

International
Paralympic Committee



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Committee

Heat Countermeasures for Tokyo 2020 Paralympic Games

Peter Van de Vliet
IPC Medical & Scientific Director

VISTA – September 2019

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Japan heatwave declared natural disaster as death toll mounts

24 July 2018



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Japan heatwave



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Louisiana coast

2 hours ago

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Para Athlete responsiveness to hot and humid environment



Temperature

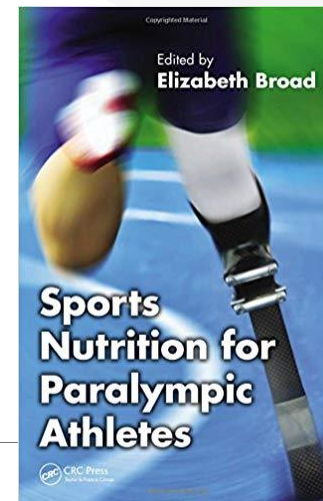
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Heat-related issues and practical applications for Paralympic athletes at Tokyo 2020

Katy. E. Griggs, Ben.T. Stephenson, Michael. J. Price & Victoria. L. Goosey-Tolfrey

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ORIGINAL RESEARCH
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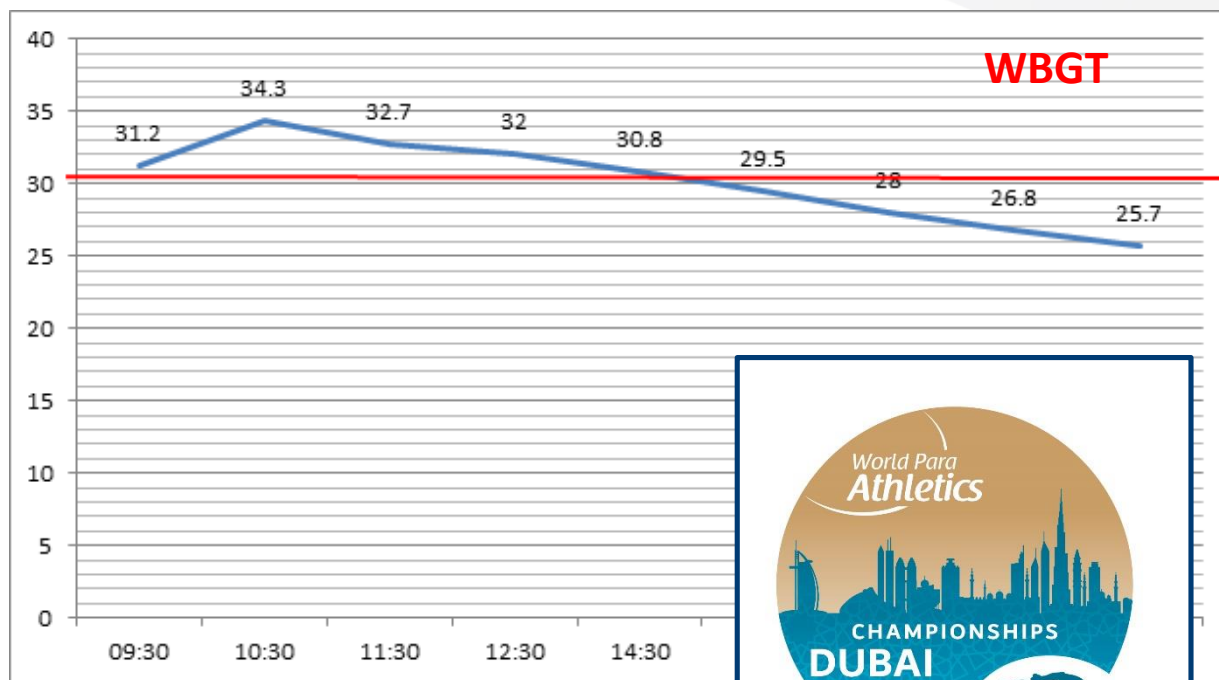
Ambient Conditions Prior to Tokyo 2020 Olympic and Paralympic Games: Considerations for Acclimation or Acclimatization Strategies

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2015 World Para Athletics World Championships – Doha, Qatar





Wet Bulb Global Temperature (WBGT)

WBGT is calculated from:

- the dry (standard thermometer) temperature
- the wet-bulb temperature (which indicates the true capacity of the air to evaporate water according to its relative humidity and velocity)
- the solar radiation (globe temperature)

WBGT was initially developed for use in military personnel.





2015 World Para Athletics World Championships – Doha, Qatar



PM R xx (2019) 1-6

Original Research

Illness at a Para Athletics Track and Field World Championships under Hot and Humid Ambient Conditions



www.pmrjournal.org

1225 athletes – 46 illness reports – 2.89/1000 athlete-day

7 cases of heat stress, 4/7 referred to hospital for observation – discharge < 24h

Sunburn – convulsion – **heat exhaustion**
Vital signs in normal range – 1 case of ↑ core temp
3 IV fluids / 4 oral hydration cool liquids

| WBGT (°C) | Non-Acclimatized, Unfit, High-Risk Individuals | Acclimatized, Individuals |
|-----------|--|---|
| >32.3 | Cancel exercise. | Cancel exercise uncompensable heat stress exists for all athletes. |
| 30.1-32.2 | Cancel or stop practice and competition. | Limit intense exercise and total daily exposure to heat and humidity; watch for early signs and symptoms. |
| 27.9-30.0 | Increase the rest:work ratio to 1:1, decrease intensity and total duration of activity. Limit intense exercise. Watch at-risk individuals carefully. | Plan intense or prolonged exercise with discretion; watch at-risk individuals carefully. |
| 25.7-27.8 | Increase the rest:work ratio; decrease intensity and total duration of activity. | Normal activity. Monitor fluid intake. |



Games in Numbers (Paralympic)

Games Period : 25 August to 6 September

13
Days

22
Sports

23
Disciplines

540
Events

21
Venues

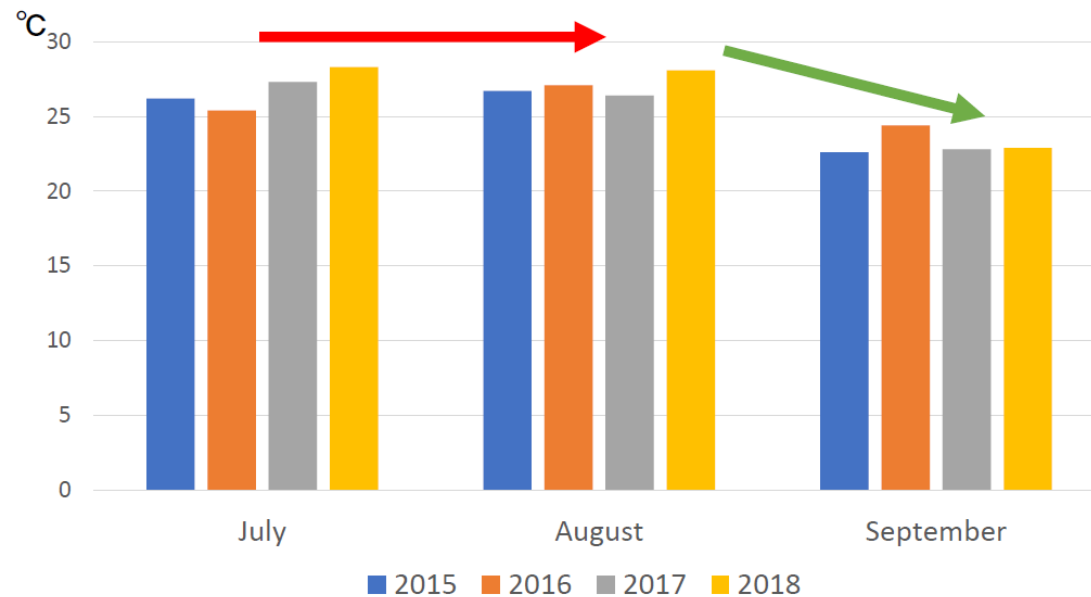
4,400
Athletes





Tokyo 2020 Olympic and Paralympic Games

Average temperature in Tokyo



Read

| | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y |
|--------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---|
| 21-Aug | 23.0 | 22.8 | 23.1 | 22.6 | 22.9 | 22.8 | 24.1 | 24.7 | 26.3 | 28.5 | 31.1 | 30.4 | 30.8 | 30.4 | 30.4 | 29.4 | 29.0 | 26.8 | 25.8 | 25.8 | 25.8 | 25.8 | 25.8 | 25.8 | |
| 22-Aug | 25.7 | 25.5 | 25.5 | 25.4 | 25.5 | 25.7 | 26.2 | 27.5 | 27.7 | 29.8 | 31.8 | 32.3 | 32.0 | 31.8 | 31.8 | 30.7 | 29.4 | 26.6 | 26.2 | 25.7 | 25.5 | 25.7 | 25.5 | 25.2 | |
| 23-Aug | 24.7 | 24.5 | 24.7 | 24.5 | 24.7 | 25.2 | 26.3 | 26.6 | 27.7 | 29.0 | 30.4 | 30.5 | 28.8 | 29.8 | 28.4 | 28.1 | 27.1 | 26.4 | 26.5 | 26.5 | 26.2 | 26.3 | 26.2 | 26.2 | |
| 24-Aug | 26.3 | 26.2 | 26.1 | 25.6 | 25.3 | 25.4 | 25.1 | 26.1 | 26.7 | 27.5 | 27.6 | 28.1 | 28.4 | 30.2 | 27.4 | 29.9 | 28.7 | 26.4 | 25.8 | 25.6 | 25.3 | 25.3 | 25.2 | 25.2 | |
| 25-Aug | 25.3 | 25.3 | 25.3 | 25.4 | 25.3 | 25.6 | 26.4 | 27.1 | 27.4 | 30.1 | 30.8 | 32.3 | 32.4 | 32.9 | 32.7 | 32.7 | 30.4 | 28.1 | 27.6 | 27.2 | 27.1 | 26.1 | 25.7 | 25.2 | |
| 26-Aug | 24.9 | 24.8 | 24.3 | 24.7 | 24.3 | 24.9 | 26.1 | 27.3 | 27.6 | 31.2 | 32.7 | 33.2 | 33.5 | 33.3 | 33.5 | 32.1 | 31.0 | 28.6 | 27.7 | 27.0 | 26.9 | 26.6 | 25.9 | 26.6 | |
| 27-Aug | 25.9 | 25.0 | 24.3 | 23.7 | 24.1 | 24.6 | 25.0 | 26.0 | 26.5 | 30.6 | 32.2 | 31.5 | 32.8 | 32.8 | 28.5 | 30.9 | 28.1 | 26.7 | 26.3 | 22.4 | 22.6 | 23.1 | 23.5 | 23.8 | |
| 28-Aug | 23.7 | 23.9 | 23.8 | 23.5 | 23.4 | 23.5 | 23.8 | 23.8 | 24.5 | 25.2 | 26.5 | 28.5 | 27.3 | 29.5 | 28.5 | 28.2 | 25.9 | 25.8 | 25.5 | 25.6 | 25.5 | 25.2 | 25.1 | 24.9 | |
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| 29-Aug | 24.4 | 23.9 | 23.8 | 23.6 | 23.3 | 23.3 | 23.5 | 24.0 | 24.4 | 25.5 | 25.5 | 26.1 | 26.7 | 25.6 | 28.3 | 28.3 | 25.3 | 25.3 | 25.2 | 25.2 | 25.2 | 25.2 | 25.2 | 25.2 | |
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| 30-Aug | 24.6 | 24.6 | 24.5 | 24.6 | 24.3 | 24.3 | 24.6 | 25.8 | 26.6 | 28.9 | 30.7 | 30.9 | 29.4 | 30.2 | 28.4 | 28.3 | 28.0 | 26.2 | 25.9 | 25.3 | 25.0 | 24.8 | 24.7 | 25.0 | |
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| 31-Aug | 24.7 | 24.2 | 24.2 | 24.1 | 23.7 | 24.4 | 25.2 | 27.0 | 27.0 | 30.5 | 30.3 | 30.4 | 32.2 | 32.5 | 28.1 | 30.4 | 25.9 | 24.7 | 23.5 | 23.5 | 23.4 | 23.4 | 23.5 | 23.4 | |
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| 1-Sep | 23.3 | 23.1 | 23.3 | 22.9 | 22.8 | 23.0 | 24.0 | 24.7 | 26.1 | 26.9 | 28.7 | 28.0 | 27.6 | 27.0 | 26.3 | 26.6 | 26.0 | 23.5 | 23.2 | 22.7 | 21.1 | 20.5 | 20.6 | 20.0 | |
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| 2-Sep | 19.7 | 20.0 | 20.2 | 20.0 | 19.8 | 19.8 | 20.1 | 19.8 | 20.2 | 20.4 | 20.3 | 22.3 | 21.5 | 22.1 | 21.5 | 21.8 | 21.9 | 21.5 | 21.4 | 21.3 | 21.2 | 21.4 | 21.3 | 21.3 | |
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| 3-Sep | 21.4 | 21.2 | 21.2 | 21.2 | 21.1 | 21.2 | 21.2 | 21.3 | 21.5 | 22.6 | 22.9 | 23.5 | 24.4 | 25.4 | 26.7 | 28.1 | 26.4 | 23.2 | 22.7 | 23.0 | 22.9 | 22.4 | 22.1 | 22.3 | |
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| 4-Sep | 21.8 | 21.6 | 21.6 | 22.0 | 22.1 | 22.6 | 23.6 | 23.5 | 24.6 | 25.5 | 27.4 | 27.4 | 27.0 | 26.1 | 26.2 | 26.1 | 25.9 | 25.5 | 25.7 | 25.6 | 25.3 | 25.1 | 25.1 | 25.1 | |
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Archery - Athletics – Canoe - Cycling – Equestrian – Football 5 – Rowing – Triathlon - Wheelchair Tennis



International Para Sport Federations

- Planning Phase -> Competition Schedules
- IF Rules?
 - Provisions for Para athletes = provisions for Olympic athletes
 - ‘Recommendations’
 - No Provisions
- IF CMO Presence at Games?
- Education?



Education & Awareness



PRESS RELEASE

Tokyo 2020 Proposes Heat Countermeasures

Local and national government agencies and other stakeholders to collaborate in promoting the comfort and safety of athletes, spectators, officials and volunteers.

Tokyo, 27 June 2019 – The Tokyo Organising Committee of the Olympic and Paralympic Games (Tokyo 2020) today published an overview of its plans to minimise the impact of heat on all those competing in, attending or working at the Tokyo 2020 Games. The aim of these measures is to prepare an environment in and around venues that will allow everyone to remain as cool and hydrated as possible.




1 Overview of Heat Countermeasures of Tokyo 2020 《Summary》

| | Spectators | Games Staff/ Volunteers | Athletes |
|--|--|--|--|
| Facilities Equipment Validation of deployment of shading facilities | <ul style="list-style-type: none"> • Tent • Large cooling fans • Rest area for those feeling unwell | <ul style="list-style-type: none"> • Dining area • Rest area | <ul style="list-style-type: none"> • Athlete's Lounge • Rest area |
| Supply of drinks Boosting supply of drinks | <ul style="list-style-type: none"> • Sale of drinks • Consider bringing bottled water into venues (Under certain conditions) (TBD) | <ul style="list-style-type: none"> • Provision of drinks • Sales of drinks • Supply of water | <ul style="list-style-type: none"> • Provision of drinks |
| Preventive Operations Adequate breaks during work | <ul style="list-style-type: none"> • Proactive announcements • Alerts during sport presentations • Provision of paper fans for precautions • Stress relief • Flower lanes | <ul style="list-style-type: none"> • Adequate breaks during work • Health-management book • Sunglasses for security staff | <ul style="list-style-type: none"> • Competition schedule • Discuss with IFs regarding the criteria for suspension or cancellation of competitions and additional hydration breaks. • Ice for icing treatment |
| Rescue Operations First-aid treatment given to unwell persons | <ul style="list-style-type: none"> • Medical room • Ambulance • First responders on patrol • Installation of first-aid station | <ul style="list-style-type: none"> • Medical room • Ambulance | <ul style="list-style-type: none"> • Medical room for athletes • Ambulance • Icing treatment |
| Information Provision Provision of info to overseas visitors | <ul style="list-style-type: none"> • Games-time Website • Mobile App • CRM/Ticket Mail • Spectator Guide • Precautionary Leaflet | <ul style="list-style-type: none"> • Pre-games training | <ul style="list-style-type: none"> • Informing through IF/NF, NOC and NPC |

Themes highlighted in orange need to be focused in consideration



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Vista 2019

Healthy and Fit for Optimal Performance • 4-7 September

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About VISTA 2019



Healthy and Fit for Optimal Performance

Amsterdam, the Netherlands will be hosting the ninth VISTA Conference from 4-7 September 2019. The Conference will take place at the Novotel Amsterdam City Hotel.

The theme of the Conference is "Healthy and Fit for Optimal Performance". The VISTA Conference, hosts to provide a platform for field of sport for athletes knowledge in this area.

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Paralympic Games

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| | |
|--------------------------|--|
| 09:30 – 11:00 Calla 3 | #9 SYMPOSIUM – Beat the Heat |
| | <p>Speakers: Hein Daanen (Vrije Universiteit Amsterdam, NED), Liz Broad (US Paralympics, USA), Tatsuru Ibusuki (Japan Para Athletics and World Para Athletics, JPN), Peter van der Vliet (International Paralympic Comittee, GER)</p> <p>Chairperson: Prof. dr. Thomas Janssen</p> |



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IOC WORLD CONFERENCE
PREVENTION OF INJURY & ILLNESS IN SPORT

CALL FOR PROPOSALS IS NOW OPEN



Submit your proposal on the website:
www.ioc-preventionconference.org

MONACO

12 - 14 MARCH 2020

KEYNOTE 3

13 MARCH - 14.30 - 15.15



**TROPICAL PARADISE OR DANGER
ZONE? BEAT THE HEAT TO PROTECT
ATHLETES IN A SWELTERING 2020
TOKYO**

Sébastien RACINAIS
Qatar



Education & Awareness

IAAF | The Home of World Athletics



Beat the heat

IAAF World Athletics Championships Doha 2019
and the Olympic Games Tokyo 2020.



Tennis - SCIENCEANDM ITF Tennis - SCIENCEAN X + v

tftennis.com/scienceandmedicine/health/heat.aspx

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Overview Heat

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Musculoskeletal

Psychological

Eating Disorders

Obesity & Diabetes

Heat

Tennis & Children

Tennis & Women

Health Specialists

Healthcare Guidelines

Physically Speaking

Health benefits of tennis

Exercise and in particular playing tennis in the heat can be potentially harmful and even life threatening to the individual. This section aims to give a brief overview of what happens to someone in these circumstances, how to avoid significant complications and how best to prepare for playing tennis in hot weather.

When playing tennis in a warm environment, the body gains heat through metabolic processes which allow the muscles to contract and move the player around the court, as well as from solar radiation, and conduction and convection from objects warmer than the body - for example the court surface.

Evaporation of sweat provides the major physiological defence against overheating in humans. Heat is transferred to the environment as the sweat is vapourised from the surface of the skin.

This cools the skin and in turn cools the warm blood which has been shunted from the interior of the body to the skin. Sweating commences soon after the start of any exercise and the rate of sweating increases directly in proportion with the ambient temperature.

The amount of sweat vapourised depends on a number of factors including the surface area exposed to the environment, the temperature and humidity of the ambient air, and convective air currents around the body, for example how windy it is.

However humidity is the most important factor. On days of high humidity there is already a high water content in the air and this makes the evaporation of the sweat harder to take place.

For this reason playing in a hot and humid environment presents the greatest challenge to maintain the core or internal body temperature below 40 degrees Celsius. Humans can only survive core temperatures above 41 degrees Celsius for short periods and the body (brain) must limit the rise or stop exercising before this core temperature is reached.

Risk Factors for Heat Exhaustion in Tennis

- Fitness – less fit individuals are at greater risk of heat illness. Therefore it is important to perform adequate conditioning and fitness training prior to undertaking any practice or competition in a hot and/or humid environment.



ITF GUIDE TO
RECOMMENDED
HEALTH CARE
STANDARDS
FOR TENNIS TOURNAMENTS



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- Athletes
- Athlete Support Personnel
- IF Officials / Workforce and Volunteers
- Guests – Friends and Family



Paralympic.org

Thank you

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Marcus Hartmann, IPC, Rob Prezioso