

****It is always strongly encouraged that racers/parents speak to their coach if they have more questions.****

Equipment Overview

The Catamount race program is divided into two sections Interclub (I/C) and Tri-State (T/S). Interclub's equipment needs are more limited as it is an entry level racing program geared to younger athletes. There are more options at the Interclub level to limit expenses. T/S is geared towards Giant Slalom (G/S) and Slalom (SL) disciplines with different equipment needs. Greater details are in the document below, but the following are the basic requirements.

Equipment	Interclub	Tri-State
Skis	One pair	SL & GS Skis
Poles	One pair	Race poles, recommend 2 pairs (GS & SL)
Boots	One pair – properly fitted	Race boot with correct flex
Helmet	Racing “hard ear”	Racing – Removable SL chin bar: FIS approved helmet
Protection	Back Protector Recommended	Back Protector, Pole Guards, Shin Guards are required; other items including forearm protection, cut proof base layer and mouth guards are recommended
Race Suits	Optional	Recommended
Goggles	Required. Make sure they fit without large gaps between helmet and face. Kids lenses are often inexpensive so make sure goggles are not scratched up making visibility difficult.	Lens should handle low light days and night training OR consider buying two types of lens.

Note: Team Jackets are optional and there should be no helmet cams on race helmets.

I/C CLOTHING: For Interclub's younger racers, parents need to ensure they are dressed warmly. Often gloves or clothing for young children can have inexpensive options as they quickly outgrown them. As we are looking for the kids to participate in all types of weather conditions every weekend, please ensure that gloves, socks, base layers, mid layers, ski pants and jackets are warm and appropriate for athletic activity.

MORE SPECIFIC INFORMATION BELOW BY SECTION

BOOTS

The single most important piece of equipment in skiing is boots! Ski racers should have ski boots that are of proper design and fit for racing and fitted for each season. Note: adult boots are typically not recommended for junior racers as they tend to ride too high on their calves, and be too stiff, which makes them difficult to flex.

Guideline for Fitting Boots:

Length: If you remove the inner boot and place the child's foot back inside the plastic shell, there should not be room for much more than 1-2 fingers spacing behind the heel. As they get to U16, look for 1 finger spacing. The foot should be snug in the liner. The best is to have the boots fitted by a proper boot fitter, letting them know your child will be ski racing, not skiing recreationally.

- One of the biggest mistakes parents make is buying a boot that is too big, often to save money to factor in growth. If the boot is too big, their feet will move inside the boot giving them less control over their movement and can cause frustrating results for the racer. If the boot/shell is too big and you tighten the bootstraps to compensate, you can actually distort the shell itself. Neither is good!

Volume/Width: Ski boots tend to be designed to be low, medium, or high volume fit. This designation is aimed at accommodating the width and mass of the skier's foot. Certain manufacturers have certain fit characteristics. For example, Lange boots traditionally have been recognized as low-medium volume boots. Most junior skiers usually fit best in low to medium volume boots.

Flex: Junior race boots come in a variety of "flex indexes" which are related to the stiffness of the boot. Most junior boots have flex indices between 60 and 100. In general, U10/U12/U14 racers will want to have boots in the 60-80 range of flex index with the stronger, heavier U14s/U16s in stiffer boots of 80-100. For U8s, you should look for a boot in the 40-60 Flex range with at least 2-3 buckles. It is important to note that flex can vary by manufacturer. A 60 flex in a Lange may not be the same as a 60 flex in a Rossignol boot. The best thing to do is have the racer assessed when fitted. They should be able to bend/flex the boot comfortably when warm (remember plastic hardens when it gets cold!).

Flex will ultimately depend on 4 things: Manufacture, weight, size, and skier type (more aggressive can handle more flex). However, here are some general guidelines if you are just starting out.

- U8: 3 buckled boot works best (but for a first time racer, you can try a 2 buckle), with a low flex (no more than 60)
- U10-U12: Junior racing boot (usually 4 buckles), max flex of 70 (50-60 for lighter/smaller racers). Better to have lower flex when in doubt.
- U14: Junior racing boot, flex can vary depending on weight and child's physical strength. Flex can go as high as 90 for a child weighing upwards of 115-130 lbs if they are strong.
- U16-U18: Many will end up in adult boots depending on height, flex can go as high as 100-130

Overall Fit:

It is recommended that boots be purchased at a location that stocks race equipment and has staff qualified as "boot fitters". In addition to the size, proper boot fitting may also include checking the skier stance in the boot to see if "canting" adjustments are needed. This is to ensure that the boot and therefore the ski is absolutely flat when the skier is standing. If a racer is slightly "knock-kneed" or "bow-legged" this will need to be compensated for through canting to ensure the racer properly controls the ski. The boot fitter may also recommend custom footbeds for the boots which have the effect of greatly improving the fit in many cases.

Bottom of Boots:

PLEASE check the bottom of the boots each season for wear and tear and avoid walking on hard surfaces or pavement if possible. If you have to walk on pavement, invest in cat tracks. You should always try to replace the heel and toe pieces before any wear begins to occur on the boot itself. Boots that are worn can create issues with how the boot fits and releases in the binding, normally causing the boot to release too easily.

Plug Boots: For U16s-U18s

As a racer develops into a stronger, more competitive 2nd year U16 or U18, they should consider plug boots. This is essentially a very stiff, very narrow, low volume boot which has lace up liners for a more precise fit and often comes with a better powerstrap. These do require a professional boot fitter to do the custom shell work required for a proper fit. You will end up paying around \$800-\$900 for a pair and usually an extra fee for the boot fitting.

SKIS AND BINDINGS

TRI-STATE

At the Tri-State level, racers should own/rent two pairs of skis, one for SL one for GS. U16-U18s might even have 2 pairs of each discipline (trainer and race ski) and even a 5th pair of SG skis. Note: US Ski & Snowboard requires that U12 athletes use only 1 pair of skis on race day (no slip skis on the race course)

U12-U14 (some U16) racers should have skis that are specifically designated as junior race skis. These skis are specifically designed to be of the correct flex and torsional rigidity which are appropriate for alpine racing. At the U16 level, most will transition to an adult race ski.

The ski length depends on a child's weight, height, and ability. The heavier/stronger and more experienced racer will typically have a longer ski as they are able to bend the ski more readily. A more tentative skier should go with a slightly shorter ski. You can sometimes manage to make skis work for two years depending on the growth of your child and how they develop technically. Longer GS skis provide a racer with more stability, the faster they get, the more stability they will require.

SL Skis

Slalom skis are relatively short skis with a fairly big "side cut". The sidecut refers to how much difference there is when comparing the width of the tip to the waist (section under the foot) and tail. Skis with a big sidecut tend to have a shorter turn radius meaning the ski can make sharper turns. In the SL discipline, gates are closer together necessitating tighter turns. The typical turn radius of a junior SL ski would be around 9-12 meters, with shorter skis having a smaller turn radius.

- SL Sizing Determine the length of SL skis by standing them on their tails. As a general rule, appropriately sized SL skis will be between the chin and eyes of the racer, for a less experienced, lighter racer, you probably will not go higher than the nose.
- U14 SL skis need a minimum length of 130cm

GS Skis

Giant Slalom, or GS skis, are skied longer than SL skis. These skis typically have less sidecut than SL skis, but their shape is still fairly pronounced. The typical turn radius of a junior GS ski would be from 14-18 meters. U16-U18s will typically have a turning radius of 20-27 meters. U18s competing in FIS races will need to follow FIS requirements (30-meter radius at the moment).

- GS Sizing Should be of a length that is from mid-forehead to 2-3 inches above the racer's head. The more experienced and stronger/heavier the skier, the longer ski

he/she can handle and can go over 3 inches above the forehead. GS skis are typically about 10 cm-15 cm longer than your SL skis

- U14 GS skis need a minimum radius of 17m (no rule on length)

Note on USED skis: Be wary of purchasing used skis. Find out how many seasons the racer used them. How were they maintained and stored? Are the bases in good condition and is there enough edge left? Typically after using a ski consistently each weekend for 2-3 years, it begins to weaken the structure of the ski. A racer that properly tunes their skis each weekend will also have very little edge left after 2 seasons.

Bindings: Most ski manufacturers make their skis to be used with their own brand of bindings, such as Atomic and Fischer, or with specific bindings from partner manufacturers such as Dynastar/Look bindings or Volkl/Marker bindings. Race skis come with a pre-drilled race plate (race interface) and only appropriate bindings should be mounted.

- Spacers: With a coach's recommendation, U16s and U18s racers can consider raising their bindings. The maximum distance from the ski surface to the binding is 50mm, which includes the race plate (race interface). Raising the bindings is done by adding spacers from the manufacturer of the binding.

IMPORTANT: Please note that any un-mounting/remounting of the binding, DIN adjustments, or binding adjustments should be done by the manufacturer's certified technicians.

Interclub

At the Interclub level, your child's age, size and technical ability will greatly influence the type of ski your racer will use. Typically those just starting out, will rent or buy an all mountain ski as they are softer and more forgiving.

As the racer progresses, you should consider renting/buying a junior race ski, especially if you have a U10 who is planning to transition to TS as a U12 (please discuss with your coach). At this point, your racer can choose between a slightly longer SL race ski or a slight shorter GS race ski.

SKI POLES

TRI-STATE

GS Poles - Should be about 2 inches (5cm) longer than SL poles

SL Poles - In ski boots, hold the poles upside down just below the tip/basket. The pole is a good fit if your forearm is at 90 degrees (or parallel to the floor). Factor in growth if renting/buying in the summer.

Athletes that are clearing gates in SL will require pole guards to protect the athlete's hands (U12 and older). While the guards protect the athlete in SL, they are a hazard when training GS. Therefore we strongly recommend a set of poles for SL (w/ guards, and one for GS (without guards).

As a TIP for U12-U14s: buy straight GS poles that are 5cm longer than the SL - when your athlete grows, this year's GS poles can become next year's SL poles! (no real need for bent poles except for GS/SG in U16 and above age groups).

INTERCLUB

In Interclub, you only require SL poles, no pole guards. In ski boots, hold the poles upside down just below the tip/basket. The pole is a good fit if your forearm is at 90 degrees (or parallel to the floor). Factor in growth if renting/buying in the summer - **do not buy too long. Shorter is better than longer.**

PROTECTION

Helmets: Helmets are mandatory in training and racing. For T/S recommend a FIS-approved hard ear helmet that can be used for both SL (with chin guard) and GS/SG/Kombi. Otherwise, you will need to buy two different helmets.

SL - racers should have a chin bar for protection in tall gates. Soft ear helmets may be worn.

GS/SG/Kombi - all racers must have a hard ear helmet regardless of age group

- U14 and above, racers must have a FIS-approved hard ear helmet for training and races. Make sure that if you're buying a FIS helmet, it has the correct sticker.
- U12s and younger, it is not required to have a FIS helmet. However, if you need to replace your current helmet, get the FIS-approved helmet as it is likely that the helmet will still fit as the U12 gets older, and the FIS requirement will provide some greater level of protection.

I/C racers: all age groups will require a hard ear helmet

Eye Protection: Goggles are required when training or racing. Athletes should consider different lenses for varying light conditions.

Chin Guard: This is attached to the helmet when training SL - it protects that dental work and nose. These are typically specifically designed for a given helmet model.

IMPORTANT NOTE: the chin guard should be removed when not training SL gates to lessen the likelihood of it catching on the snow during a crash.

Pole Guards: this is plastic that covers the pole grips to protect the racer's hands. These can be generic, but check to make sure that they fit your pole/grip combo. We recommend guards that create a closed arc, attaching to the pole below the grip and on top of the grip. This limits the chance of a pole catching in the snow when your hand drags or during a crash.

Shin Guards: This is a piece of rounded plastic that covers the knee down to/over the top of the boot. This really does not need to be fancy but make sure they fit properly length-wise. Typically U12-U16 use a Junior sized shin guard.

Forearm Guards: The forearm guards protect from impact with the gates in GS. We recommend waiting to get these until your racer needs them based on their line and coach's recommendation. Not usually needed until U16 and above age groups.

Back protectors: A back protector is a great piece of equipment, required for GS and highly recommended for SL. In general, the back protector must adapt to the anatomical bend of the athlete's spine and lie flat against the body. The top edge of the back protector must be situated in the area of the spinal column and may not go above the 7th cervical vertebrae (C7). The maximum thickness must be in the middle part and may not exceed 45 mm; the thickness reduces at the edges of the back protector. The back protector must be worn underneath the competition suit.

