

## **Appendix V**

# **IPC Nordic Skiing Homologation Guide**

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### **Homologation of courses for IPC Nordic skiing**

The International Paralympic Committee (IPC) is the governing body for the Paralympic Games. The IPC Nordic Skiing Sport Technical Committee is responsible for the technical delivery of Cross-Country Skiing and Biathlon for skiers with a disability. IPC organizes as well World Championships, World Cups, using the FIS ICR as the bases for their rulebook. The goal of IPC is to develop Nordic venues (courses and stadiums) that meet the approval of their elite athletes, as well as will provide for competitions where athletes, independent of individual disabilities, will ski courses that are equal and fair for all categories and classes.

In general, the philosophy for FIS homologation, and the requirements and recommendations for stadium and course design applies to IPC Nordic skiing as well. However, since certain classes and categories have clear physical limitations, the courses must in general be made easier, with special attention to fast downhill sections, sharp curves, and steep or long up hills. The following sections will describe areas within homologation work that specifically should be considered when designing courses for Paralympic Nordic athletes.

## Classification

Nordic Paralympic athletes are classified according to the following table:

Category	Class	Region of disabilities	Main sport equipment and degree of disabilities
Standing	LW2	Disabilities in one lower limb (ex. above knee)	Skiing with 2 skis and 2 poles
	LW3	Disabilities in both lower limbs	Skiing with 2 skis and 2 poles
	LW4	Disabilities in one lower limb (ex. below knee)	Skiing with 2 skis and 2 poles
	LW5/7	Disability in both upper limbs	Skiing with 2 skis and no poles
	LW6/8	Disability in one upper limb	Skiing with 2 skis and 1 pole
	LW9	Disability in one upper limb and one lower limb	Equipment of choice, but with 2 skis
Sitski	LW10	Disabilities in both lower limbs (no sitting balance)	Using sit-ski
	LW11	Disabilities in both lower limbs (fair sitting balance)	Using sit-ski
	LW12	Disabilities in both lower limbs (good sitting balance)	Using sit-ski
Visually Impaired	B1	Slight to no light perception in either eye	Must ski with a guide Must wear black glasses
	B2	Up to visual acuity of 2/60 and/or visual field of less than 5 degrees	May ski with a guide
	B3	Up to visual acuity of 6/60 and/or visual field of less than 20 degrees	May ski with a guide

## IPC Nordic Event Distances and recommended courses

### Standing and Visually Impaired categories

The table below shows the standard event distances that are used at IPC World Cup, Championships and Paralympic Games.

Event	Course
20 km	5 km
15 km	5 km or 3.75km
12.5km biathlon	2.5km

10 km	5 km or 3.33 km
7.5 km biathlon	2.5 km
5 km	5 km or 2.5 km
2.5 km	2.5 km
CC Sprint / BT Pursuit	900m +/- 300m
Relay	5 km or 2.5 km

In general, the Standing and Visually Impaired categories can ski on courses that are very close to FIS homologation standards. However, design considerations in the following areas should be considered:

- Fast down hills with curves and corners that can be difficult and unsafe for Visually Impaired skiers
- Use of shorter loops such that Visually Impaired skier more easily can become familiar with the course
- Reduction of A-climbs (should be replaced by B-climbs)
- Range for TC should in general be in the low range (for example 150 – 180 m for 5 km)

The following table shows recommended standards for Total Climb, Max Climb and Height Difference. Although it is not recommended to include many A-hills, it is still important to design hills with varying slopes, gradient and length, where a few hills are close to the standard for A-hills (over 20-25 m in PHD).

Course	TC	MC	HD	Hills
10 km	250 - 350	40	75	0-1 A hill, 8-12 B hills, 0-2 C hills
7.5 km	200 - 250	40	75	0-1 A hill, 6-10 B hills, 0-2 C hills
5 km	140 - 180	40	75	0-1 A hill, 4-6 B hills, 0-2 C-hills
3.3 km	90 - 130	30	50	3-5 B hills, 0-1 C hill
2.5 km	75 - 90	30	50	2-3 B hills, 0-1 C hill

### Sit-ski classes

Event	Course
15 km	5 km or 3.75 km
10km / 12.5km Biathlon	2km / 2.5km
10 km	5 km or 3.33 km
7.5 km Biathlon	2.5 km

5 km	5 km or 2.5 km
2.5 km	2.5 km
CC Sprint / BT Pursuit	900m +/- 300m
Relay	2.5 km and 2km

Courses for the sit-ski category can not follow FIS homologation rules due to the fact that sit-skiers have no use of their lower body, and pull themselves forward with poles from a sitting position (on their sledge).

The categories for A, B and C hills are therefore proposed to be changed to:

A-hills	10 – 20 m PHD and gradient between 4 – 12 %
B-hills	4 – 9 m PHD and gradient between 4 – 12 %
C-hills	distance < 30 m and gradient 12 – 18 %

The following points should also be considered when designing courses for the sit-ski category:

- up hills should in general not be steeper than 10 - 12 % gradient
- A-hills should not be too long (not over 250 m in length)
- down hills should have straight run-outs preferably with a slight uphill to break the speed, the hills should not be steeper than 12 – 14 % gradient
- corners and turns should be placed where the speed is slow corners on flat part of the course should optimally not be less than 90 ° angle (larger angle required for downhill corners). This applies in the stadium as well, for example for lapping or into the shooting range. (NOTE: If you as a standing skier are poling without using the legs, the skis should easily follow the track both in curves/bends in flat parts and also in down hills – if we have to “work” with the legs, a sledge will have problems)

Course	TC	MC	HD	Hills
7.5 km	100 - 150	20	75	4 – 6 A hills, 4 – 6 B hills
5 km	70 - 120	20	75	2 – 4 A hills, 2 – 5 B hills
3.75	60 - 90	20	50	1 – 2 A hills, 1 – 3 B hills
3.33 km	50 - 80	20	50	1 – 2 A hills, 1 – 2 B hills
2.5 km	40 - 70	20	50	1 – 2 A hills, 1 – 2 B hills

## Stadium layout

In contrast to the newest development of stadiums and course layouts for FIS competitions, it is less important to ski through the stadium often, since most IPC races are interval start races. Since IPC Nordic Skiing events are divided into 6 categories (3 for men and 3 for women), it is difficult for announcers and spectators to follow the event if several categories are starting, passing through the stadium or finishing at the same time. For competitions with small fields, this situation can however be solved by letting each category finish the race before the next one starts.

A special consideration should be given to the transition and staging area for the sit-ski category. This should be provided with an easy, flat access to start & finish areas, with nearby covered and heated area for transition from wheelchair to sit-ski, as well as storage of wheelchairs.