

## Session 2 - Tokyo 2020 Olympic and Paralympic Games

The session comprised a progress report on the Games' preparations, climate mitigations and optimising human and equine performance in a challenging climate. Panel members included Dr Jenny Hall, Dr Rachel Murray, Dr Peter Whitehead, Prof David Marlin and Tim Hadaway.

### Progress Report

The Games will take place at the 1964 Olympic venue. Dressage and Jumping will take place at Bajikoen and Cross Country at Sea Forest. Good progress is being made in the construction and completion of the facilities.

Horses and athletes are to expect challenging climatic conditions similar to those in Atlanta and Hong Kong. Expected weather conditions have been analysed and accounted for in determining the competition schedule. Competition will take place during early mornings, late afternoon and early evenings. Cooling facilities are being well planned and facilities such as air-conditioned stables, multiple cooling stations and mobile cooling units will be provided. A climate advisory document is available on the FEI website and that the IOC and OC are developing advice for athletes and event workforce.

The FEI's climate mitigation group and Technical Committees are working to identify climate trigger points for mitigation decisions and measures that will be taken in the event of extreme conditions e.g. shortening courses, reducing the complexity of courses and postponement.

Further education and a communications will be provided to NFs and information sessions for NFs will take place during the Test Event from 12 to 14 August 2019.

The Olympic Games will take place from 24 July – 9 August 2020 and Paralympics from 27-31 August 2020.

### Climate mitigation planning and optimising equine and human performance

#### Climate triggers and mitigations

Climate mitigation is in place to ensure the health and welfare of horses is not compromised during competition. Thermal stress can result in reduced performance, earlier onset of fatigue, and increased risk of mistakes, injury and illness. Horses can be affected by thermal stress during recovery from transportation, pre-competition training, pre-competition warm-up, competition, recovery following competition, and up until their departure.

Environmental stress is monitored using the Wet Bulb Globe Temperature (WBGT) which accounts for the ambient temperature, humidity, solar radiation and wind speed. The WBGT will be used to monitor climate before and during competition and will be used to identify climatic trigger points, allowing climatic mitigation measures to be implemented in a proactive manner.

Preventative measures will be required to avoid thermal stress in horses. They will have to become acclimatised, kept cool, and consideration must be given to their individual differences e.g. health, breed, fitness and ability, as well as the intensity of exercise. Measures to prepare horses for the challenging climatic conditions include acclimatisation, familiarity with cooling procedures, feeding practices to avoid colic and ensure electrolyte supplementation, adequate recovery time following travel and careful management during competition e.g. avoiding overheating, careful daily monitoring, awareness of anhidrosis, plentiful water and the use of indoor arenas.

## **Optimising human performance**

Human athletes and event workforce must also acclimatise to the climate in Tokyo which in humans takes 7-14 days depending on fitness. Acclimatisation reduces heart rate, core temperature, electrolyte loss and perceived exertion. It increases sweat rates and heart stroke volume, enabling performance in heat.

Cumulative heat stress can occur in humans due to failure to recover from previous day's exertion. It usually occurs during the first few days in a new climate and is linked to dehydration. Hydration is therefore of paramount importance.

Although Tokyo's climate will affect everyone, those with pre-existing health issues should consult their doctor before travel and consideration is to be given to legislation relating to the use of medicines in Japan. People should be mindful of the clothing they wear, keeping hydrated, staying in the shade and wearing sunscreen.

Athletes should consider their fitness levels, carry out graduated training on their first few days after arrival, keep cool and hydrated, avoid missing meals and sleep well. Grooms should work in the shade, keep hydrated, eat regularly and sleep well. Coaches, stewards, staff and spectators who spend long periods outside must carry drinks, dress appropriately and be aware of heat stress. Signs of heat stress include nausea, confusion, dizziness, fainting, profuse sweating, cramps and headaches. An advisory document can be found on the FEI website.

## **Warm-up in hot and humid climates**

Warm-up prepares the horse for exercise, optimises performance, reduces risk of injury and should take place at any training session. It helps in establishing the maximum efficiency of muscles and their coordination for maximal performance. Warm-up increases the temperature of the body, muscles and blood, improves blood flow to muscles and provides efficient oxygen transfer and use. It improves cooling efficiency, limb flexibility and psychomotor skills resulting in protection of tendons muscles and ligaments from injury.

Warm-up consists of three parts: passive, general and specific. Passive warm-up involves externally increasing the body temperature and general warm-up lasts for up to 10 minutes and involves non-specific movements at half intensity. Specific warm-up involves movements required by the sport discipline with increasing intensity. Warming-up for too long results in fatigue, reduced performance, potential for injury and overheating.

Overtraining during warm up is linked to a lack of athlete confidence and experience, insufficient preparation and the warm-up being insufficiently adapted to climatic conditions.

Factors affecting warm-up in Tokyo include climatic conditions, distance between the stables and the warm-up area, distances from the warm-up area to the competition arena and the surfaces.

Recommended actions during warm-up include keeping the horse in the shade or a cool area beforehand, pre-cooling, rest periods in the shade during warm-up, shortening the overall warm-up time and not including passive warm-up. The warm-up should be split into short periods of approx. 15min between which the horse should be rested in the shade, monitored and cooled where required. The monitoring of horses should include evaluation for fatigue abnormal respiratory patterns, and the type and distribution of sweat. Consideration should be given to the heating effects of clothing such as ear bonnets, numnah sizes, and the use of bandages.

## **Lessons learnt from Atlanta**

Much research was carried out in the lead up to the 1996 Olympic Games in Atlanta with focus on the intensity of competition and recovery from performance. Aggressive cooling and cooling them before cross country was considered crucial and is typically carried out where horses compete in hot climates. Hydration and the monitoring of water intake, for both humans and horses is of great importance.

## **Veterinary perspective on individual horse intervention**

Individual horse intervention is a new concept which will comprise a formal protocol for the intervention and support to horses only during post-travel recovery and training. The aim of the intervention is to engage in a collaborative process with the horse's team, apply a consistent approach to the management of horses based on best practice and first class advice to protect horse and athlete welfare.

Horses at exercise will be observed and specific triggers e.g. excessive sweating, increased respiratory rate, will prompt intervention. The athlete will be asked to move the horse in to the shade, data will be collected concerning thermal stress, the horse will be cooled if needed and further guidance given where required.

Research will be carried out to support the initiative at eventing competitions and at the Test Event. An educational programme will be available to raise awareness and inform athletes on risk factors for thermal stress, recognising hot horses and best cooling practices.

## **Panel Discussion**

Kyra Kyrklund, Joyce Heutink, Henrik Ankarcrona and Göran 'Yogi' Breisner took part in a panel discussion concerning the climatic challenges in Tokyo.

Special challenges were identified to be the long warm-up required for dressage, transporting horses to a second competition venue for cross country and ensuring jumping riders are aware of the tiring effects of the heat regardless of their previous experiences of extensive travel. Para-dressage challenges include the speed of cooling horses and the timing of early morning competition as some athletes may require medical therapy before competition starts.

They advised that horses should be prepared well before travel and for teams to know what is normal for the individual horses so that abnormalities can be easily identified. They identified that athletes may be inclined to exercise their horses too much after arrival which would have a negative impact on their later performance. Athletes also need to be fit and acclimatised. Scheduled rest times for athletes and grooms would be required and they stressed the importance of cooling for both the athlete and horse.

### **Stakeholder feedback**

Concern was raised regarding the weather conditions, the time of day in which the horses will compete and competition times with respect to broadcasting.

Clarity was provided regarding the plans for detailed protocols for the postponement of competition and contingency plans are in place for adverse weather such as storms, thunder and lightning. Weather monitoring will be supported by leading weather services who will advise on the conditions at the competition venue. Teams should arrive with a clear strategy for managing their horses and work is in progress to ensure suitable allocations of training arenas to meet their requirements given the climatic challenges. Competition is scheduled to avoid the hottest parts of the day in conjunction with the challenge of competition logistics e.g. get workforce to the venue in order for competition to take place at such early hours of the day.

In summary the 2020 preparations are progressing well, and much planning has been carried out to enable horses and athletes to compete at the best of their ability.