

Appendix V

IPC Nordic Skiing Homologation Guide

Version 2012

7 Homologation of courses for IPC Nordic skiing (skiers with disabilities)

7.1 In general, the philosophy for FIS homologation, and the requirements and recommendations for stadium and course design applies to IPC Nordic skiing as well.

See **FIS Homologation manual** for :

- Philosophy of Homologation
- Course Design Criteria
- Design of courses
- Stadium
- Waxing cabins, Ski test area, warm up course
- Practising homologation skills

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.

7.2 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

7.3 IPC Nordic Event Distances and recommended courses

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

Courses :	LW 10-12	800m, 2.0km, 2.5km, 3.0km
	LW 2-9 / B1-3	1200m, 2.0km, 2.5km, 3.0km, 5.0km

7.3.1 Cross Country

Competition	Class	Gender	Total Distance		Course	Loops	
CC Sprint	LW 10-12	men	800m (+/-200m)	sit ski	800m (+/-200m)	1	
	LW 10-12	women	800m (+/-200m)	sit ski	800m (+/-200m)	1	
	Qualification (all)	LW 2-9	men	1200m (+/-300m)	standing	1200m (+/-300m)	1
	Semifinal (best 8)	B1-3	men	1200m (+/-300m)	standing	1200m (+/-300m)	1
	Final (4 athletes)	LW 2-9	women	1200m (+/-300m)	standing	1200m (+/-300m)	1
		B 1-3	women	1200m (+/-300m)	standing	1200m (+/-300m)	1
CC middle	LW 10-12	men	10km	sit ski	2.5km	4	
	LW 10-12	women	5km	sit ski	2.5km	2	
	LW 2-9	men	10km	standing	5km	2	
	B1-3	men	10km	standing	5km	2	
	LW 2-9	women	5 km	standing	5km	1	
	B 1-3	women	5 km	standing	5km	1	
CC long	LW 10-12	men	15km	sit ski	3.0km	5	
	LW 10-12	women	12km	sit ski	3.0km	4	
	LW 2-9	men	20km	standing	5km	4	
	B1-3	men	20km	standing	5km	4	
	LW 2-9	women	15km	standing	5km	3	
	B 1-3	women	15km	standing	5km	3	
Relay men	LW 10-12	men	4km	sit ski	2.0km	2	
	LW2-9 + B1-3	men	5km	standing	2.5km	2	
Relay women	all	women	2.5km	sit ski	2.5km	1	

7.3.2 Biathlon

Competition	Class	Gender	Total Distance	Course	Loops	
BT short Penalty loop 150m 2 shootings	LW 10-12	men	7.5km	sit ski	2.5km	3
	LW 10-12	women	6.0km	sit ski	2.0km	3
	LW 2-9	men	7.5km	standing	2.5km	3
	B1-3	men	7.5km	standing	2.5km	3
	LW 2-9	women	6.0km	standing	2.0km	3
	B 1-3	women	6.0km	standing	2.0km	3
BT middle Penalty loop 150m 4 shootings	LW 10-12	men	12.5km	sit ski	2.5km	5
	LW 10-12	women	10km	sit ski	2.0km	5
	LW 2-9	men	12.5km	standing	2.5km	5
	B1-3	men	12.5km	standing	2.5km	5
	LW 2-9	women	10km	standing	2.0km	5
	B 1-3	women	10km	standing	2.0km	5
BT middle Pursuit 2 day Pursuit Penalty loop 150m 4 shootings	LW 10-12	men	12.5km	sit ski	2.5km	5
	LW 10-12	women	10km	sit ski	2.0km	5
	LW 2-9	men	12.5km	standing	2.5km	5
	B1-3	men	12.5km	standing	2.5km	5
	LW 2-9	women	10km	standing	2.0km	5
	B 1-3	women	10km	standing	2.0km	5
BT 1 day Pursuit Qualification + Final Penalty loop 80m 2 shootings	LW 10-12	men	2.4 - 3.0km	sit ski	800m (+/-200m)	3
	LW 10-12	women	2.4 - 3.0km	sit ski	800m (+/-200m)	3
	LW 2-9	men	3.6 - 4.5km	standing	1200m (+/-300m)	3
	B1-3	men	3.6 - 4.5km	standing	1200m (+/-300m)	3
	LW 2-9	women	3.6 - 4.5km	standing	1200m (+/-300m)	3
	B 1-3	women	3.6 - 4.5km	standing	1200m (+/-300m)	3
BT long Penalty 1 minute 4 shootings	LW 10-12	men	15km	sit ski	3.0km	5
	LW 10-12	women	12.5km	sit ski	2.5km	5
	LW 2-9	men	15km	standing	3.0km	5
	B1-3	men	15km	standing	3.0km	5
	LW 2-9	women	12.5km	standing	2.5km	5
	B 1-3	women	12.5km	standing	2.5km	5

7.4 Standing and Visually Impaired categories

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
- 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
5 km	140 - 180	40	75	0-1 A hill, 4-6 B hills, 0-2 C-hills
3.0 km	80 - 110	30	50	2-4 B hills, 0-1 C hill
2.5 km	75 - 90	30	50	2-3 B hills, 0-1 C hill
2.0 km	50 - 80	30	50	1-3 B hills, 0-1 C hill
1.2 km	0-60	30		

WC : In case the above mentioned courses aren't available, the following courses can also be used.

3.3 km	90 - 130	30	50	3-5 B hills, 0-1 C hill
3.75km	100 - 135	40	50	0-1 A hill, 3-5 B hills, 0-1 C-hills
7.5 km	200 - 250	40	75	0-1 A hill, 6-10 B hills, 0-2 C hills
10 km	250 - 350	40	75	0-1 A hill, 8-12 B hills, 0-2 C hills

7.5 Sit-ski classes

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 – 15 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 %, maximum 16 %

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 200 m in length)
- The track should be level from side to side (including climbs, descents and flats).
- 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). Banking (higher on the outside of the curve) can help the skier make a sharp or a high speed turn. The minimum radius of a turn in a flat section or downhill section shall be 15m.

Course	TC	MC	HD	Hills
3.0 km	35-65	15	40	1 – 2 A hills, 2 – 4 B hills
2.5 km	30-60	15	40	0 – 1 A hills, 1 – 3 B hills
2.0 km	25-55	15	40	0 – 1 A hills, 1 – 3 B hills
800 m	0 - 30	15		

WC : In case the above mentioned courses aren't available, the following courses can also be used.

5 km	60 - 120	15	50	1 - 2 A hills, 3 – 6 B hills
3.75	45-70	15	40	1 – 2 A hills, 2 – 4 B hills
3.33 km	35-70	15	40	1 – 2 A hills, 1 – 3 B hills

7.6 Stadium layout

Since IPC Nordic Skiing events are divided into 6 categories (3 for men and 3 for women), it can be 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 and 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.

7.7 Homologation Process of IPC Nordic PWG and WCH courses

At PWG and IPC WCH all Cross-Country and Biathlon competitions shall be carried out on IPC homologated courses.

7.7.1 Responsibility

For the highest level, Paralympic Winter Games (PWG), World Ski Championships (WCH) competitions the IPC is responsible for the execution of the Homologation process. That includes the appointment of the IPC Homologation Inspectors (IPC HI), the homologation reports and the final acceptance of the courses. A person named by IPC will be responsible for the final acceptance.

The IPC Nordic STC is responsible for issuing an ***IPC Homologation Confirmation Letter*** to the organizer for each homologated course.

7.8 Guidelines for the organization, education and appointment of IPC Homologation Inspectors (IPC HI)

7.8.1 The authority of the Homologation Inspector.

The IPC HI is the representative of the IPC to the Organizer of the IPC Cross-Country and Biathlon course homologation. He guarantees that the homologated course meets the standards laid down in the IPC Rules and this manual. The HI will remain in charge of the homologation process until the final homologation report has been submitted.

7.8.2 Qualifications required for IPC HI :

The IPC HI must have a valid IPC TD-license and a FIS TD or an IBU TD license.

7.8.3 The Homologation Inspector Organization structure.

The responsibility for all IPC HI matters belongs to the IPC Nordic STC.

7.8.4 The IPC HI Education Process

The Education Process provides the HI with the theoretical and practical knowledge necessary to carry out their assigned duties required to complete the IPC Homologation Process. The IPC Nordic STC is responsible to arrange possibilities to educate interested IPC TD's, including participation in FIS Hg seminars.

7.8.5 Appointment of IPC HI

The IPC HI for PWG and WCH is proposed by the IPC Nordic STC to the IPC Governing Board which decides.

7.8.6 Reimbursement of IPC HI

The IPC HI has a right to reimbursement for his travel expenses (highway taxes included), as well as free accommodation and meals during the assignment. (train, first class; for longer distances air fare, economy class; or payment of a per kilometer fee of 0.40€ or equivalent). In addition a fixed daily rate of 100€ is added for the travel days to and from, as well as each day of the assignment, which includes postage charges for mailing reports, etc. Double charges (e.g. traveling home on the same day as the last working day) are not permitted. If overnight accommodation during the journey to and from the assignment is necessary, this must be justified and reimbursed separately. The maximum payment for personal vehicle transportation cannot exceed the equivalent cost of an airfare in economy class.

7.9 Procedure for IPC CC and BT course homologation

Appointment of IPC HI :	As soon as an organizer for PWG and WCH is confirmed The IPC Nordic STC makes a proposal to the Governing Board
Official announcement :	The IPC Headquarters officially informs the Organizing Committee about the name of the IPC HI.
First contact :	The OC gets in contact with the IPC HI and makes a proposal for the first site visit.
Field work :	During several visits (in general 2 – 4) the OC and the IPC HI evaluate the courses and finalize the required documentation.
Final inspection :	The final inspection will be made by the OC, the IPC HI and the IPC Technical Delegate appointed by IPC for this competition.
Report :	The IPC HI sends the report of the final inspection to the IPC Nordic STC for approval.
Documentation :	The Eibl program (same as FIS) shall be used. All recorded data shall be put into the program to produce the needed documentation.
Certification	When the IPC STC has approved the course, the IPC Headquarters will send out a letter of confirmation for each homologated course.

7.10 Duties and Responsibilities of the Organiser

To begin the homologation process the Organiser must consult with the IPC HI in order to start the work. The following information must be made available:

- Name and address of their official contact person for homologation
- the proposed competition maps and all the engineering data used to produce them
- a proposed stadium layout
- the planned infrastructure for the competition site.

The plans of the course must be produced in good time and drawn at a scale of 1:10 000. The profiles should be drawn at a scale of 1:50 000 horizontally and 1:5000 vertically.

The Organiser must supply these course maps, indicating on them the total climb (TC), the height difference (HD) and the maximum climb (MC) so the inspector can check the figures. The location of the following climbs must be shown on the profile:

- A major uphill
- B short uphill
- C steep uphill

The Organiser must supply copies of the approved course maps and the homologation report to its TD. A graduated scale and a north direction arrow must be included.

7.11 Duties and Responsibilities of the IPC Homologation Inspector

Following the receipt of the Organisers' initial information, the inspector will develop a detailed plan for an inspection schedule together with the Organiser.

The inspector, when required, should send examples of approved technical maps and technical data to the Organisers.

The inspector must submit the following documents to the IPC Nordic STC :

- the completed homologation report
- the final course maps and profiles
- a final stadium plan with layouts for all the scheduled competitions.

7.12 Duties and Responsibilities of the IPC Nordic STC

- To notify inspectors of their appointment and to provide them with rules and guidelines that outline the homologation process, including sample documents, maps and report forms.
- To notify the Organiser of their appointed inspector and to provide the Organiser with the **IPC Homologation Guide** and the **FIS Homologation manual**.
- To receive completed homologation reports from the inspectors and to do the final approval.
- To send out a letter of confirmation for each homologated course to the Organiser and the appointed IPC Technical Delegate of this competition.
The certification is valid for 5 years.