



## Winter Paralympic Athletes Challenged with Injuries Too

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The first Winter Paralympic Games took place in Sweden in 1976, and 53 athletes participated in two sports. The Games have grown exponentially since then with more than 670 athletes participating in 80 events across six sports in the most recent PyeongChang Paralympics in 2018. This growth can be attributed to several factors, including the continued development of Paralympic sports in general, advances in modified sports equipment, adaptive techniques, and the development of new sports geared toward athletes with impairment.

Adaptations include a single Paralympian on a snowboard course at one time as opposed to four athletes in the able-bodied version, the use of a sledge and two adapted hockey sticks for ice sledge hockey, a guided skier for visually impaired athletes, a single ski for a single leg amputee, and a mono ski for a paralyzed athlete. Due to growth of the Paralympics, the International Paralympic Committee (IPC) adopted a medical code in 2011 to protect the health of the participants and minimize the chance of injury and, to accomplish this, implemented a prospective injury surveillance program.

Studies have reported injury rates of 9.4% in Salt Lake City (2002), 8.4% in Torino (2006), 23.8% in Vancouver (2010), and 24.4% for Sochi (2014). The increase in injury rates is partially due to better reporting of injuries, but there were still some concerns with the injury patterns in Sochi. First of all, there was a six-fold increase in acute alpine injuries from the 2010 to the 2014 games. This was attributed to steeper course settings and higher ambient temperatures/ lower altitudes resulting in less optimal snow conditions in Sochi. Secondly, the incidence of injury in the Sochi Paralympians was three times that of the able-bodied Olympians, which is in contrast to prior studies reporting a similar incidence. Finally the injury rate in Sochi was twice the injury rate in the London 2012 Summer Paralympic games. This

could be attributed to the environmental factors discussed previously in Sochi and the high risk nature of the Winter Games sports, including the addition of para-snowboarding.

As a result of the high injury rate seen at the Sochi Games, the IPC Medical Committee made recommendations to help prevent injuries in the PyeongChang Games. These included an increase in training runs to familiarize the athletes with the courses and a more optimal start location to avoid steep grades. Also, the courses were widened to prevent the tight turns seen with the narrow courses, and the course designs included “waves” instead of “jumps,” which are high risk for mono skiers. Changes were also made in the medical coverage including constant radio communication between the medical staff and course officials in terms of course conditions, a pre-Games education program for medical and coaching staffs, and an independent race director who makes independent safety decisions including amending start times and postponing or canceling events. No data has been reported yet as to whether these changes had an impact on the injury rate; but, it is important to continue to study this athletic population and make adjustments to help lower the high injury rate.

### References

1. Derman W, Blauwet C, Webborn N, Schwellnus M, Van de Vliet P, Lazarovski D. Mitigating risk of injury in alpine skiing in the Pyeongchang 2018 Paralympic Winter Games: the time is now! [Editorial]. *Br J Sports Med*. 2018.52(7):419-420.
2. Webborn N, Willick S, Emery CA. The injury experience at the 2010 Winter Paralympic Games. *Clin J Sports Med*. 2012.22(1):3-9.
3. Derman W, Schwellnus MP, Jordaan E, Runciman P, Van de Vliet P, Blauwet C, Webborn N, Willick S, Stomphorst J. High incidence of injury at the Sochi 2014 Winter Paralympic Games: a prospective