

International
Paralympic Committee



Clinical Lessons for Team Physicians: what the IISS tells us!

**Professor Wayne Derman MD PhD
IPC Medical Commission
University of Cape Town**

Greetings and Thanks from Cape Town



Illness and injury in athletes during the competition period at the London 2012 Paralympic Games: development and implementation of a web-based surveillance system (WEB-IISS) for team medical staff

Wayne Derman,^{1,2} Martin Schwellnus,^{1,2} Esme Jordaan,³ Cheri A Blauwet,^{4,5} Carolyn Emery,^{6,7} Pia Pit-Grosheide,⁵ Norma-Angelica Patino Marques,^{5,8} Oriol Martinez-Ferrer,^{5,9} Jaap Stomphorst,^{5,10} Peter Van de Vliet,^{5,11} Nick Webborn,¹² Stuart E Willick^{5,13}

Original article

Factors associated with illness in athletes participating in the London 2012 Paralympic Games: a prospective cohort study involving 49 910 athlete-days

Martin Schwellnus,^{1,2} Wayne Derman,^{1,2} Esme Jordaan,³ Cheri A Blauwet,^{4,5} Carolyn Emery,^{6,7} Pia Pit-Grosheide,⁵ Norma-Angelica Patino Marques,^{8,5} Oriol Martinez-Ferrer,^{5,9} Jaap Stomphorst,^{10,5} Peter Van de Vliet,^{5,11} Nick Webborn,¹² Stuart E Willick,^{5,13}

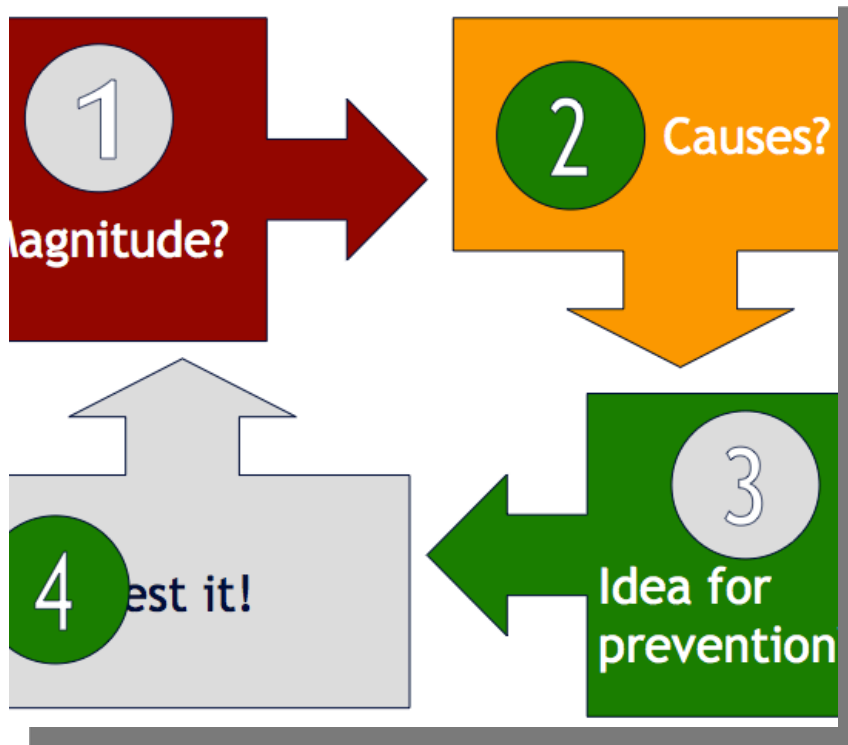
Original article

The epidemiology of injuries at the London 2012 Paralympic Games

Stuart E Willick,^{1,2} Nick Webborn,³ Carolyn Emery,⁴ Cheri A Blauwet,^{1,5} Pia Pit-Grosheide,¹ Jaap Stomphorst,¹ Peter Van de Vliet,⁶ Norma Angelica Patino Marques,^{1,7} J Oriol Martinez-Ferrer,^{1,8} Esmè Jordaan,⁹ Wayne Derman,^{1,10} Martin Schwellnus¹⁰



What is the relevance to the team physician?



- How many of my athletes will get injured or ill?
- What illnesses and injuries are the most common?
- What are high risk sports?
- What are the mechanisms and aetiology
- Can I reduce or prevent illness and injury in my team?

Illness and injury in athletes during the competition period at the London 2012 Paralympic Games: development and implementation of a web-based surveillance system (WEB-IISS) for team medical staff

Wayne Derman,^{1,2} Martin SchwelInus,^{1,2} Esme Jordaan,³ Cheri A Blauwet,^{4,5} Carolyn Emery,^{6,7} Pia Pit-Grosheide,⁵ Norma-Angelica Patino Marques,^{5,8} Oriol Martinez-Ferrer,^{5,9} Jaap Stomphorst,^{5,10} Peter Van de Vliet,^{5,11} Nick Webborn,¹² Stuart E Willick^{5,13}



Table 1

Athlete-days in countries with and without own medical support in the precompetition, competition and total study period of the London 2012 Paralympic Games

	Countries without own medical support (EMDCS)	Countries with own medical support (EMDCS and WEB-IISS)	Total
NPCs (n)	82	78	160
Athletes (n)	236	3329	3565
Athlete-days (precompetition period)	708	9987	10695
Athlete-days (competition period)	2596	36619	39215
Athlete-days (total period)	3304	46606	49910



Illness and injury in athletes during the competition period at the London 2012 Paralympic Games: development and implementation of a web-based surveillance system (WEB-IISS) for team medical staff

Wayne Derman,^{1,2} Martin Schwelnus,^{1,2} Esme Jordaan,³ Cheri A Blauwet,^{4,5} Carolyn Emery,^{6,7} Pia Pit-Grosheide,⁵ Norma-Angelica Patino Marques,^{5,8} Oriol Martinez-Ferrer,^{5,9} Jaap Stomphorst,^{5,10} Peter Van de Vliet,^{5,11} Nick Webborn,¹² Stuart E Willick^{5,13}



Table 2

Incidence rate of percentage of athletes with injury and illness reported during the precompetition, competition and total period of the London 2012 Paralympic Games

	Precompetition period (3 days)			Competition period (11 days)			Total period (14 days)		
	95% CI			95% CI			95% CI		
Injury									
IR	14.8	12.6	17.3	12.1	11.0	13.3	12.7	11.7	13.7
% of athletes	4.3	3.6	4.9	10.9	9.8	11.9	15.1	13.9	16.3
Illness									
IR	14.6	12.4	17.1	12.8	11.7	13.9	13.2	12.2	14.2
% of athletes	3.9	3.3	4.6	10.2	9.2	11.2	14.2	13.0	15.3

IR, incidence rate (injuries/illness per 1000 athlete-days) with 95% CI.

Olympic Games:

11% Injured

7% Illness

? Exposure data

? 9.2 Inj/1000 a days

? 5.1 Ill/1000 a days



Results



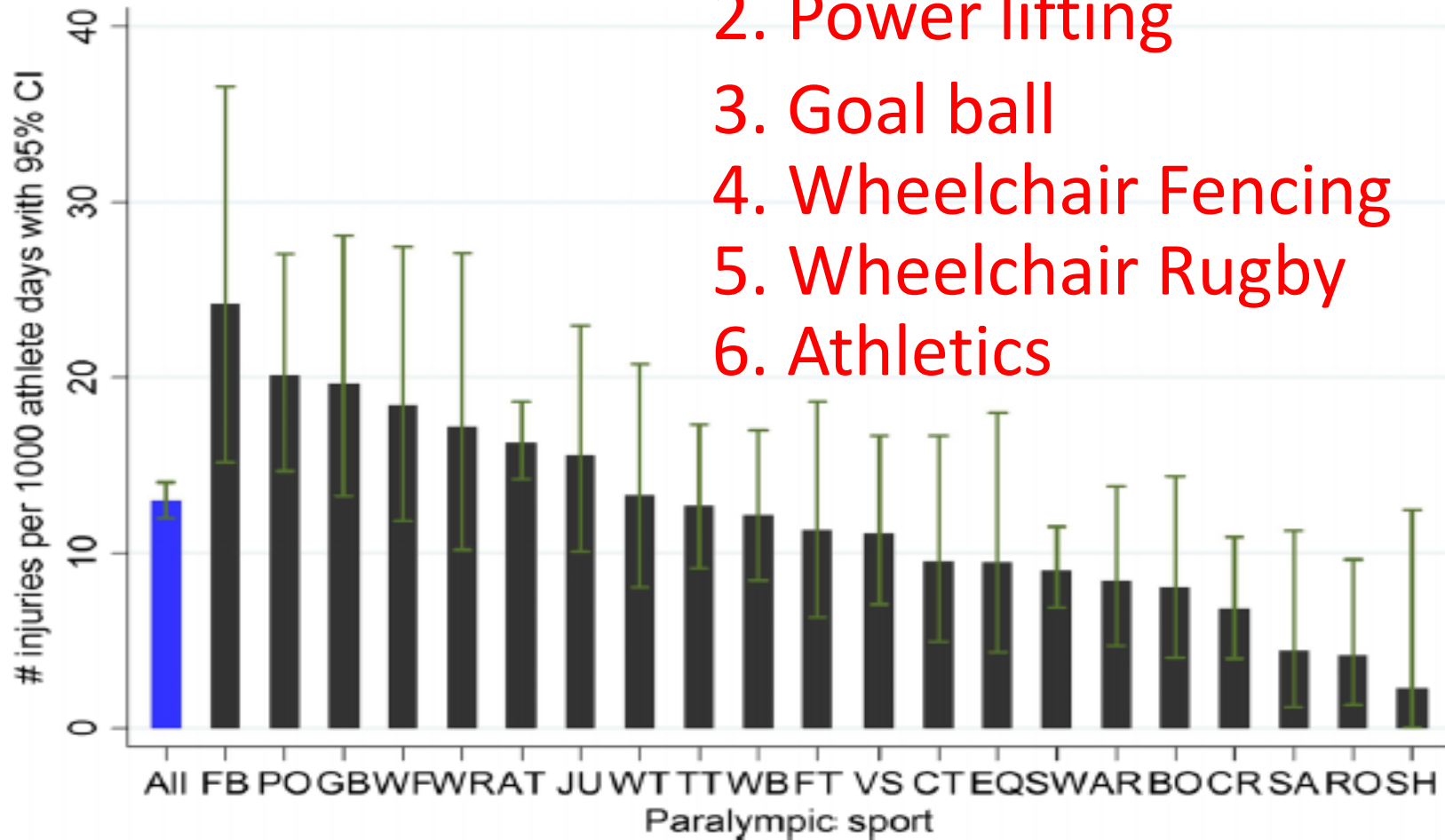
- 633 injuries identified in 539 athletes
- Incidence proportion (IP) = 17.8 injuries/100 athletes (95% CI; 16.5-19.0)
- Vancouver 2010 Winter Paralympics IP = 23.8 injuries/100 athletes (95% CI; 20.1-27.7) (n=505)
- Injury incidence rate (IR) = 12.7 injuries/1000 athlete-days (95% CI; 11.7-13.7)



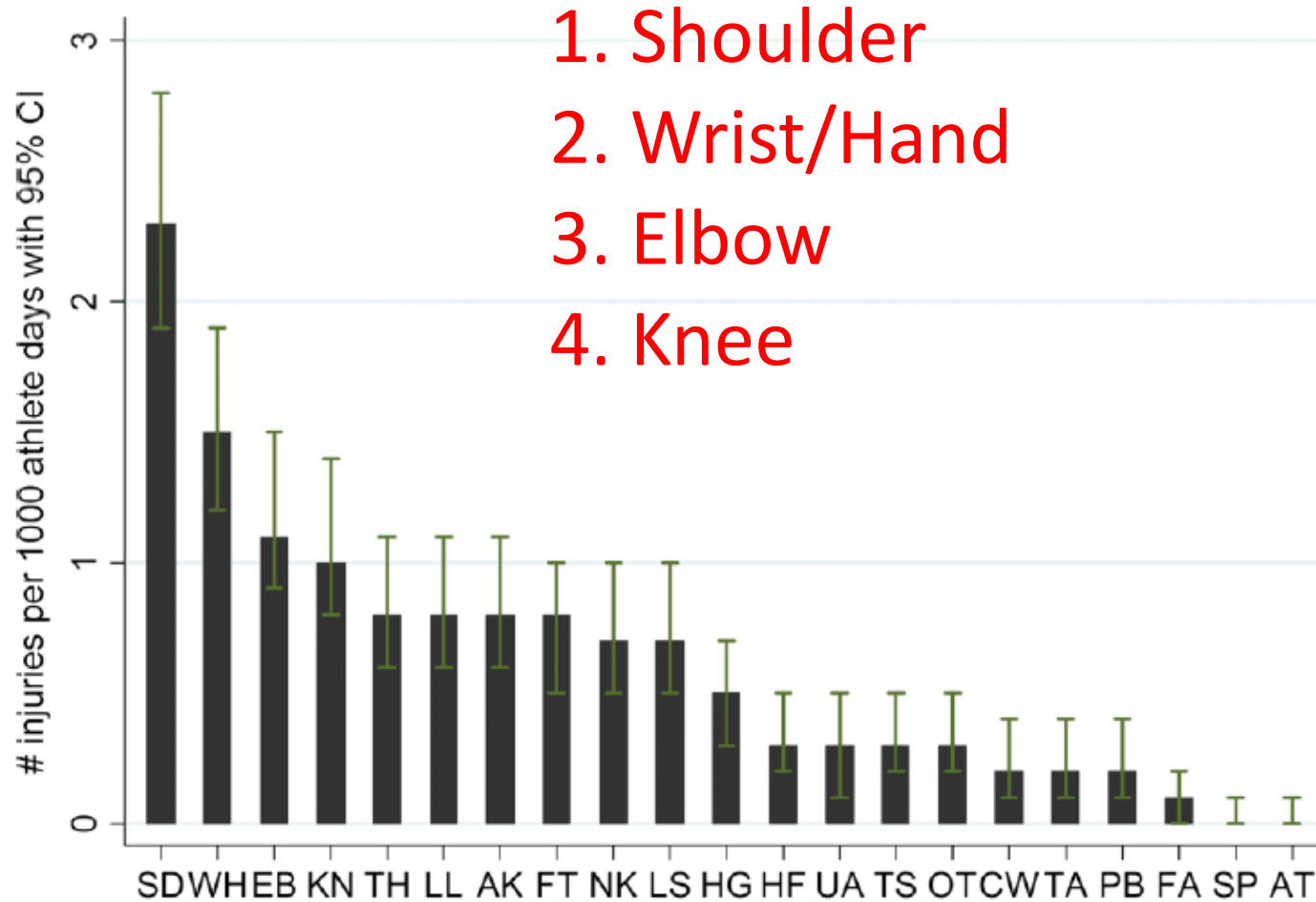
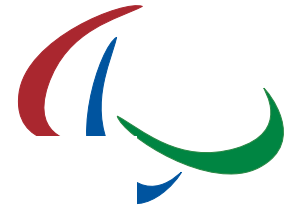
Injury Rate by Sport



1. Football 5-a-side
2. Power lifting
3. Goal ball
4. Wheelchair Fencing
5. Wheelchair Rugby
6. Athletics

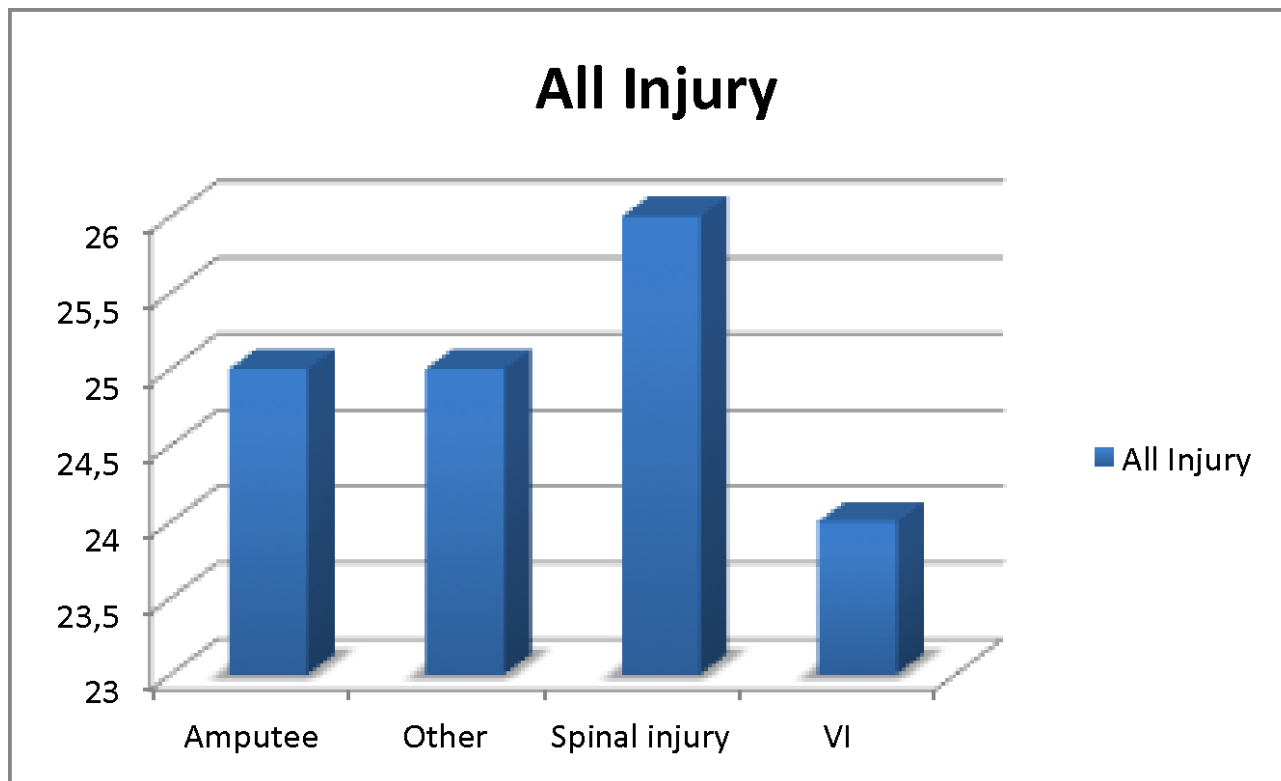


Injury Rate by Body Part





Proportion of all injury by impairment



Injury Rate by Sex and Age Group



	Total period				Precompetition period				Competition period			
	N	IR	95% CI		N	IR	95% CI		N	IR	95% CI	
Females	196	11.5	9.9	13.2	61	16.7	12.8	21.4	135	10.1	8.4	11.9
Males	437	13.3	12.1	14.6	97	13.8	11.2	16.8	340	13.2	11.8	14.6
Age 13–25	180	11.3	9.7	13.0	43	12.6	9.1	16.9	137	10.9	9.2	12.9
Age 26–34	254	14.5	12.8	16.4	64	17.1	13.2	21.8	190	13.8	11.9	15.9
Age 35–67	199	12.1	10.5	13.9	51	14.5	10.8	19.0	148	11.5	9.7	13.5
All injuries	633	12.7	11.7	13.7	158	14.8	12.6	17.3	475	12.1	11.0	13.3

N = Number of athletes

IR = Incidence Rate (# injuries/1000 athlete-days)

- Injury rates were similar in male and female athletes
- Median age = 30 years (range 13–67)
- Highest Injury Rate in 26-34 year old athletes

Injury Onset by Sport



Sport	Number of injuries	Percentage of acute injuries	Percentage of acute or chronic injuries	Percentage of overuse injuries
Football 5-a-side	22	54	23	23
Powerlifting	44	14	25	61
Goalball	30	77	10	13
Wheelchair fencing	24	42	0	58
Wheelchair rugby	18	61	22	17
Athletics	216	50	21	29
Judo	25	64	16	20
Wheelchair tennis	19	37	16	47
Table tennis	40	47	8	45
Wheelchair basketball	34	65	12	23
Football 7-a-side	15	73	20	7
Seated volleyball	23	65	13	22
Cycling track	12	75	0	25
Equestrian	9	56	22	22
Swimming	62	47	16	37
Archery	15	33	20	47
Boccia	11	91	0	9
Cycling road	17	71	12	17
Sailing	4	50	25	25
Rowing	5	60	0	40
Shooting	1	100	0	0

- New onset acute traumatic injuries = 51.5% of all injuries
- Chronic overuse injuries = 31.8% of all injuries
- Acute on chronic injuries = 16.7% of all injuries

Highlights



- Web-based injury surveillance (IPC-IIS) ↑'s compliance
- Male and female athletes have similar injury rates
- In female athletes, pre-competition injury rates are higher than competition injury rates
- Injury rates are the lowest in the younger athletes
- Half of all injuries seen at the summer Paralympics are new onset acute injuries
- Highest rates of injury are shoulder, wrist/hand and elbow injuries
- Highest rates of injury in football 5-a-side, powerlifting, goalball, wheelchair fencing, wheelchair rugby, & athletics



Protection of the health of the athlete.

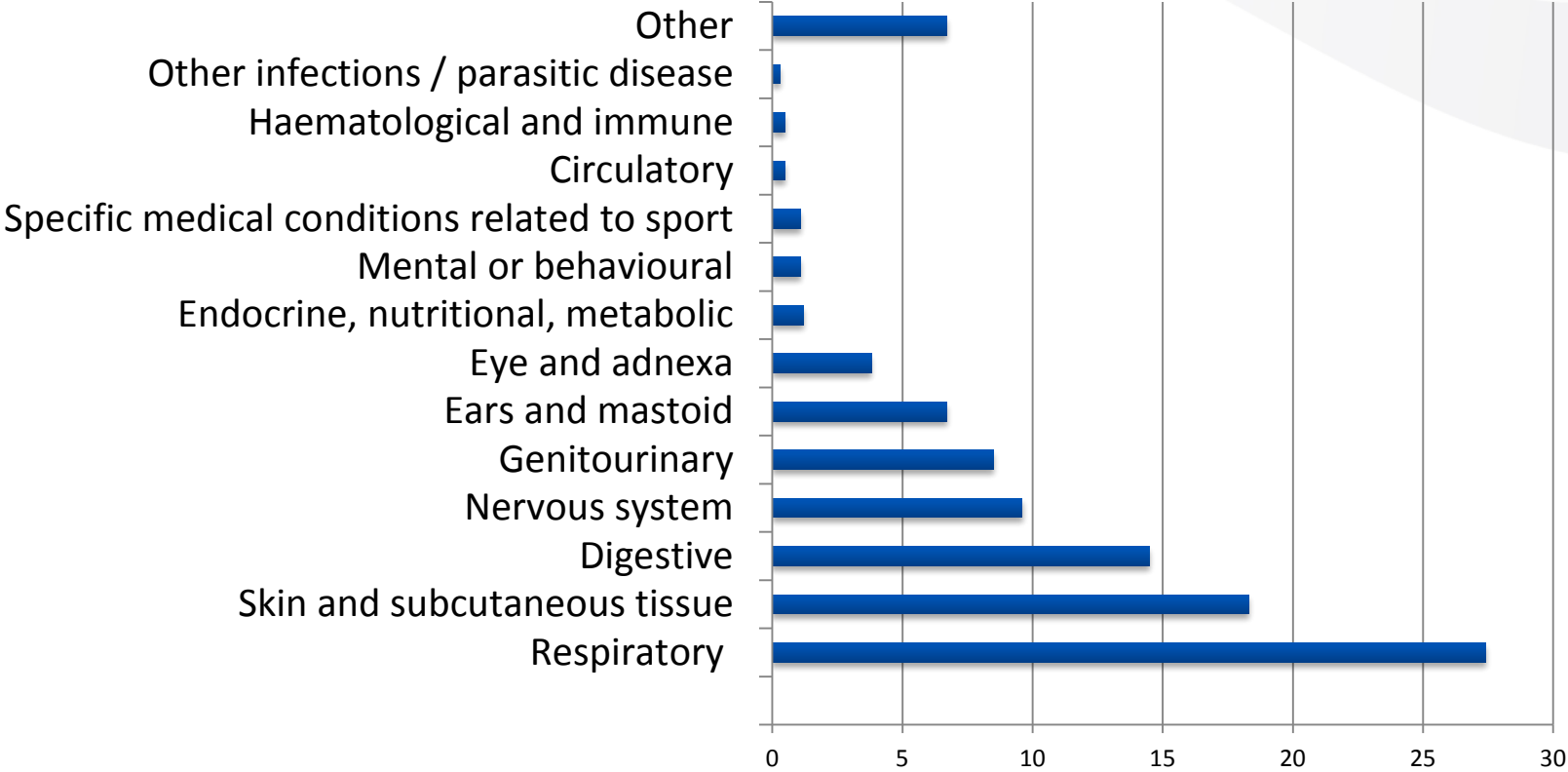


- Illness may not be benign (time loss or life threatening)
- Return to play

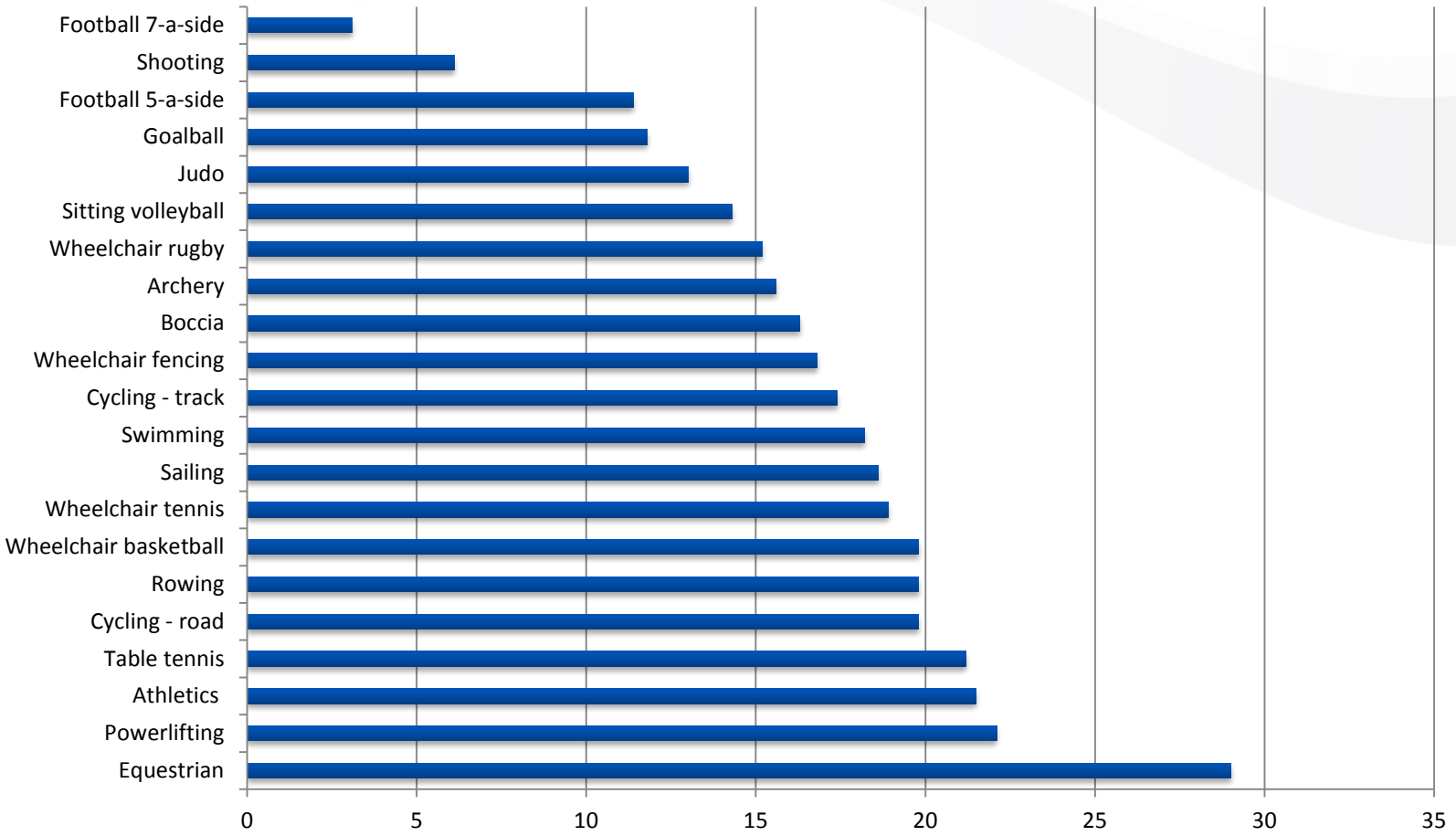
What illnesses are common in Paralympic Athletes?



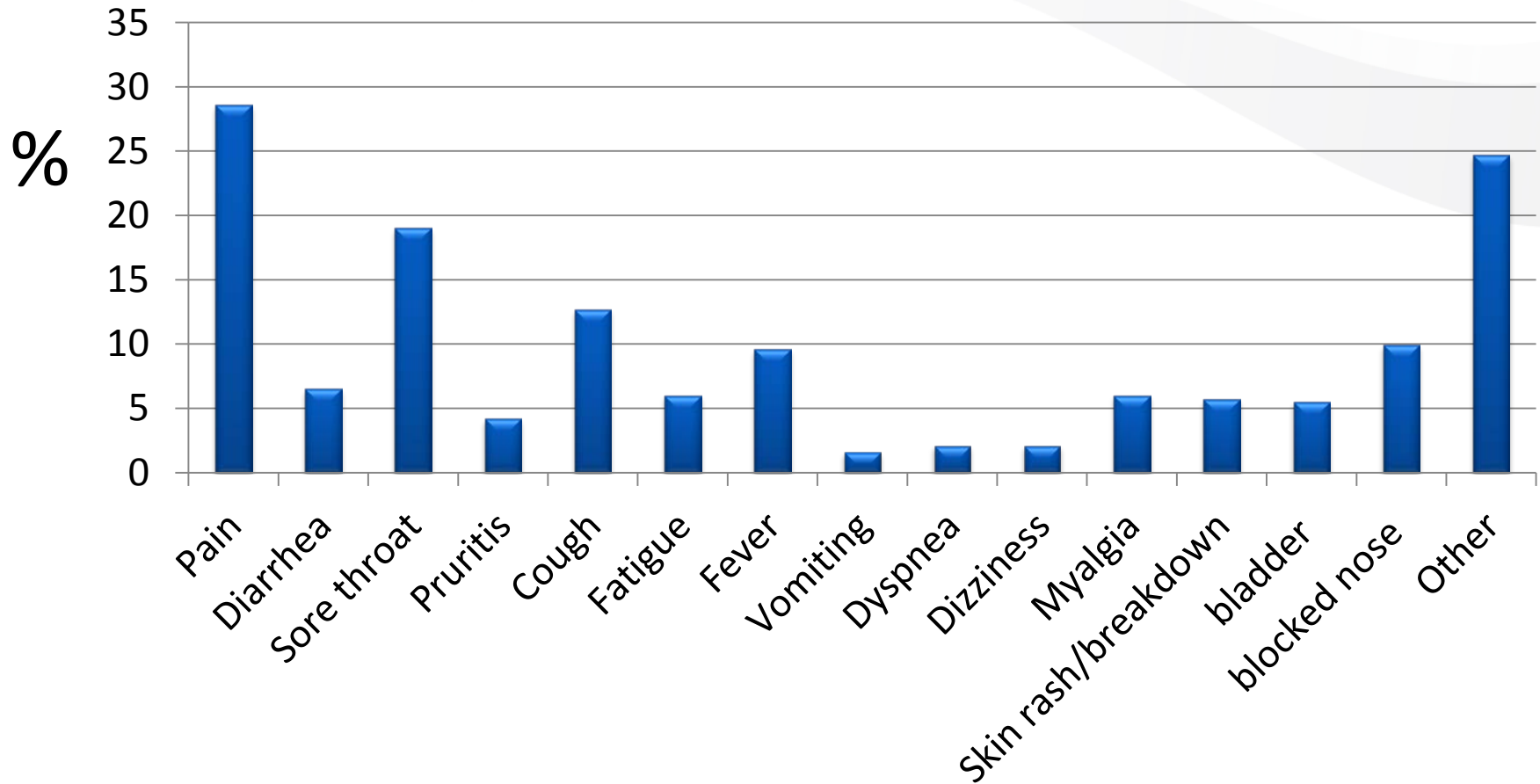
Illness Proportion (%)



In which sports are illness more common?



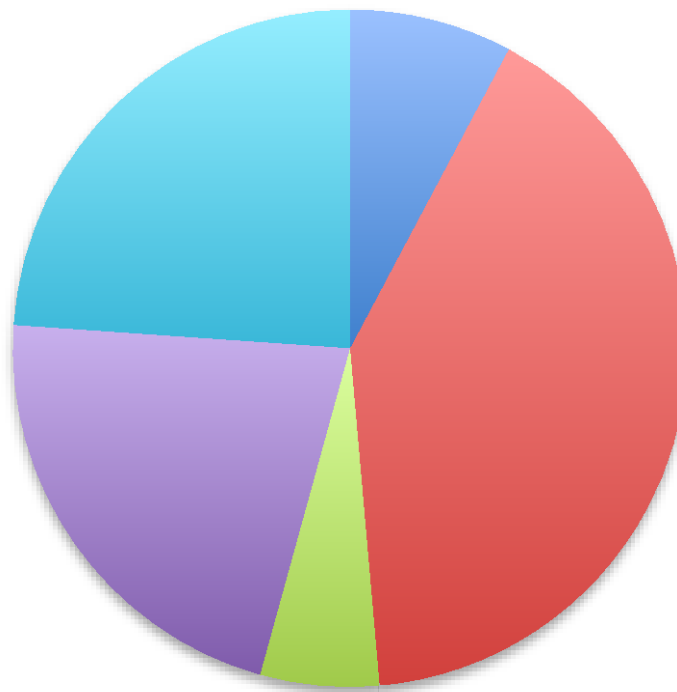
What are the symptoms of illness in Paralympic athletes?



What is the aetiology of illness in Paralympic athletes? (385 illnesses)



All illnesses



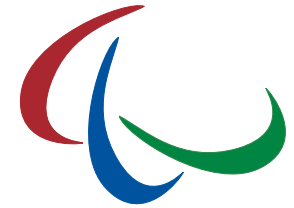
- Pre existing
- Infection
- Exercise related
- Environment
- Other



Which Impairment Classes have the most Illness? (385 illnesses on WEB-IISS)



- Groups with most illness:
 - Spinal cord injury (30%)
 - Amputation/limb deficiency (26,5%)
 - Visually disabled (19%)
 - CP, II and Les autres (remainder)

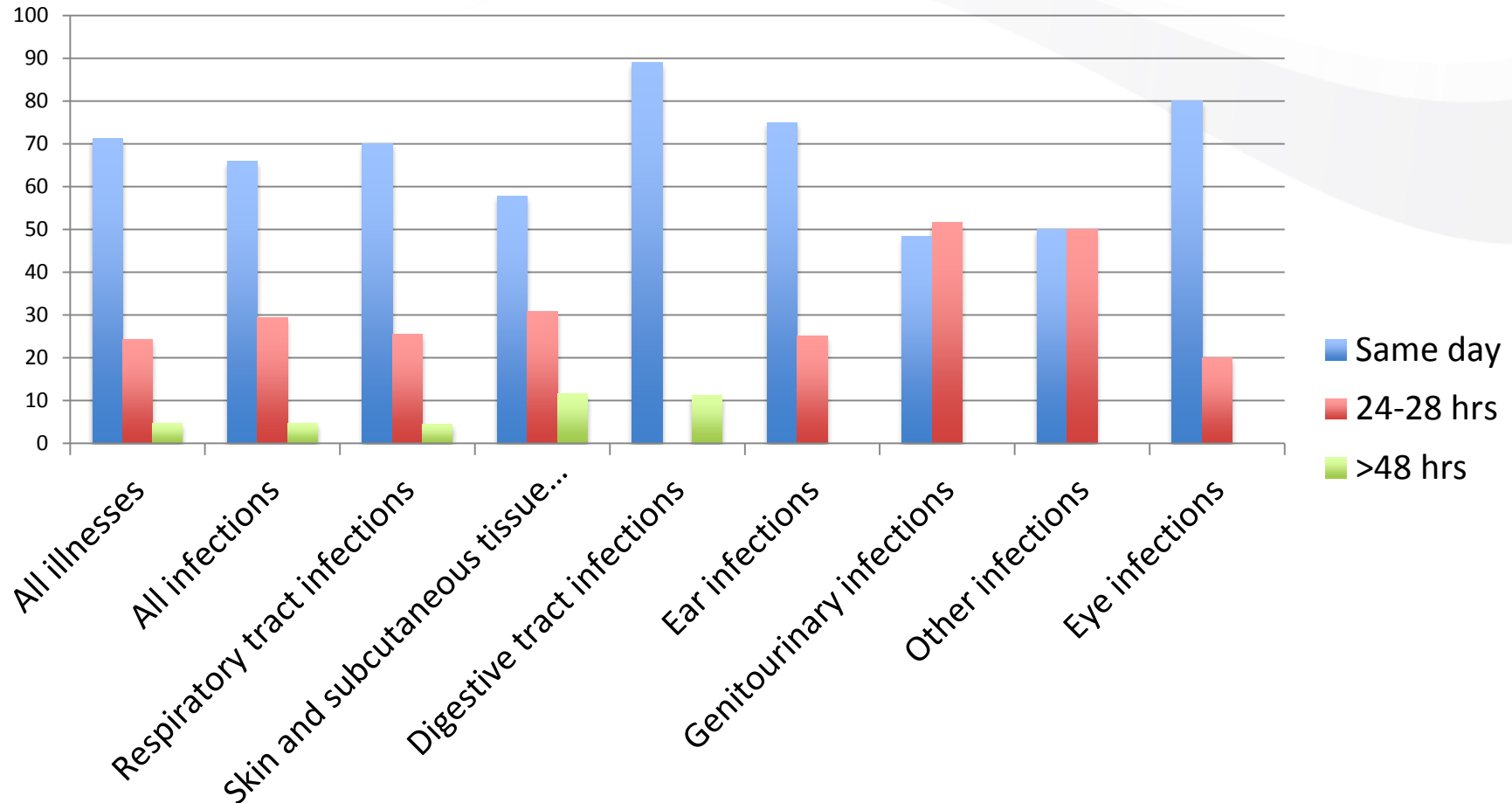


Illness in impairment classes (385 illnesses on WEB-IISS)

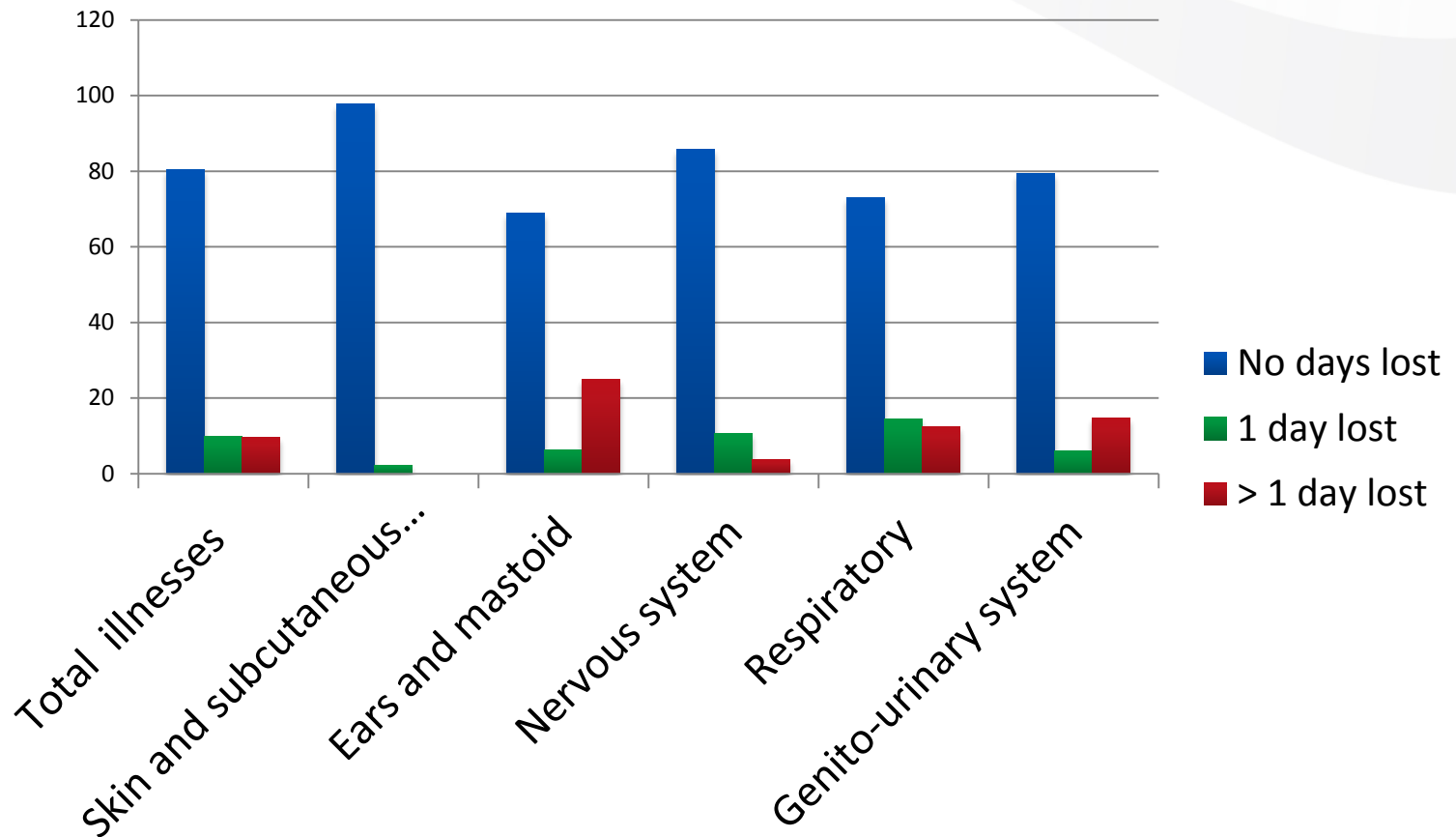


- Skin and subcutaneous illnesses
 - Spinal cord injured (46.7%)
 - Amputation/limb deficiency (31%)
- Urinary tract infection
 - Spinal cord injured (77.4%)

When do Paralympic athletes report illness to the Dr?



How severe are the illnesses seen in Paralympic athletes?



Take home messages:



- Illnesses are common in paralympic athletes (high incidence)
- Incidence of illness similar in pre-competition vs competition period
- The spectrum of illnesses is different
- Most common are respiratory but non-respiratory illnesses (especially UTI and Skin & GIT are common)
- Participation in athletics is a risk factor
- Age and gender are not independent predictors
- Spinal injured and amputees are at risk of these illnesses
- Most illnesses are infections
- Don't forget allergy
- Athletes (esp SCI) may not display the usual symptom patterns (vague)
- High index of suspicion

Take home messages:



- Paralympic athletes report late to the Doctor
- Remember prevention principles
- Most illness does not result in time loss (but 20% does)!
- Remember return to play considerations especially wrt respiratory tract infections and systemic symptoms





We look forward to learning more about illness and injury in the winter sports....





Paralympic.org

Thank you for your attention
AND YOUR ONGOING
PARTICIPATION!