

GUIDELINES AND RECOMMENDATIONS FOR PERFORMING EXERCISE IN EXTREME HOT WEATHER

INTRODUCTION

Through a press release dated 25th February 2019, the Malaysian Meteorological Department has reported that as Malaysia is approaching the end of the north-east monsoon phase, temperature in the country, especially in the northern states of the peninsular of Malaysia has risen to 34 to 36 degrees Celsius. This hot weather is expected to be prolonged and will only subside towards the end of April 2019. Hot weather often raises concerns for the public, especially those who are active in sports. It can compromise the physical capabilities of athletes, as well as the general population during their day-to-day exercise training and activities.

In view of this, the National Sports Institute is publishing these general Guidelines and Recommendations for Performing Exercise in Extreme Hot Weather with the aim of educating and helping public, coaches and athletes who are engaging in exercise training sessions and competitions, so that the major effects of heat illnesses such as dehydration, muscle cramp, heat stress, and heat stroke can be avoided.

HUMAN BODY THERMOREGULATORY PROCESS

During physical activity in a hot environment, peripheral blood circulation and sweating increase significantly, in order to dissipate metabolically produced heat, into the environment. While prolonged exercise in hot and humid environment results in a higher sweat rate, the cooling effect of sweat evaporation is lower due to the saturated air reducing the water pressure gradient. In other words, the higher the relative humidity, the less heat will be dissipated from the body through evaporation and thereby impose higher risk to exertional heat illnesses.

SIGNS & SYMPTOMS OF HEAT ILLNESS

- Light headedness, dizziness, nausea
- Obvious fatigue
- Cessation of sweating
- Obvious loss of skill and coordination/ clumsiness or unsteadiness
- Confusion
- Aggressive or irrational behaviour
- Altered consciousness
- Collapse
- Ashen grey pale skin

PREVENTION STRATEGIES

Recommendations for Event Organisers

Sports event organisers are urged to assume extreme caution when event is held under extreme hot weather condition. They are responsible to ensure the safety of the participants with the following considerations:

- Re/Schedule the starting time of events based on weather patterns.
- Adapt the rules and regulations to allow extra breaks or longer recovery periods
- Establish a medical emergency plan and facilities capable of managing heat related illnesses
- Provide cooling facilities such as shelter (umbrella), ice, wet towel, water pool, powerful fans.
- Explain to participants / athletes about the risks and preventive measures, as well as symptoms and treatment measures related to heat illnesses
- Cancel/postpone the event in the case of unexpected or unreasonably hot weather

Cooling Methods

- Cooling methods include external (eg, application of iced garments, towels, water immersion or fanning) and internal (eg, ingestion of cold fluids or ice-slurry) methods.
- Precooling may benefit sporting activities that involve prolonged exercise (eg, middle- and long-distance running, cycling, tennis and team sports) in warm-hot environments. Internal methods (ie, ice slurry) can be used during exercise, whereas tennis and team sport athletes may implement mixed cooling methods during breaks.
- Such practices may not be appropriate for explosive or shorter duration events (eg, sprinting, jumping, throwing) conducted under similar conditions, as they may lower muscle temperature.
- A practical approach while exercising/training in hot-humid environment might be the use of fans and commercially available ice cooling vests, which can provide effective cooling without impairing optimal muscle temperature for performance. In any case, cooling methods should be tested and individualised during training to minimise disruption to the athlete.

Maintaining Hydration Status

The goal of fluid intake during physical activity in hot environment is to ensure the body receives adequate fluid before, during and after training/competition. Fluid intake recommendations are as follows:

- Take 2 cups of water (500-600ml) within 2 hours before training and competition.
- Take 2-3 cups of water or sports drink (500-750ml) for every hour of training and competition lasting 60 minutes or more.
- Fluid intake after training and competition depends on body weight losses. In general, 1kg of body weight loss requires 1.5 liter of water ingestion to rehydrate.

Heat Acclimatization

- Allows athletes to undergo heat acclimatization to enhance biological adaptation to reduce physiological burden and increase exercise capacity.
- In general, heat acclimatization needs to be carried out for one to two weeks to improve the efficiency of sweating and heat release.
- Heat acclimatization sessions should last at least 60 min/day, and induce an increase in body core and skin temperatures, as well as stimulate sweating.

Attire

- Wear appropriate clothing (light, good quality fabric made from high quality cotton that helps with air flow and wicking properties, white- or light-coloured clothing)
- Fabric made from 100% cotton is not encouraged as cotton holds large amount of sweat, not allowing the sweat to evaporate (remember that sweat must evaporate to cool the body).

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