FIS PARA SNOWSPORTS ADAPTIVE EQUIPMENT REGULATIONS 2026/2027

Adaptive Equipment Rules, Registration, Development, Pre-Approval, Approval and Control

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INTERNATIONAL
SKI AND SNOWBOARD
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Blochstrasse 2
CH-3653 Oberhofen am Thunersee
Switzerland

Phone: +41 33 244 6161
E-mail: mail@fisski.com
Website: fis-ski.com

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SECTION A – GENERAL PROVISIONS

1.1 Purpose

1.1.1 These Articles define the requirements for the registration, development, testing, approval and control of Adaptive Equipment used in FIS Para Snowsports competitions.

1.1.2 These provisions shall be applied in conjunction with: FIS Para Snowsports Classification Rules and Regulations; FIS International Competition Rules (ICR) and any other applicable FIS Regulations.

1.2 Scope

1.2.1 These rules apply to all Adaptive Equipment used by licensed athletes in FIS Para Snowsports competitions.

1.2.2 These provisions are binding for: Athletes; National Ski Associations (NSAs); Manufacturers and service providers.

1.3 Definitions

1.3.1 (Adaptive) Equipment: Any implement, apparatus, and/or technical aid adapted to the special needs of an Athlete to reduce the impact of their impairment(s) and that is permitted by these Rules and the ICR. Refractive or optical correction (such as eyeglasses or corrective lenses) are not considered to be Adaptive Equipment.

1.3.2 New Equipment: Any Adaptive Equipment which has been submitted as per art. 1.6.2.

1.3.3 Pre-Approved Equipment: Adaptive Equipment authorised by FIS for use in all FIS Sanctioned competitions **except** for World Cup, World Championships and Paralympic Winter Games.

1.3.4 Approved Equipment: Adaptive Equipment authorised by FIS for use in all FIS sanctioned competitions in accordance with these Articles.

1.3.5 Equipment Set: A complete system of Adaptive Equipment (e.g., sit-ski including all components).

1.4 General Principles

1.4.1 (Adaptive) Equipment shall compensate for activity limitations resulting from an eligible impairment and shall not provide a net performance advantage beyond functional equivalence.

1.4.2 Adaptive Equipment shall comply with the intent and application of the Classification Rules and shall not alter classification outcomes.

1.4.3 Adaptive Equipment must be safe and shall not pose a risk to the athlete or others.

1.4.4 Adaptive Equipment must be reproducible and available in principle to all athletes within the same sport class.

1.4.5 FIS may prohibit or restrict equipment that is contrary to fair competition.

1.4.6 Adaptive Equipment must not incorporate any technology that produces athletic performance by means of machines, engines, electronics, motors, robotic mechanisms, or comparable systems.

1.5 Adaptive Equipment Registration (FPDMS)

1.5.1 All Adaptive Equipment must be registered in the FIS Para Snowsports Data Management System (FPDMS) prior to use in competition.

1.5.2 Registration Procedure – the Adaptive Equipment Registration Manual published on the FIS Website.

1.6 Approval Process

1.6.1 The approval process consists of three stages: Development Registration or FPDMS Registration; Pre-Approval; Full Approval.

1.6.2 Stage 1 - Development or FPDMS Registration

- Development Registration: Required for any new development of Adaptive Equipment; the submission must be made via the discipline email address and must include concept description, intended function, and innovative characteristics; equipment may not be used in competition. or;
- FPDMS Registration – Adaptive Equipment which is already permitted by these Rules must be registered directly in FPDMS according to the Adaptive Equipment Registration Manual published on the FIS Website

1.6.3 Stage 2 – Pre-Approval Process

1.6.3.1 Upon registration and submission of Adaptive Equipment via FPDMS, FIS shall review each set with the status “Pending” and may request further details. Once sufficient information has been provided, FIS shall change the status to “Provisionally Approved.”

Pre-Approval is required before any use of New Equipment; application submitted through FPDMS; Pre-Approved Equipment may be used in all FIS sanctioned competitions except for World Cup, World Championships and Paralympic Winter Games.

1.6.4 Stage 3 – Full Approval: Granted only after Physical Evaluation has taken place (Section A - art. 1.7).

1.7 Physical Evaluation and Final Approval

1.7.1 Final Approval requires physical evaluation.

1.7.2 Equipment Review - Final Approval shall only be granted following physical evaluation of the Adaptive Equipment by a FIS representative.

1.7.3 Final Approval Procedure: FIS shall inform NSAs by 31 October of each season at which competitions Adaptive Equipment may be presented for Final Approval. If Final Approval is granted:

- an approval sticker shall be applied to the Adaptive Equipment;
- if necessary, a final photo of the approved Adaptive Equipment may be uploaded to FPDMS;
- the Adaptive Equipment status shall be set to “Approved.”

1.7.4 If an athlete changes equipment mid-season, the full process must be repeated and FIS needs to be notified as soon as possible of any changes.

1.8 Season Renewal

1.8.1 At the end of each season (June) FIS will put all Adaptive Equipment on Seasonal Review and the steps described in art. 1.8.3. and 1.8.4 shall apply.

1.8.2 NSAs must submit new Adaptive Equipment sets for review.

1.8.3 At the start of each season, NSAs must confirm continued use, update modified equipment, or archive unused equipment.

1.8.4 Adaptive Equipment not confirmed is not valid for competition.

1.9 Performance and Design Limits

1.9.1 FIS may define limits for dimensions, geometry, weight, mechanical characteristics and permitted/prohibited systems.

1.9.2 Limits are published in discipline-specific specifications (Section B, C and D).

1.9.3 Equipment exceeding limits shall not be approved.

1.10 Compliance, Control and Inspection

1.10.1 Monitoring Authority

FIS, through its appointed officials, shall monitor the use of technology and equipment prior to and/or at all FIS Para Snowsports sanctioned Competitions to ensure conformity with the principles outlined in these Regulations.

1.10.2 Assessment Criteria

Monitoring may include, but is not limited to, assessment of whether:

1.10.2.1 equipment and/or prosthetic components are commercially available to all athletes. Prototypes purpose-built exclusively for a specific athlete must be submitted as new development to FIS (art. 1.6.2) before going through the approval process.

1.10.2.2 equipment results in athletic performance being generated by machines, engines, electronics, motors, robotic mechanisms or similar.

1.10.2.3 equipment conforms with the sport-specific Adaptive Equipment Rules (Section B, C and D).

1.10.3 Registration Deadlines and Obligations

1.10.3.1 For all licensed athletes, all Adaptive Equipment including but not limited to sit-skis, prostheses, orthoses, blacked-out goggles (AS1 and NS1 only), and adaptive support must be registered in FPDMS by 30 September each year, in accordance with the Adaptive Equipment Registration Manual published on the FIS Website. In case of participation in competitions before 30 September (e.g. Competitions in the Southern Hemisphere and Rollerski competitions), the adaptive equipment must be registered minimum three weeks prior to the respective competition.

1.10.3.2 For newly licensed athletes Adaptive Equipment must be submitted as soon as practicably possible.

1.10.3.3 Any changes, adjustments or modifications after the registration deadline must be immediately communicated to FIS at: ParaAlpine@fis-ski.com, ParaCrossCountry@fis-ski.com or ParaSnowboard@fis-ski.com.

1.10.3.4 Approval of Adaptive Equipment registered after 30 September is at the discretion of FIS.

1.10.4 Authority for Sanctions

The final decision regarding any sanction(s) arising from breaches of equipment or technology rules shall lie with the Jury, in accordance with the ICR and these Regulations.

1.10.5 Ongoing Monitoring at Competitions

FIS, through its appointed Race Directors and Technical Delegates, shall continue to monitor the use of technology and Adaptive Equipment at all FIS-sanctioned competitions to ensure conformity with these Regulations and the principles set out in the ICR.

1.11 Technical Guidelines

1.11.1 FIS may issue Technical Guidelines to clarify interpretation or application.

1.11.2 Technical Guidelines are binding.

1.12 Final Provisions

1.12.1 In cases not covered by these rules, decisions shall be made by FIS.

1.12.2 These provisions may be amended in accordance with FIS rule-making procedures.

SECTION B – PARA ALPINE SKIING ADAPTIVE EQUIPMENT RULES

In accordance with the International Competition Rules of Para Alpine Skiing (ICR) and to monitor the use of technology and equipment, FIS requires NSAs to register all Adaptive Equipment including, but not limited to:

- Sit ski (including safety/braking mechanism)
- Outriggers
- Arm/hand guard
- Prosthetic and/or Orthosis
- Headset (including Head Protection) – VI Athletes only
- Any other Adaptive Equipment (equipment which has been modified or adapted to compensate for activity limitations resulting from the eligible impairment)

1.1 Sit Ski

A sit-ski consists of the following elements:

- moulded seat mounted on a frame.
- suspension system beneath the seat eases riding on uneven terrain and helps in turning by maximizing ski-snow contact.
- metal or plastic block in the shape of a boot sole that is the base that clicks into the ski's binding.
- braking device on both sides of the seat. which creates friction to prevent sliding.
- Legs cover (optional)

A sit-ski can be used in Uni-Ski or Dual-Ski.

Any applications to the sit-ski not defined above must be submitted as new development as per Section A, art. 1.6.2.

1.2 Outriggers

Arm crutches with ski tips attached. The system can flip out to allow the ski attachment to rise vertically to be used as a normal crutch.

1.3 Hand/Forearm Protectors

Hand/forearm protectors are permitted.

The hand protector cannot be designed to create additional length to the hand.
Extensions perpendicular to the long axis of the forearm are only permitted for Athletes in Sport Classes allowed to ski with only one or no ski poles. The maximum dimension of the extension shall be no more than 5 cm in any direction - height, length and width.

Athletes in Sport Classes that are allowed to ski with only one ski pole may not use a protection fixed to a ski pole in the impaired hand.

The forearm cannot exceed the skier's anatomical length as defined in the section under unilateral upper limb prosthesis.

1.4 Orthosis; Orthotic Device

Externally applied device used to modify the structural and functional characteristics of the neuro-muscular and skeletal systems. (For stabilizing, support, compensation, protection, prevention)

1.5 Prosthesis; Prosthetic Device

Externally applied device used to replace wholly, or in part, an absent or deficient limb segment.

1.6 Athletes with an Upper Limb Impairment/Amputation:

1.6.1 Unilateral

The overall length of the limb, including the prosthesis, cannot exceed the length of the unaffected limb with the fist closed as if gripping a pole.

1.6.2 Bilateral

The overall arm measurement from the tip of the acromion to the distal end of the prosthetic should be no longer than 0.399 x height (centimetres), with the arm in the anatomical position.
In the event that the arm can't rest in the anatomical position, then limb segments should be taken.
The Upper Arm measurement:
Tip of acromion to lateral epicondyle = 0.191 x height (cm)
The Forearm measurement:
Lateral epicondyle to radial styloid = 0.1485 x height (cm)
The Hand measurement:
Radial styloid to distal end of second metacarpal = 0.119/2 x height (cm)

The double below elbow amputee that will be wearing prosthesis, calculation can be simplified to:
Lateral epicondyle to the end of the prosthetic should be no longer than 0.208 x height (cm)

3. For those classes where the use of poles is specifically excluded (no poles), any prosthesis cannot have an extension device perpendicular to the long axis.

1.7 Athletes with a Lower Limb Impairment/Amputation:

1.7.1 Lower limb prostheses must be used with ski boots. Exception may apply for certain prostheses, that have been designed to be used without a ski boot. In this case, the NSA must follow the Adaptive Equipment approval process.

1.7.2 Unilateral

1.7.2.1 The overall length of the lower limb, including the prosthesis cannot exceed the overall length of the unaffected limb.

1.7.3 Bilateral

1.7.3.1 Athletes with Bilateral Below Knee Amputations:

Will be limited by the following formula as to the overall length of their lower extremities, including prostheses and ski boots for competition purposes:

Overall leg length (in cm)* = or < [(thigh length-13)/0.4 + 4.3] x 1.05

*including prosthesis and ski boots

The overall length of the leg including the prosthesis and ski boot equals or is less than the length of the thigh minus 13, divided by 0.4, plus a 4.3cm for the thickness of the ski boot sole with an additional 5% to the final length allowing for natural variation.

The thigh length is measured from the anterior superior iliac spine to the inferior pole of the kneecap or to the lower point of the medial femoral condyle if there is no patella. This measurement is carried out with the athlete supine.

The overall length of the leg will be measured from the anterior superior iliac spine to the heel of the ski boot placed on the prosthesis with the athlete standing.

The Maximal Allowed Standing Height (including the prosthesis and ski boots) will be measured in the standing position by using a vertical line from the top of the skull to a line connecting the base of the heels of ski boots. If there is any doubt the measurement

can be taken with the athlete standing on 2 sets of scales (equal weight) with the height being the vertical distance between the top of the skull and a line joining the base of both ski boot heels. Where possible a metal tape measure should be used for measuring. When the competition prosthesis has a fixed flexion in ankle or knee, the measure should be taken along the leg axis.

1.7.3.2 Athletes with Bilateral Above Knee Amputation:

The length of prostheses used by athletes with bilateral lower limb amputations will be determined using the 3-Step process described below.

Step 1: Estimate maximum standing height from Ulna length

Measure the distance between point of the elbow (olecranon process) and the ulna styloid.

Measure between the point of the elbow and the midpoint of the prominent bone of the wrist. The height in metres is determined from the below table based on the ulna length as measured in centimetres.

Table: Ulna length and maximum standing height

Ulna length (centimetres)	Men height (metres)	Women height (metres)
21		1.54
21.5		1.55
22		1.56
22.5		1.58
23		1.59
23.5		1.61
24	1.64	1.62
24.5	1.66	1.63
25	1.67	1.65
25.5	1.69	1.66
26	1.71	1.68
26.5	1.73	1.69
27	1.75	1.70
27.5	1.76	1.72
28	1.80	1.73
28.5	1.82	1.75

29	1.84	1.76
29.5	1.85	1.77
30	1.87	1.79
30.5	1.89	
31	1.91	
31.5	1.93	
32	1.94	

Step 2: Estimate maximum standing height based on measurement of Demi-span.

Demi-span is measured as the distance from the middle of the sternal notch to the tip of the middle finger in the coronal plane.

The measure is best obtained with the athlete standing with their back against a stable wall, right shoulder abducted to 90° with the palm of the hand facing forward. The measure is taken in centimetres.

The maximum standing height is then calculated from the following formula:

Women: Height in cm = (1.35 x demi-span (cm)) +60.1

Men: Height in cm = (1.40 x demi-span (cm)) +57.8

Step 3: Final estimate of maximum standing height:

Take the mean of the two estimates, maximum standing height estimated from the ulna length and maximum standing height estimated from demi-span.

The overall standing height of the Athlete with their competitive prostheses must be less than or equal to the mean estimated height, plus 4.3cm for the thickness of the ski boot sole plus an additional 2.5% to the final figure allowing for natural variation. This is demonstrated in the below formula:

Overall standing height (cm)* = or < [(result method 1 + result method 2)/ 2 + 4.3 cm] x 1.025

*including prosthesis and ski boots

The Maximal Allowed Standing Height (including the prosthesis and ski boots) will be measured in the standing position by using

a vertical line from the top of the skull to a line connecting the base of the heels of ski boots. If there is any doubt the measurement can be taken with the athlete standing on 2 sets of scales (equal weight) with the height being the vertical distance between the top of the skull and a line joining the base of both ski boot heels. Where possible a metal tape measure should be used for measuring. When the competition prosthesis has a fixed flexion in ankle or knee, the measure should be taken along the leg axis.

1.8 BLUETOOTH HEADSETS

VI athletes may choose to use Bluetooth Headsets for clear communication with their Guide. These must be securely attached to the crash helmet of both the athlete and guide and must not impact the safety performance of the crash helmet in any way.

SECTION C - PARA CROSS-COUNTRY ADAPTIVE EQUIPMENT RULES

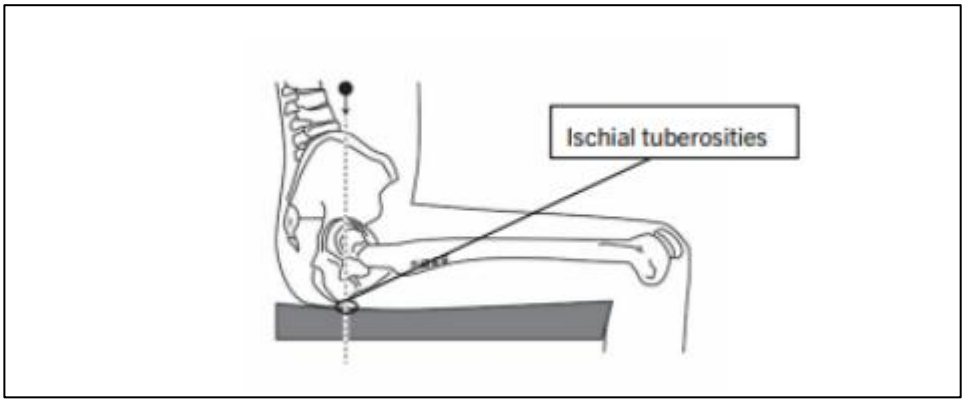
In accordance with the International Competition Rules of Para Cross-Country (ICR) and to monitor the use of technology and equipment, FIS requires NSAs to register the Athletes' equipment including, but not limited to:

- Sit skis including all anchor points for strapping, and all strapping
- Prostheses and/or Orthosis
- Arm-to-body strapping
- VI adaptive eyewear (e.g. goggles, opaque shades, glasses, etc.)
- Any other adaptive equipment, including all sit ski sitting surface interface, i.e. seating cushion, foam…

1.1 Sit Ski

1.1.1 The Para Cross-Country sit-ski shall consist of a sitting device with a fixed seat, which is not adjustable during the race. The sit-ski is mounted on a pair of cross-country skis or rolling devices (summer competition). No springs or flexible articulations are allowed in any segment of the sit ski, including the connection with the skis. The connection with the skis must be rigid.

1.1.2 The maximum allowable height difference between the athlete's seat surface (the point at which the athlete's most inferior aspect of the ischial tuberosity is positioned on a compressed seat cushion, if applicable, on the seat surface/seat cushion) and the top of the ski (the point on the ski, not including the binding, vertically aligned below the athlete's ischial tuberosity (see graphic below)) is 40cm.



1.1.3 Individual exceptions / allowances in the 40 cm seat height limit will be considered by FIS Para Cross-Country / Classification, on a case by case basis if the athlete experiences sit ski fitting limitations due to large stature/ large body proportions/ long lower extremity length. All ‚Exception Requests' must be sent to ParaCrossCountry@fis-ski.com as per the deadlines outlined under Section A – art. 1.10.3.

1.1.4 Athletes that compete in the Sitting category must be seated on the sit-ski at all times during the race, meaning that the athlete's ischial tuberosities must remain in contact with the seat throughout all competition.

1.1.5 To prevent movement of the ischial tuberosities off the seat, the athlete's upper thigh (most proximal femur) / hip must be strapped securely to the seat. The specifications below will apply to all sit skis with athlete's positioned with hips level to or higher than knees:

- The athlete's proximal hips must be strapped securely to the seat,
- The strap must connect to the back of the seat frame,
- The strap must be made of strong, non-stretch material,
- The buckle must lock securely and remain tight throughout competition,
- The strap must be secured tightly across the hips.

1.1.6 The athlete's sitting surface must not be covered by any clothing or race bib and must be easily seen at all times.

1.1.7 For sit skis that obstruct clear visualization of the athlete's ischial tuberosities rising from the seat, competition officials will perform detailed individualized assessments prior to and during competition to ensure adherence to art. 1.1.4 – Section C.

1.1.8 On both sides of the sit ski there must be an area of at least 15cm x 15cm where the bib number sticker can be clearly displayed.

1.2 Goggles, opaque shades or glasses

1.2.1 Goggles, opaque shades or glasses worn by NS1 athletes must conform to art. 12341.1.4 of the Para Cross-Country International Competition Rules.

1.3 Prosthesis

1.3.1 A prosthesis or prosthetic device is an externally applied device used to replace wholly, or in part, an absent or deficient limb segment. Prosthetic devices used in FIS Para Cross-Country Competitions must conform with these Equipment Rules.

1.3.2 For standing athletes competing with Prostheses (i.e., Unilateral or bilateral above knee amputations, unilateral or bilateral below knee amputations, bilateral lower limb dysmelia, or combined above knee and below knee amputations,), the following formulas apply for measuring the maximum allowable standing height (all measures are taken in centimetres (cm) rounded at 1 digit behind the comma):

For Athletes with below knee deficiencies:

Males	Max. height = 5.272 + (0.998 x sitting height) + (0.855 x thigh) + (0.882 x upper arm) + (0.820 x forearm) + 1.91
Females	Max. height = 0.126 + (1.022 x sitting height) + (0.698 x thigh) + (0.899 x upper arm) + (0.779 x forearm) + 1.73

For Athletes with above knee deficiencies:

Males	Max. height = 5.857 + (1.116 x sitting height) + (1.435 x upper arm) + (1.189 x forearm) + 2.62
Females	Max. height = 4.102 + (0.509 x arm span) + 0.966 x sitting height) + 2.14

In cases of multiple dysmelia, the formula with the highest R2 for which all parameters can be measured will be taken from the Canda 2009 publication (Canda, A. (2009) Stature estimation from body segment lengths in young adults: Application to people with physical disabilities. Journal of Anthropology, 28(2):71-82). The PE score will be added to the formula in table 4 (males) or table 5 (females) of this study (See tables below).

In cases with complex dysmelia, where no measures for the upper limb can be calculated, standing height will be based on the following formula:

Males	Max. height = sitting height / 0.52
Females	Max. height = sitting height / 0.533

In cases of Athletes with combined above and below knee amputation (or comparable dysmelia), the formula for below knee deficiency (see above) will be taken with the measurement of the thigh on the non-affected side.
All measures are taken in conformity with the ISAK standardized measures (International Society for the Advancement of Kinanthropometry).

Table 4 Regression equations on male sample

Code	R^2	RMSE	PE	Stature (cm)=
M 1_m	0.978	1.41	1.54	1.346+1.023 * lower leg+0.957 * sitting height+0.530 * thigh+0.493 * upper arm+0.228 * forearm
M 2_m	0.978	1.43	1.54	1.575+1.087 * lower leg+0.969 * sitting height+0.532 * thigh+0.551 * upper arm
M 3_m	0.978	1.44	1.47	0.947+0.135 * arm span+0.914 * sitting height+0.545 * thigh+1.067 * lower leg
M 4_m	0.975	1.53	1.50	2.630+0.992 * sitting height+1.245 * lower leg+0.609 * thigh+0.216 * foot
M 5_m	0.974	1.54	1.49	2.590+1.027 * sitting height+1.302 * lower leg+0.613 * thigh
M 6_m	0.969	1.69	1.77	2.354+0.179 * arm span+0.948 * sitting height+1.376 * lower leg
M 7_m	0.963	1.84	1.85	4.866+1.753 * lower leg+1.109 * sitting height
M 8_m	0.961	1.89	1.91	−5.272+0.998 * sitting height+0.855 * thigh+0.882 * upper arm+0.820 * forearm
M 9_m	0.955	2.03	2.03	−6.059+1.059 * sitting height+0.953 * thigh+1.233 * upper arm
M 10_m	0.936	2.43	2.62	−5.857+1.116 * sitting height+1.435 * upper arm+1.189 * forearm
M 11_m	0.931	2.52	2	−7.517+1.283 * sitting height+1.439* thigh
M 12_m	0.928	2.57	2.82	29.795+0.333 * arm span+0.935 * lower leg+0.673 * thigh+0.771 * foot
M 13_m	0.927	2.60	2.49	−9,049+ 0.527* arm span+0.973 * sitting height
M 14_m	0.923	2.65	2.88	31.768+0.411 * arm span+1.043 * lower leg+0.673 * thigh
M 15_m	0.922	2.67	2.97	−7.217+1.231 * sitting height+2.075 * upper arm
M 16_m	0.920	2.72	2.91	36.224+0.979 * lower leg+0.856 * upper arm+1.183 * foot+0.723 * thigh+0.402 * forearm
M 17_m	0.918	2.73	2.85	37.010+1.075 * lower leg+0.954 * upper arm+1.270 * foot+0.729 * thigh
M 18_m	0.910	2.87	2.97	34.937+0.479 * arm span+1.426* lower leg
M 19_m	0.908	2.91	2.98	41.771+1.421 * lower leg+1.518 * foot+0.887 * thigh
M 20_m	0.903	2.98	2.98	41.642+1.493 * lower leg+1.238 * upper arm+1.360 * foot
M 21_m	0.890	3.19	3.38	31.176+1.382 * upper arm+1.123 * thigh+1.068 * forearm+1.123 * hand
M 22_m	0.884	3.25	3.18	50.870+1.899 * lower leg+1.559 * upper arm
M 23_m	0.883	3.23	3.61	37.026+1.507 * upper arm+1.164 * thigh+1.451 * forearm
M 24_m	0.883	3.27	3.16	49.629+2.099 * lower leg+1.732 * foot
M 25_m	0.862	3.55	3.66	40.422+ 2.232 * upper arm+1.382 * thigh
M 26_m	0.844	3.79	3.88	35.854+2.203 * upper arm+1.577 * forearm+1.400 * hand
M 27_m	0.834	3.91	4.15	43.424+ 2.398 * upper arm+2.083 * forearm

Code M $n°_m$: M, multiple regression equation; n°, serial number; m: male. RMSE: root mean square error. PE: pure error

Table 5 Regression equations on female sample

Code	R^2	RMSE	PE	Stature (cm)=
M 1_f	0.959	1.57	1.25	1.772+0.159 * arm span+0.957 * sitting height+0.424 * thigh+0.966 * lower leg
M 2_f	0.959	1.57	1.34	2.305+1.013 * lower leg+0.970 * sitting height+0.451 * thigh+0.513 * upper arm +0.253 * foot
M 3_f	0.958	1.59	1.34	2.907+1.062 * lower leg+1.005 * sitting height+0.453 * thigh+0.529 * upper arm
M 4_f	0.955	1.65	1.33	3.326+1.007 * sitting height+1.219 * lower leg+0.523 * thigh+0.299 * foot
M 5_f	0.954	1.67	1.31	4.082+1.285 * lower leg+1.049 * sitting height+0.528 * thigh
M 6_f	0.951	1.71	1.45	1.815+0.212 * arm span+0.975 * sitting height+1.173 * lower leg
M 7_f	0.940	1.89	1.55	5.192+1.711 * lower leg+1.116 * sitting height
M 8_f	0.936	1.96	1.73	−0.126 +1.022 * sitting height+0.698 * thigh+0.899 * upper arm+0.779 * forearm
M 9_f	0.929	2.06	1.92	−0.686+1.061 * sitting height+0.814 * thigh+1.237 * upper arm
M 10_f	0.918	2.22	2.14	−4.102+0.509 * arm span+0.966 * Sitting height
M 11_f	0.911	2.3	2.04	−0.559+1.094 * sitting height+1.325 * upper arm+1.229 * forearm
M 12_f	0.892	2.54	2.34	−1.663+1.184 * sitting height+2.039 * upper arm
M 13_f	0.894	2.51	2.23	0.685+1.246 * sitting height+1.306 * thigh
M 14_f	0.875	2.74	2.68	35.709+0.328 * arm span+0.803 * lower leg+0.535 * thigh+0.973 * foot
M 15_f	0.866	2.84	2.96	40.436+1.009 * lower leg+1.359 * foot+0.627 * thigh+0.939 * upper arm
M 16_f	0.864	2.86	2.66	41.582+0.417* arm span+0.888 * lower leg+0.522 * thigh
M 17_f	0.852	2.98	2.77	42.556+0.489 * arm span+1.142 * lower leg
M 18_f	0.851	2.99	3.13	45.104+1.399 * lower leg+1.526 * foot+0.776 * thigh
M 19_f	0.825	3.24	3.10	42.361+1.240 * upper arm+0.934 * thigh+1.239 * hand+0.973 * forearm
M 20_f	0.822	3.26	3.36	50.489+2.047 * lower leg+1.693 * foot
M 21_f	0.815	3.33	3.20	41.502+1.578 * upper arm+1.075 * thigh+1.645 * hand.
M 22_f	0.795	3.50	3.49	52.044+2.077 * upper arm+1.154 * thigh
M 23_f	0.780	3.63	3.36	46.344+1.870 * upper arm+1.630 * forearm+1.278 * hand
M 24_f	0.769	3.71	3.57	53.970+2.105 * upper arm+1.966 * forearm

Code M $n°_m$: M, multiple regression equation; n°, serial number; f, female. RMSE: root mean square error. PE: pure error

Figure 1: (Canda, A. (2009). Stature estimation from body segment lengths in young adults: Application to people with physical disabilities. Journal of Anthropology, 28(2):71-82)

1.4 Orthosis; ORTHOTIC DEVICE

1.4.1 An orthosis or an orthotic device is an externally applied device used to modify the structural and functional characteristics of the neuro-muscular and skeletal systems (For stabilizing, support, compensation, protection, prevention). Orthosis/orthotic devices worn by athletes during competition must conform to these Equipment Rules. Athletes wearing orthotic devices during competition must declare this during Athlete Evaluation. If an athlete changes or starts wearing an orthotic device after Athlete Evaluation, the athlete must declare the change to FIS.

1.5 Prohibited technology

1.5.1 Use of the following technology is prohibited at FIS Para Cross-Country Sanctioned Competitions:

1.5.1.1 equipment that results in athletic performance being generated by machines, engines, electronics, motors, robotic mechanisms or the like; and

1.5.1.2 osteo-integrated prosthesis.

SECTION D - PARA SNOWBOARD ADAPTIVE EQUIPMENT RULES

In accordance with the International Competition Rules of Para Snowboard (ICR) and to monitor the use of technology and equipment, FIS requires NSAs to register all Adaptive Equipment including, but not limited to:

- Orthosis
- Prosthetic arm or leg/boot
- Any other Adaptive Equipment (equipment which has been modified or adapted to compensate for activity limitations resulting from the eligible impairment)

1.1 Orthosis; orthotic device

Externally applied device used to modify the structural and functional characteristics of the neuro-muscular and skeletal systems (For stabilizing, support, compensation, protection, prevention).

1.2 Prosthesis; prosthetic device

Externally applied device used to replace wholly, or in part, an absent or deficient limb segment.
Athletes in the Upper Limb (UL) Sport Class shall not use prosthetic devices, hooks, or any other external aids to push or pull from the start. Exceptions to this rule may be requested to FIS through the Adaptive Equipment Approval process (Section A, art. 1.6 and 1.7).

1.3 Athletes with an Upper Limb Impairment/Amputation:

1. Unilateral

The overall length of the limb, including the prosthesis, cannot exceed the length of the unaffected limb with the hand open.

2. Bilateral

The overall arm measurement from the tip of the acromion to the distal end of the prosthetic should be no longer than 0.399 x height (centimetres), with the arm in the anatomical position.

In the event that the arm cannot rest in the anatomical position, then limb segments should be taken.

The Upper Arm measurement:

Tip of acromion to lateral epicondyle = 0.191 x height (cm)

The Forearm measurement:

Lateral epicondyle to radial styloid = 0.1485 x height (cm)

The Hand measurement:

Radial styloid to distal end of second metacarpal = 0.119/2 x height (cm)

The double below elbow amputee that will be wearing prosthesis, calculation can be simplified to:

Lateral epicondyle to the end of the prosthetic should be no longer than 0.208 x height (cm).

1.4 Athletes with a Lower Limb Impairment/Amputation:

1.4.1 Lower limb prostheses must be used with snowboard boots

1.4.2 Unilateral

The overall length of the lower limb, including the prosthesis cannot exceed the overall length of the unaffected limb.

1.4.3 Bilateral

1.4.3.1 Athletes with Bilateral Below Knee Amputations:

Will be limited by the following formula as to the overall length of their lower extremities, including prostheses and snowboard boots for competition purposes:

Overall leg length (in cm)* = or < (thigh length-13)/0.4 x 1.05

**including prosthesis*

The overall length of the leg including the prosthesis equals or is less than the length of the thigh minus 13, divided by 0.4, with an additional 5% to the final length allowing for natural variation.

The thigh length is measured from the anterior superior iliac spine to the inferior pole of the kneecap or to the lower point of the medial femoral condyle if there is no patella. This measurement is carried out with the athlete supine.

The overall length of the leg will be measured from the anterior superior iliac spine to the heel of the prosthesis with the athlete standing.

The Maximal Allowed Standing Height (including the prosthesis) will be measured in the standing position by using a vertical line from the top of the skull to a line connecting the base of the heels of prosthesis. If there is any doubt the measurement can be taken with the athlete standing on 2 sets of scales (equal weight) with the height being the vertical distance between the top of the skull and a line joining the base

of both heels. Where possible a metal tape measure should be used for measuring. When the competition prosthesis have a fixed flexion in ankle or knee, the measure should be taken along the leg axis.

1.4.3.2 Athletes with Bilateral Above Knee Amputations:

The length of prostheses used by athletes with bilateral lower limb amputations will be determined using the 3-Step process described below.

Step 1: Estimate maximum standing height from Ulna length

Measure the distance between point of the elbow (olecranon process) and the ulna styloid.

Measure between the point of the elbow and the midpoint of the prominent bone of the wrist. The height in metres is determined from the below table based on the ulna length as measured in centimetres.

Table: Ulna length and maximum standing height		
Ulna Length (centimetres)	Men Height (metres)	Women Height
21		1.54
21.5		1.55
22		1.56
22.5		1.58
23		1.59
23.5		1.61
24	1.64	1.62
24.5	1.66	1.63
25	1.67	1.65
25.5	1.69	1.66
26	1.71	1.68
26.5	1.73	1.69
27	1.75	1.70
27.5	1.76	1.72
28	1.80	1.73
28.5	1.82	1.75
29	1.84	1.76
29.5	1.85	1.77
30	1.87	1.79
30.5	1.89	

31	1.91	
31.5	1.93	
32	1.94	

Step 2: Estimate maximum standing height based on measurement of Demi-span.

Demi-span is measured as the distance from the middle of the sternal notch to the tip of the middle finger in the coronal plane.

The measure is best obtained with the athlete standing with their back against a stable wall, right shoulder abducted to 90° with the palm of the hand facing forward. The measure is taken in centimetres.

The maximum standing height is then calculated from the following formula:

Women: Height in cm = (1.35 x demi-span (cm)) +60.1

Men: Height in cm = (1.40 x demi-span (cm)) +57.8

Step 3: Final estimate of maximum standing height:

Take the mean of the two estimates, maximum standing height estimated from the ulna length and maximum standing height estimated from demi-span.

The overall standing height of the Athlete with their competitive prostheses must be less than or equal to the mean estimated height, plus an additional 2.5% to the final figure allowing for natural variation. This is demonstrated in the below formula:

Overall standing height (cm) = or < (result method 1 + result method 2)/ 2 x 1.025

*including prosthesis

The Maximal Allowed Standing Height (including the prosthesis) will be measured in the standing position by using a vertical line from the top of the skull to a line connecting the base of the heels of prosthesis. If there is any doubt the measurement can be taken with the athlete standing on 2 sets of scales (equal weight) with the height being the vertical distance between the top of the skull and a line joining the base of both ski boot heels. Where possible a metal tape measure should be used for measuring. When the completion prosthesis has a fixed flexion in ankle or knee, the measure should be taken along the leg axis.