

IPCAS Statement on the use of Prosthetics.

The following rules apply to the length of prostheses used by athletes in competition.

Athletes with bilateral below knee amputation

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 IPC competition purposes:

Overall leg length (in cm)* = or < $[(\text{thigh length}-13)/0.4 + 4.3] \times 1.05$

**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.

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 (olecronon 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)	Male Height (metres)	Female 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:
 - Females: Height in cm = (1.35 x demi-span (cm)) +60.1
 - Males: 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 athlete's height is 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 both 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.

IPC Alpine Skiing reserves the right to measure the athlete at any IPC sanctioned event.