Advanced Equipment Guide

Introduction

Selecting ski equipment for a budding cross-country ski racer is a somewhat challenging task for parents. There are many factors to take into account:

- Kids grow heavier and taller each year yet parents usually want to invest in equipment that can be used for two seasons
- Kids technique can improve quickly and good equipment helps them to be better skiers
- Good ski equipment is not cheap
- It is generally recommended that kids have two pairs of skis (one for classic and one for skating) if only to save parents the effort of re-waxing skis several times a week! There are also important performance benefits to having equipment which is specific to the technique.

There is some good news however. Good ski equipment that is looked after will retain a pretty significant percentage of its original value. There are also opportunities to purchase used equipment from families with slightly older kids at discounted prices and you can take advantage of lower priced junior equipment for kids up to around five feet tall and a hundred pounds. It is much more important for a kid to get out and ski regularly, to develop good technical skills and have fun than to have the latest and greatest equipment.

Skis

There are a couple of factors that determine the cost of a ski. Generally, more expensive skis are narrower, use lighter materials, have better bases and offer a wider range of cambers than less expensive skis. For younger skiers and those who are hard on their equipment a wood core is a good choice. Air or foam core skis are lighter but are more fragile and will not stand up to things such as ski jumping. The base material will make a difference in terms of its ability to absorb and hold wax. Less expensive bases are hard and will need to be re-waxed more often and will not glide as quickly as better bases. Go to a good store and ask lots of questions. There can be significant differences in quality between two skis that sell for the same price and appear to be similar. If you are not comfortable with selecting equipment on your own go to a store with someone who is knowledgeable and they can ask the questions for you.

Universal Versus Technique Specific Skis

Junior skis come in universal (classic and skating) and technique specific designs (classic or skating). Technique specific designs for juniors are generally reserved for the more expensive models of junior skis or for recreation oriented skis (e.g. classic touring skis). This means that universal skis will be an affordable option for many. Universal skis are fine as long as you choose the camber and length which is appropriate to the technique and the weight and ability of the skier. For example, I have purchased two pairs of universal skis for one child with different cambers and lengths appropriate to classic and skate techniques.

Classic skis

In order to purchase classic skis you need to understand how they work. When you look at a ski resting on the ground from the side the ski is an arch. The tips and tails of the skis will rest on the ground with the middle part in the air. When sufficient weight is applied from above to the middle part of the ski it will flatten and touch the ground. A ski with a stiff camber will require more weight to flatten than a soft cambered ski. A classic ski has to be sufficiently cambered such that when a skier's weight is evenly distributed on each ski (e.g. as in gliding down a hill) the middle of the ski (the wax pocket) will not

touch the snow whereas the tips and tails (glide zones) will. When a skier puts all of their weight on one ski the middle part of the ski (wax pocket) will touch the snow and provide grip.

The most important factor in selecting classic skis is the camber. The selected camber needs to be related to a skier's weight and ability. A ski whose camber is too stiff will not allow a skier sufficient grip to climb hills. Too soft and the ski will glide slowly.

- Start by choosing the length of ski. The ski should be roughly up to the base of the palm of a hand held outstretched above the head. Skis generally come in 10 cm increments. For a less experienced skier you might want to choose a slightly shorter ski and slightly longer ski for a stronger skier.
- Select the camber of the ski. Begin by knowing the weight of the skier and a reasonable idea of their classic ski ability. If your child weighs 40 kilograms and they are a reasonably strong classic skier (good weight transfer and kick) then the ski should be stiff enough that it requires around 60% of their weight (24 kg) for the ski to be flattened. If you are buying the skis at a good ski store they should have equipment to test the stiffness of the skis. Let's say that you need a 160 cm ski. A store should have a selection of 160 cm skis with different stiffness of cambers and should take the time to find the appropriate stiffness for your child. A rule of thumb is that:
    - A beginner skier should have a ski that closes at approximately 55% of their weight
    - An intermediate ski should have a ski that closes at about 60% of their weight.
    - A strong classic skier should have a ski that closes at about 65% of their weight
- Once you have selected a ski with the appropriate camber you should have the store measure the wax pocket and indicate its position on the sidewalls of the ski with permanent marker.

Skate Skis

Skate skis are generally shorter and stiffer than classic skis and are usually torsionally stiffer (greater resistance to twisting). The length of the ski is less important than the camber. Many of the skate skis have some kind of additional shape to help the skis track (e.g. Fischer Skate Cut). The benefits of this innovation are marginal and less important than other factors.

- Identify the length of the ski. A skate ski should be about 5 to 10 cm above head height. A ski longer than this will cause some difficulties climbing hills. A ski that is shorter may not glide as well.
- Select the camber of the ski. In comparison to a classic ski a skate ski should close (be fully flattened) at approximately 100% percent of the skier's weight. In choosing a skate ski there is less of a penalty in selecting a slightly stiffer ski than one that is too soft. A soft ski will not track well on hard packed snow and will generally be harder to balance on. A good skate ski will have a long gradual camber.

Poles

While younger kids can get away with one pair of poles this will be a compromise of poles that are too short for skating and too long for classic. Pole length for classic should be about shoulder height whereas, a pole for skating should come to about halfway between the chin and the nose. This may not sound like a big difference however it is enough to affect the ability to ski with good technique. An important point in selecting poles for kids is that they do not need to cost a lot. $25 aluminum or fiberglass poles are sufficient until a child is old enough to generate significant force and look after their equipment. This is usually around 13 years of age.

Boots

For most kids a boot that combines a relatively flexible classic sole with an extended cuff to provide support for skating is adequate. These are generally marketed as “combi” boots and retail for under $200. There is a point where a kid’s foot size, body weight and technique make it worthwhile to have two pairs of boots however, this is usually reached around 13 or 14 years of age. At this time you can gauge their seriousness and your ability to pay before putting out the cash.

Bindings

There are two types of bindings on the market, Salomon and Rotefella also known as New Nordic Norm (NNN). In actual ski performance they both work well. For some reason the NNN bindings (particularly the automatic ones) tend to ice up and jam in really cold weather and when there is soft sticky snow. The more expensive manual versions work better. Unfortunately there seems to be a greater selection of NNN styles boots for kids so this is a consideration.