniques:

1. Three track skiing
2. Four track skiing
3. Blind skiing
4. Sit skiing
5. Other adaptive techniques

Three Track Skiing

Above-knee and below-knee amputees, persons with polio or birth defects, and those with a variety of other problems, ski three track in which the common element is having one good leg and two good arms. Above-knee amputees ski without their prosthesis because it is difficult to control. Below-knee amputees can ski with their prosthesis. The advantage is that they can stand on it when stopped. The disadvantage is increased risk of injury.

Adaptive equipment for three trackers are outriggers. Outriggers are forearm crutches with ski tips attached. They act as balance assistants and are used to "walk" on the flats. Three track skiing derives its name from the three tracks made in the snow by two outriggers and the single ski.

Some three trackers, especially racers, learn to ski with ski poles instead of outriggers. In fact, that is how people with one leg skied before the invention of outriggers. While more difficult, "one tracking" is also a possibility for many and skiing with poles is an advanced instructional method.

Four Track Skiing

Four track skiing is used by people with a wide variety of disabilities including: double leg amputees, spina bifida, cerebral palsy, muscular dystrophy, multiple sclerosis, stroke, head trauma, paraplegia, and polio. An individual with two legs and arms, natural or prosthetic, who is capable of standing independently (static balance), or with the aid of outriggers, could use this method. Many severely disabled people ski using this technique.

In addition to outriggers, a lateral stability device is often used. This device is commonly referred to as a "ski bra." It helps keep the skis parallel and also allows the student's strong side to help control the weaker side.

Blind Skiing

Visually impaired students are taught the same as any other skier with the exception that the instructor must learn to communicate more clearly. A number of holds or assists have been developed as well. Once the student can ski,

the task becomes one of guiding or talking them down the hill.

No adaptive equipment is required for the visually impaired. Often the student and instructor (or guide) wear bright bibs which signal to other skiers to be alert.

Sit Skiing

Sit skiing is the technique used by anyone who cannot ski standing. Sit skiers include people with muscular dystrophy, multiple sclerosis, cerebral palsy, spina bifida, paraplegia, and quadraplegia. This technique has been used since 1980 and it has opened skiing to people who are wheelchair bound.

The sit ski has a fiberglass shell and metal edges. It is steered by leaning the body and by dragging a "pole" on the side to which the skier wants to turn. An instructor skies behind the device holding a length of nylon mesh cord in order to stop the skier and to assist with turns when necessary. Sit skiers often become proficient enough to ski "untethered" or without the instructor and safety line.

The most recent development in sit skiing is the mono-ski. Here the fiberglass shell is mounted on a single ski and the skier uses outriggers. Use of a mono-ski requires good upper body strength. Therefore, it is a technique that is not suitable to quadraplegics and high-level paraplegics.

Other Adaptive Techniques

This catch-all category is used for a variety of people with disabilities who don't fit into any of the other four. Among them are upper extremity impairment: people who have lost the use of one or both arms. Those with one good arm use one ski pole and a pole can also be used with an arm prosthesis.

Below-knee amputees may choose to ski using their artificial leg or legs. A heel line is usually necessary to achieve a bent knee position. Waist straps and thigh lacers help provide lateral stability, a snug fit, and reduced pistoning and rotation. A special ski leg can be made if the student decides to seriously pursue skiing.

The combination of disabilities and adaptive

equipment are numerous. In competitions, some 19 different classes are recognized. But, generally, most people ski using one of the four major techniques.

Instruction

There are a number of programs of ski instruction available. Most are voluntary, weekend programs. There are five full-time professional ski schools which specialize in adaptive skiing and about 25 voluntary ones. All but a few of these programs are chapters or affiliates of the National Handicapped Sports and Recreation Association (NHSRA).

The NHSRA has also developed a clinic team which trains instructors in adaptive ski teaching. The team also advises on program delivery. There is an instructor testing and certification program conducted by NHSRA which is approved and recognized by the Professional Ski Instructors of America.

Competition

A natural outgrowth of participation in sports is the development of competition. A very well developed system is in place. Learn to Race clinics and training camps are conducted by a few of the instructional programs locally and by the NHSRA nationally.

Those interested in competition can race in any number of programs open to the public such as NASTAR and United States Ski Association races. Further, there are ten sanctioned regional championships at which racers can qualify for the nationals.

Both the NHSRA and U.S. Association of Blind Athletes conduct annual national championships. Both organizations also select athletes for the U.S. Disabled Ski Team which competes in the World Winter Games for the Disabled and the Winter Olympics for the Disabled. In 1986, the U.S. Disabled Ski Team was number one in the world at the games in Sweden.

Resources

National Handicapped Sports and Recreation Association

4405 East West Highway, Suite 603
Bethesda, MD 20814

U.S. Association of Blind Athletes

Professional Ski Instructors of America
5541 Central Ave.
Boulder, CO 80301

Alpine Skiing, contact:
Vineland National Center
P.O. Box 308
Loretto, MN 55357

Nordic Skiing

Nordic (or cross country) skiing is also popular among people with disabilities. Since the sport does require more muscular effort for motion than Alpine skiing, it is not an option for some severely disabled individuals.

Among the participants are amputees skiing with their prosthesis and some who ski on one leg. Those on one leg must rely upon upper body strength and use their poles to push themselves along.

Nordic skiing is well suited for the visually impaired. They may ski with a guide or follow pre-set tracks in the snow.

Some more severely disabled people who would be four-trackers in Alpine skiing, such as those with cerebral palsy, muscular dystrophy, multiple sclerosis, stroke, head injury, etc., can also participate in Nordic skiing if they are able to ambulate well. Some will require assistance, pushing or pulling with a rope, and frequent rest breaks are always a safe practice.

There is a sit ski for Nordic skiing. The sit skier will need excellent upper body strength to push themselves over any appreciable distance. Again, assistance and rest stops will help.

Instruction

There are very few Nordic skiing instructional programs in the U.S. The sport is just beginning to develop. Those interested in learning the sport should check with a local cross country ski resort to see if they have an instructor willing and qualified. Most will have difficulty finding a program nearby.

Competition

The competition program described under Alpine skiing exists for Nordic skiing. Nordic events are held separately from Alpine events, but the U.S. Disabled Ski Team includes both Alpine and Nordic competitors.

Other Winter Sports

Snowmobiling has been a sport in which people with disabilities have participated for at

least 15 years. It was one option open to more severely mobility impaired individuals before development of four track and sit skiing.

Ice boating and bike sailing are adaptable to a wide variety of mobility impairments. Ice fishing can also be enjoyed by many people.

Author

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