



Photo by Alexandre Loureiro



BEING **HEAT ILLNESS** AWARE AT THE TOKYO PARALYMPIC GAMES

AN ATHLETE GUIDE

DR NEIL MAXWELL, DR MARK HAYES & PROFESSOR
NICK WEBBORN

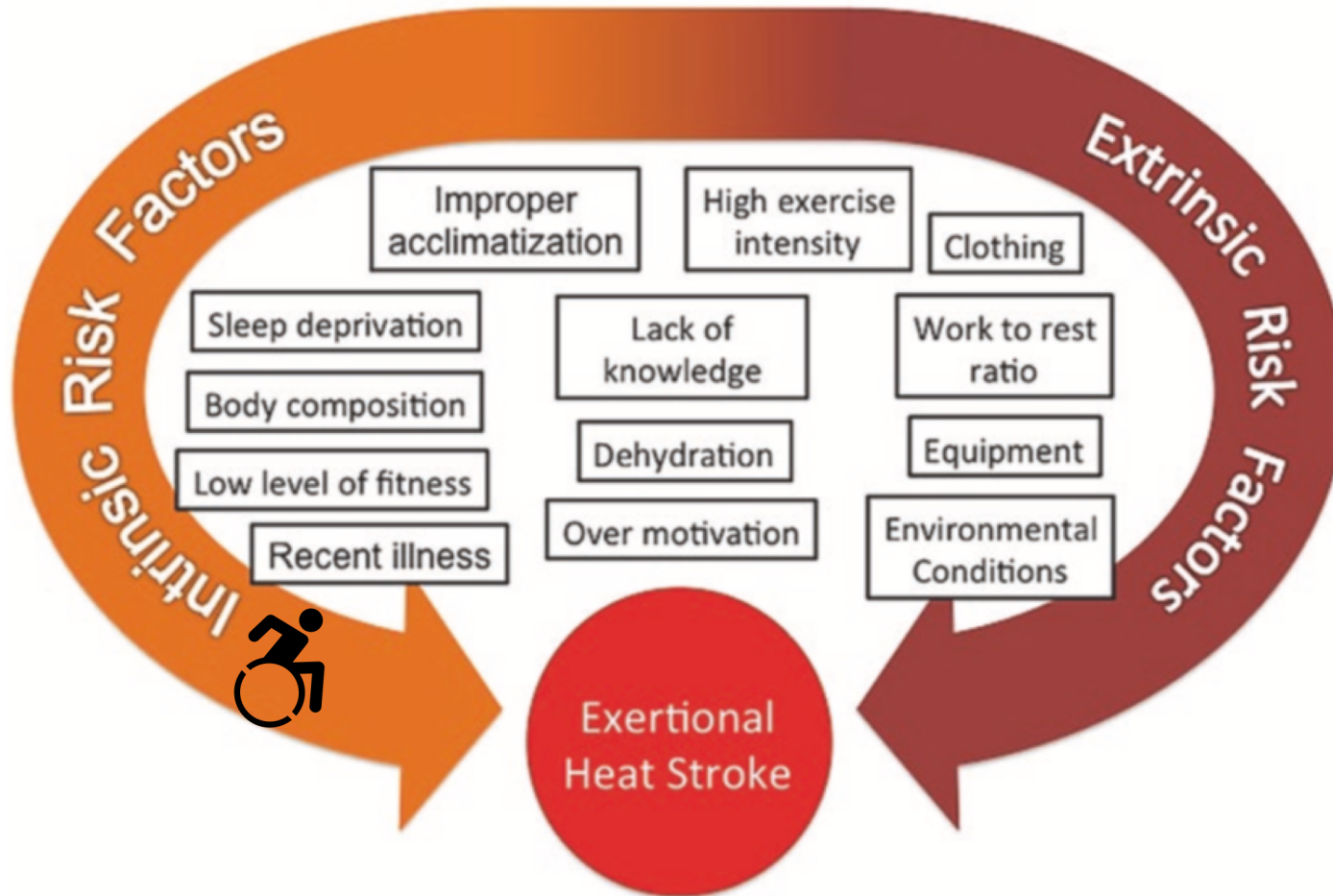
INTERNATIONAL PARALYMPIC COMMITTEE

WHY IS HEAT ILLNESS A PROBLEM?

1. Athletes develop heat illness when the **body's cooling mechanisms are not able to work** properly
2. Some **sports are at a higher risk** of getting a heat illness
3. Some **Paralympic athletes are at a higher risk** of experiencing heat illness symptoms because of their impairment e.g. SCI
4. Heat illness can happen in any weather and anywhere, but the likelihood is increased in how weather and in competition and it can be **life-threatening if not treated properly**



WHAT FACTORS CONTRIBUTE TO EXERTIONAL HEAT ILLNESS?



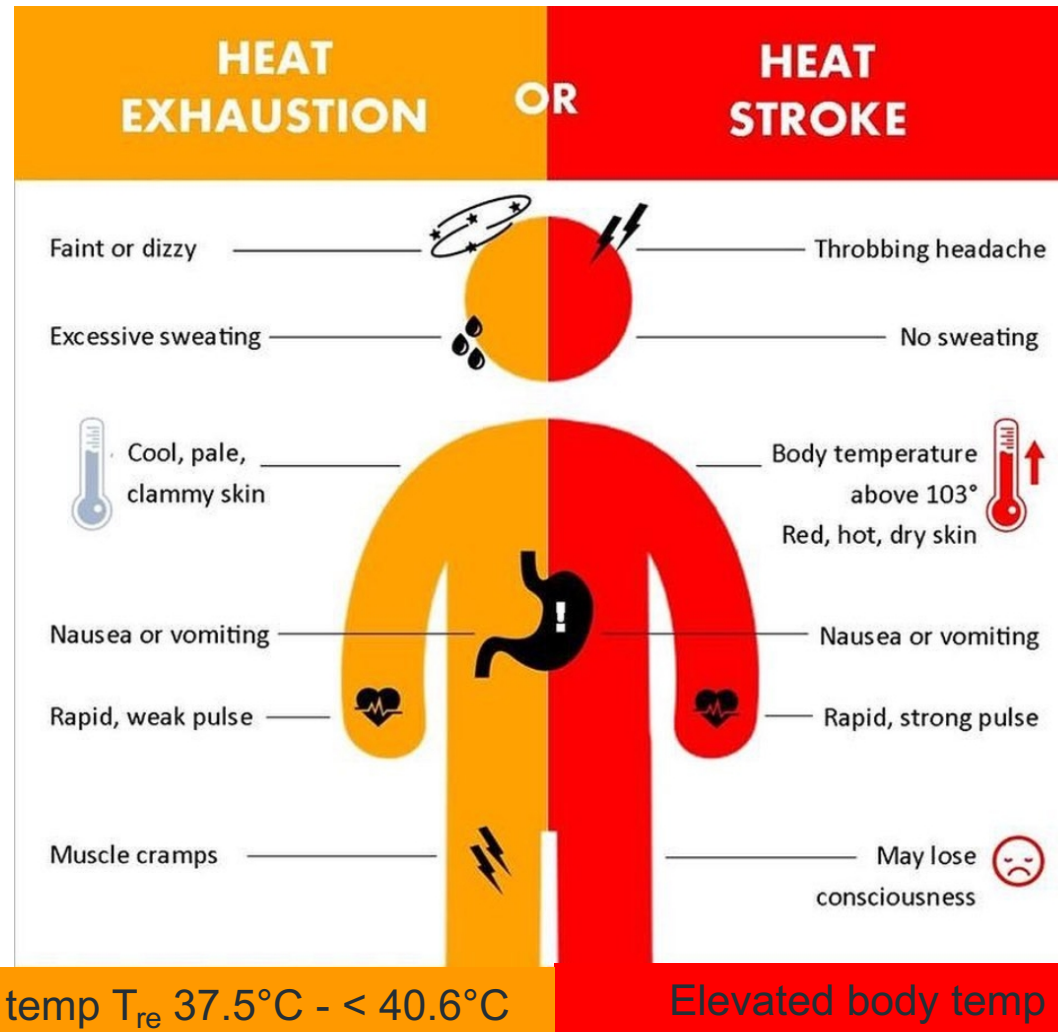
Athletes with tetraplegia are at a greater risk of heat injury when compared to athletes with paraplegia who, in turn, have a greater risk of heat injury when compared to able-bodied athletes



WHAT ARE THE SIGNS AND SYMPTOMS WHEN I OR A FELLOW ATHLETE GETS TOO HOT?

Signs
(what you can see, maybe in another athlete)

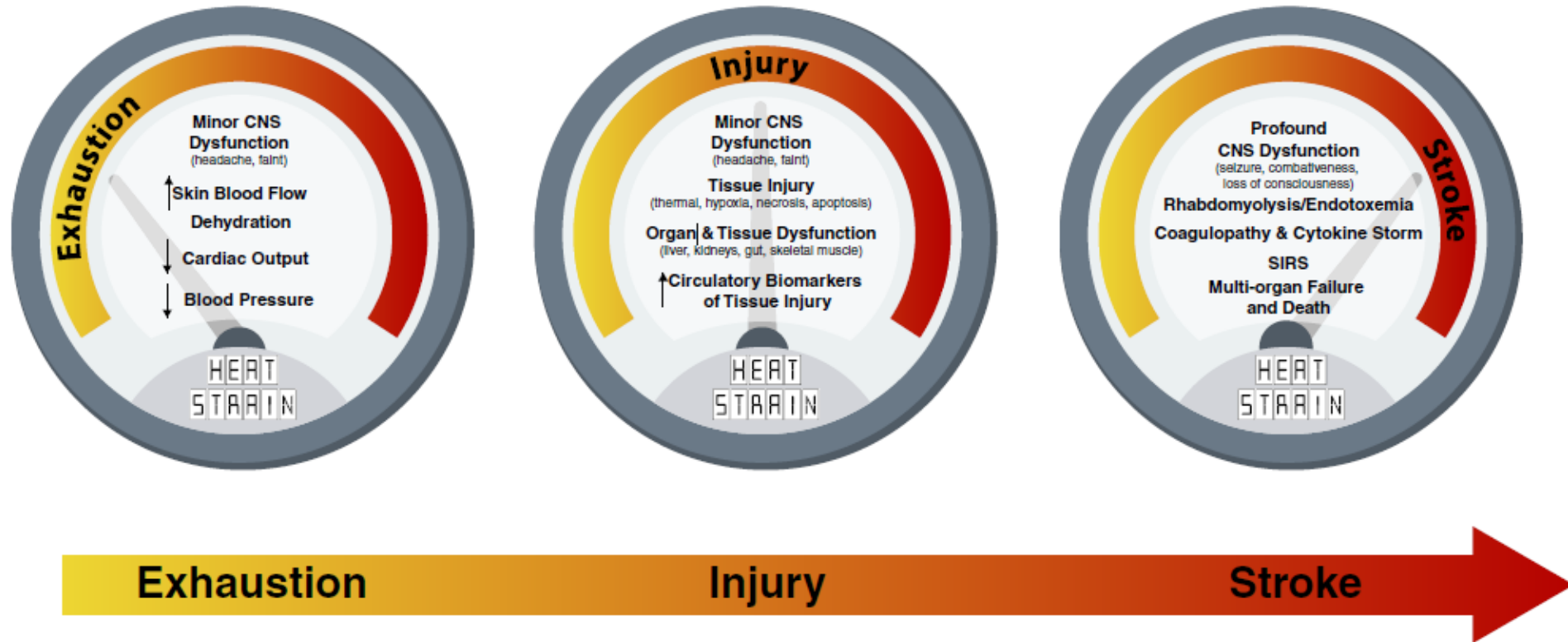
Symptoms
(what you feel)



Altered mental state, dizziness, confusion



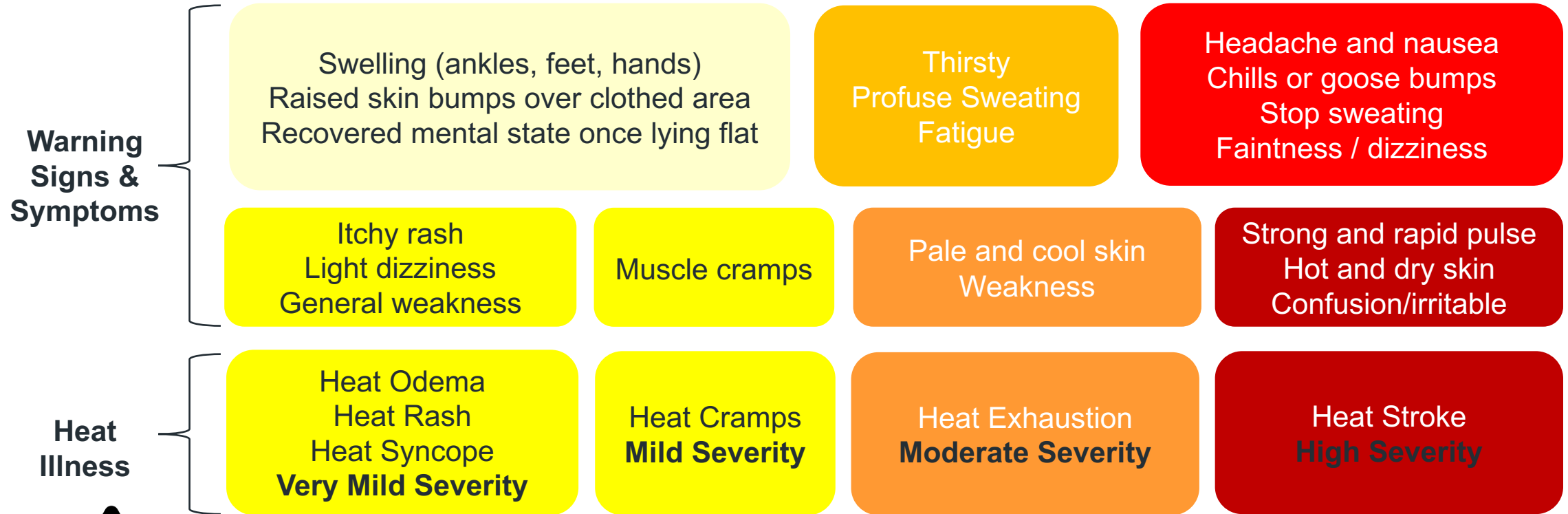
HEAT ILLNESS CONTINUUM







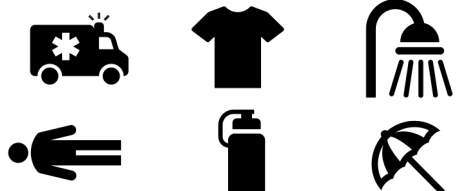

There are different degrees of heat illness you can experience so you need to know what to look out for



WHAT ARE THE WARNING SIGNS AND SYMPTOMS FOR THE DIFFERENT HEAT ILLNESSES?



WHAT IS THE TREATMENT FOR A HEAT ILLNESS?

Illness	Treatment	
Heat Odema	<ul style="list-style-type: none"> • Move to cool, shaded area, elevate affected area, remove jewelry/tight clothing 	
Heat Rash	<ul style="list-style-type: none"> • Apply something cold, (e.g. a damp cloth or ice pack (wrapped in towel) for up to 20 min 	
Heat Syncope (faint)	<ul style="list-style-type: none"> • Lie down, ideally in a cool, shaded area, drink fluids • Seek medical help 	
Heat Cramps	<ul style="list-style-type: none"> • Sip water or a sports drink • Gently stretch, massage and ice the muscle • Call medical help if no improvement in 1 hour 	
Heat Exhaustion	<ul style="list-style-type: none"> • Call for medical help • Lay down on back in a cool, shaded area • Remove excessive layers of clothing • Give a sports drink or water – unless likely to vomit • Cool with a cool water spray or wet cloths and a fan 	
Heat Stroke	<ul style="list-style-type: none"> • Call for medical help • While you wait for help to arrive, immediately cool the victim with any means at hand, preferably by immersing the casualty in cold water • Monitor the casualty closely 	



WHAT SHOULD I DO IF I OR I SUSPECT A FELLOW ATHLETE HAS HEAT STROKE?



- Box 1: Methods of body cooling**
- Body immersion in iced water
 - Evaporative cooling: spraying water over the patient and facilitating evaporation and convection with the use of fans
 - Immersing the hands and forearms in cold water
 - Use of ice or cold packs in the neck, groins, and axillae
 - Invasive methods: iced gastric, bladder, or peritoneal lavage

If you or another athlete has signs or symptoms of heat stroke, seek medical help and the primary goal of treatment should be cooling the whole body within 30 minutes of recognising the heat illness, ideally immersing the body in cold water



CAN I RATE THE LEVEL OF HEAT ILLNESS?

HEAT ILLNESS SYMPTOM INDEX

Rate each of the symptoms using the scale below

Symptoms:	Feeling Tired	Confusion
	Cramps	Muscle Weakness
	Nausea	Heat sensations on head or neck
	Dizziness	Chills
	Thirst	Feeling light-headed
	Vomiting	

- 0 No symptoms
- 1
- 2
- 3 Mild symptoms that do not interfere with practice
- 4
- 5 moderate symptoms
- 6
- 7 Severe symptoms requiring a break from practice
- 8
- 9
- 10 Stop practice

Original Article

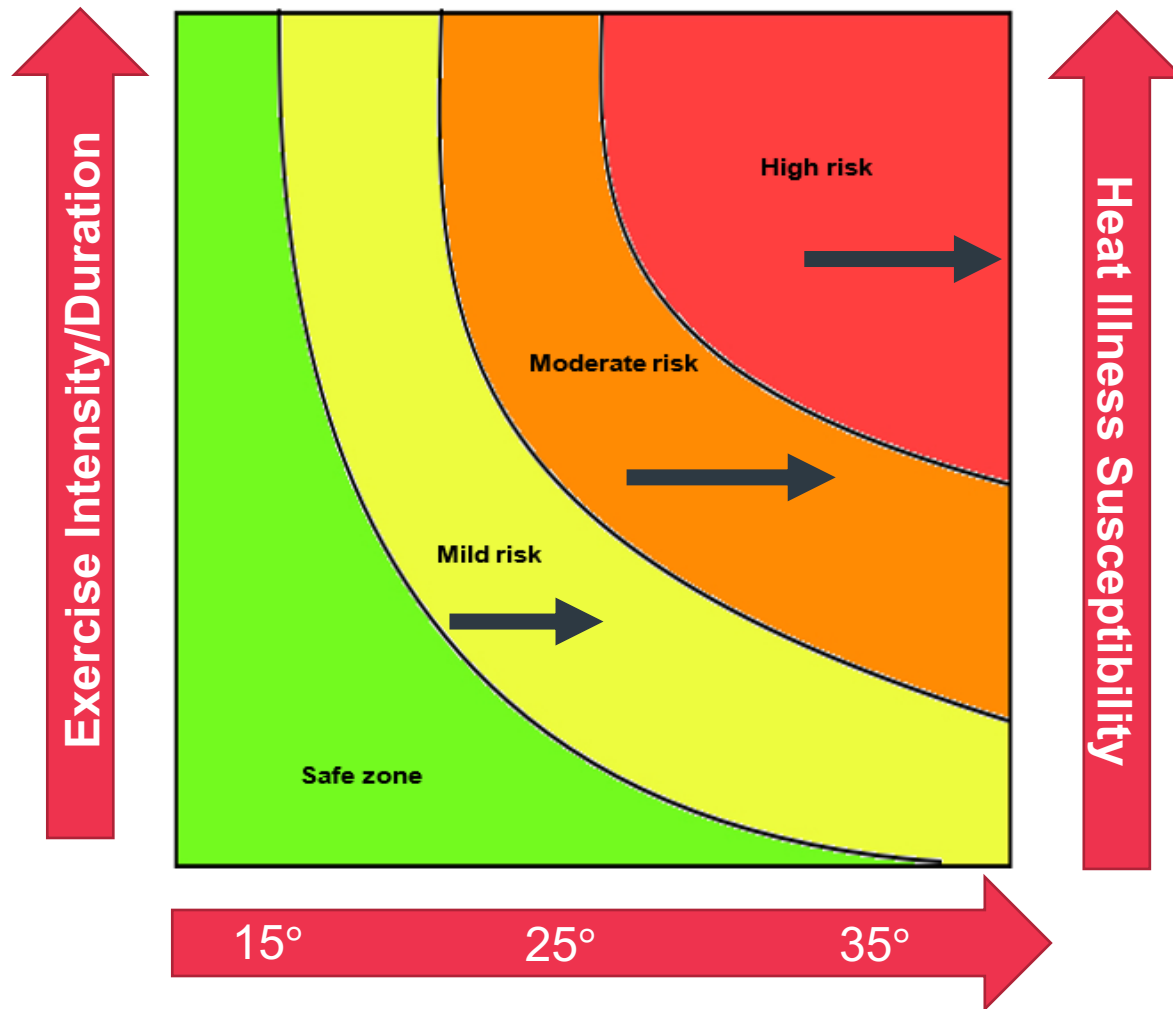
Heat Illness Symptom Index (HISI): A Novel Instrument for the Assessment of Heat Illness in Athletes

Eric E. Coris, MD, Stephen M. Walz, MA, ATC, LAT, Robert Duncanson, MD, ATC, LAT, Arnold M. Ramirez, MD, and Richard G. Roetzheim, MD

The Heat illness symptoms index can quantify mild and moderate heat-related illness symptoms and can be used to gauge the extent of some of the symptoms as well as whether the treatment you are using is helping



CAN HEAT ILLNESS SUSCEPTIBILITY BE LESSENED?



As exercise intensity and/or duration of your competition increases in the heat of Tokyo, so does your risk of developing a heat illness

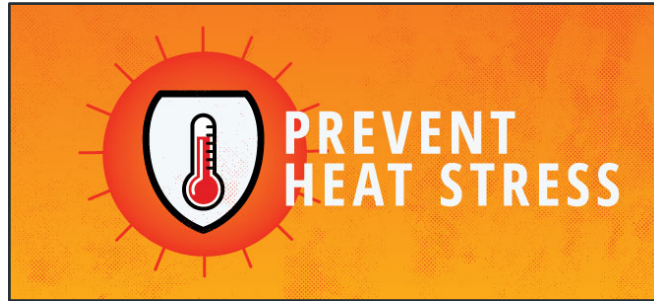


But the black arrows represent a positive shift to cope better with Tokyo heat stress from using heat acclimation, cooling and hydration strategies



10 STRATEGIES TO PREVENT HEAT ILLNESS

11



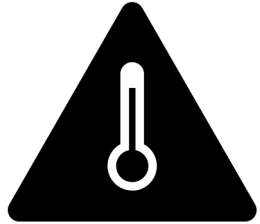
Become familiar with heat illness signs & symptoms



1. Before arriving in Tokyo heat acclimate
2. Reduce duration of warm-up (intensity and/or duration)
3. Drink more fluids little and often before competition and avoid caffeine
4. Use multiple cooling strategies (pre, during and post competition if able)
5. Wear less (layers), loose (breathable fabrics) and light (reflective colours)
6. Wear hats to protect from direct sunlight
7. Look for shade whenever possible
8. When not competing, slow down = less heat produced
9. Try to eat light - the more calories you take in, the more body heat you produce
10. To avoid the worst effects of the heat, check the weather forecast and plan ahead



SUMMARY: WHAT CAN I DO TO BE HEAT AWARE IN TOKYO?



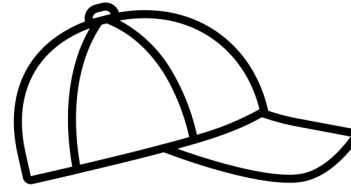
HEAT ACCLIMATE

Develop a heat acclimation protocol with your coach to prepare yourself for the competition environment



KEEP HYDRATED

Consume fluids little, but often and monitor your own hydration status



STAY COOL

Use precooling, per (during exercise) cooling and post cooling to maintain core temperature and thermal comfort



KNOW HEAT ILLNESS SIGNS & SYMPTOMS

Understand what the signs and symptoms of heat illness are so you can prevent them in you and your fellow athletes



HEY PARALYMPIC ATHLETE!

WHAT IS YOUR EXPERIENCE WITH EXERCISE IN THE HEAT?

ARE YOU COMPETING IN THE 2020 TOKYO PARALYMPICS?

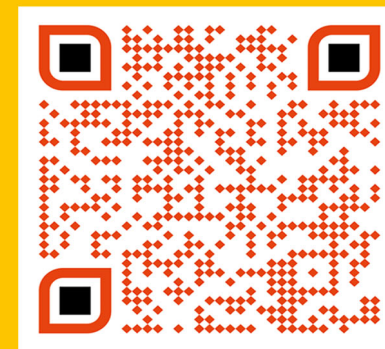
WE WOULD LIKE TO HEAR FROM YOU!

Join our research project now by completing our survey before August 23, 2021.



Contribute to the professionalization of Paralympic Sports!

It only takes **15-20 minutes!**



Find the survey via:
bit.ly/heat-survey

or scan the QR code!

Available in:

English, Deutsch, Español, Português, Français, Nederlands, العربية, 日本語, 普通话, русский

MORE ABOUT THE RESEARCH PROJECT

WE AIM to better understand heat-related illness issues and heat preparedness in Paralympic athletes. We hope to ultimately enhance heat preparation and reduce the risk of heat illness in the future.

WE ASK YOU to tell us about your experiences with heat illness issues and how you prepare yourself for competing in the heat.

WE ARE an international team consisting of researchers and practitioners from Japan, the United Kingdom, Australia and the Netherlands!

Amsterdam
Movement
Sciences



Radboudumc



RESOURCES THAT SUPPORTED THIS PRESENTATION

14

Coris, E.E., Walz, S.M, Duncanson, R., Ramirez, A.M. and Roetzheim, R.G. (2006). [Heat illness symptom index \(HISI\): A novel Instrument for the Assessment of heat Illness in Athletes](#), *Southern Medical Journal*, 99(4): 340-345.

Griggs, K.E., Stephenson, B.T., Prince, M.J. and Goosey-Tolfrey, V.L. (2020). [Heat-related issues and practical applications for Paralympic athletes at Tokyo 2020](#), *Temperature*, 7, Special Issue 1 of 2.

Laitano, O., Leon, L.R., Roberts, W.O. and Sawka, M. (2019). [Controversies in exertional heat stroke diagnosis, prevention, and treatment](#). *J Appl Physiol*, 127 (%): 1338-1348.

Laitano, O., King, M.A. and Leon, L.R. (2019) *Common misconceptions in classic and exertional heat stroke* (Chpt. 5), In Périard J.D. and Racinais, S. (Eds), [Heat Stress in Sport and Exercise: Thermophysiology of Health and Performance](#), Springer, Switzerland.

Lopez, R.M. and Jardine, J.F. (2018). *Exertional Heat Illnesses* (Chpt. 17), In Casa, D. J. (Ed), [Sport and Physical Activity in the Heat](#), Springer, Switzerland.

Price, M.J. (2016). [Preparation of Paralympic Athletes; Environmental Concerns and Heat Acclimation](#). *Frontiers in Physiology*, 6, 415.

Pritchett, K., Broad, E. Scaramella, J. and Baumann, S. (2020) [Hydration and Cooling Strategies for Paralympic Athletes](#), *Current Nutrition Reports*, Sep;9(3):137-146.



BE HEAT ILLNESS AWARE – KNOW THE SIGNS AND SYMPTOMS – IT CAN AFFECT YOUR HEALTH AS WELL AS YOUR PARALYMPIC PERFORMANCE

15

Acknowledgements:

We would like to acknowledge the following students for their contribution to the material in this PowerPoint Presentation:

- Abigail McConnell
- Andrew Price
- Luke Row
- Evie Winterton



THANK YOU

