



## Marathon des Sables 2022

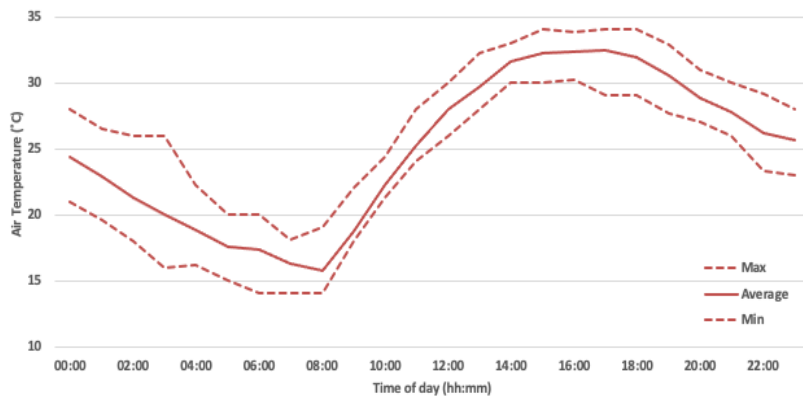
### Pre-Event Heat Acclimatisation services at Leeds Beckett University

#### What is involved in the Mds

The Marathon des Sables is a 250km 6-day ultra-endurance running event that takes place in the Moroccan Sahara Desert over difficult sand and rocky terrain. A major challenge is the heat which at times can reach 50°C. In 2022 the event takes place from 27<sup>th</sup> March to 1<sup>st</sup> April, and we are providing services in March 2022 for competitors to heat acclimatise prior to departure.

#### Event temperature history

In 2021 there was a 47% drop out rate, which it is thought was mainly due to the exceptionally hot conditions in the October event combined with reports of a gastrointestinal infection that magnified the effects of the heat. Most of these competitors



had retired by the end of stage 3, and as can be seen in Figure 1, temperatures were high for the whole event. Note that although daytime temperatures were high, the evenings remained warm through the night continuing the strain placed upon the body, especially in the long stage. In reality, the local temperatures would have been higher due to the heat that the sandy and rocky environment would have radiated. Only those athletes well adapted to the heat will have been able to cope with those conditions and continue the event.

Figure 1. The temperatures recorded at the nearest weather station during the event in 2021.

In March and April, conditions are not normally that severe, but high temperatures can still be expected. Figure 2 shows that in some years the temperature around the period of the event this year can be cool on some days but can also remain high.

In 2016, 2017, 2018 and 2021 temperatures were high for multiple days, and even in the other years where cool days were interspersed with hotter days, they would have been hot enough to be problematic. Higher than normal humidity will increase the severity of the heat stress, as will the absence of wind. We can't predict what might happen during this year's event, but it is very likely that high levels of heat adaptation will be essential.

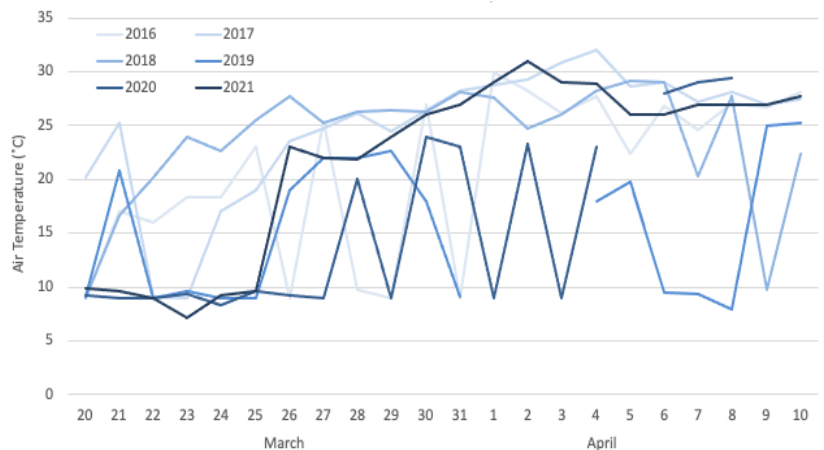


Figure 2. Maximum daytime temperatures for the last 6 years for the period of the 2022 event.

*"I took part in what is described as the hottest ever marathon des sables. I have no doubt in my mind that the acclimatisation training I did at LBU prepared me greatly for the event. I can honestly say that the heat did not seem a major factor for me, which is crazy considering the amount of people who dropped out due to it. The team were so accommodating and flexible, everything was professionally done and with the utmost care. I wouldn't even consider taking on this event again without the support of the team at LBU."*

**Dan Herman, 2021 Mds Finisher.**

#### What is heat acclimatisation?

If the body is exposed to hot conditions that causes the core temperature to increase to a high enough level for long enough periods and often enough, the body will start to adapt and adjust various physiological mechanisms and processes to be able to function more effectively in the heat. This process is called heat acclimatisation, and if well controlled and executed

by planned 'heat exposures', it can force and cause these beneficial adaptations to take place. These adaptations allow the body to lose heat more effectively and allow the body to perform well even when hot, for long periods. This means you can maintain the running speeds closer to those that you would do in cooler temperatures and run for longer periods without succumbing to heat stroke. The changes that take place can be measured and monitored so the process of heat adaptation and its progress can be tracked.

### What is involved?

As described above, regular exposures to a hot environment are required to create the stimulus for the body to create the adaptations. To get higher levels of adaptation requires a larger number of exposures. Our approach is to use our state-of-the-art environmental chambers and hot baths, for periods of between 60 and 90 minutes over a period of 2 to 3 weeks. Visits will comprise of running on the treadmill in the heat or in sitting in a hot bath, while we monitor a number of responses, including core temperature to ensure that core temperature is both high enough but not too high. The exposures increase in severity and progress as adaptation takes place to ensure that the capacity to perform in the heat continues to develop. There is some flexibility in the approach depending upon each individuals' circumstances, needs and availability, so please do get in touch to discuss your individual requirements.

### Why Leeds Beckett University?

With the use of our environmental chambers we have a long history of supporting athletes preparing for racing in hot conditions as long ago as 1993. More recently we worked with a number of triathletes and track athletes alongside their national federations to develop specific acclimatisation strategies and provide heat acclimatisation exposures in the lead up to the Tokyo Olympics, where both high heat and humidity created very difficult conditions for high intensity endurance performances.

### Heat Adaptation packages

	Bronze	Silver	Gold
Chamber sessions	6	10	14
Pre & Post Heat Stress evaluation	✓	✓	✓
Core Temperature*	✓	✓	✓
Whole Body Sweat Rate	✓	✓	✓
Perceptual responses	✓	✓	✓
Heart Rate responses	✓	✓	✓
Plasma volume changes		✓	✓
Sweat Composition			✓
Paced long run		✓	✓
	<b>£550</b>	<b>£700</b>	<b>£1200</b>

\*Wireless GI core temperature pills can be paid for additionally at £60 per session



### Outcomes of our heat acclimation services

- A high level of heat acclimatisation
- Experience of running in the expected conditions of the event
- Decreased perception of the heat
- Understanding how your body reacts to the heat
- Know your sweat rate and how to hydrate effectively
- Learning strategies to minimise the chances of heat stroke
- Establishing a safe race pace / running intensity
- Gaining confidence in your ability to run in the heat

These outcomes will depend on the package chosen. The above, are the outcomes for the Gold package.

**Where:** Leeds Beckett University, Headingley Campus, Carnegie School of Sport building, LS6 3QT.

**Booking & more information:** Please contact [Barney.wainwright@leedsbeckett.ac.uk](mailto:Barney.wainwright@leedsbeckett.ac.uk)

**We also provide additional services that may be of interest:** Pre-Participation ECG's, specific nutrition & hydration advice, running fitness assessments, gait analysis, psychological strategies.