



**TRI TRAINING
HARDER**

**BELIEVE.
STRIVE.
ACHIEVE.**

BEYOND THE SUNSHINE

**WHY ALL TRIATHLETES SHOULD ATTEND
WARM-WEATHER TRAINING CAMPS.**

EXECUTIVE SUMMARY

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PHILIP HATZIS

Training camps have long been perceived as a luxury reserved only for the elite athlete. However, with the growth of the sports tourism industry and the increasing numbers of recreational endurance athletes willing to travel abroad to focus on their performance, warm weather training camps have firmly established themselves as a mainstream staple in many triathlete's training plans for the year.

The benefits of warm weather training are no longer reserved for professionals and elite age groupers, but for athletes of all abilities and with a vast range of individual goals. The report explores these benefits and outlines the physical, tactical and psychological gains that warm weather training can deliver. There are several measurable physical benefits for athletes training in warm weather and areas where there is increased sunlight, from the impact of Vitamin D to the additional training stress from heat.

In addition to the physical benefits, this report covers the positive psychological power of training in warmer environments and explores how common winter blues can be reduced or reversed by training in the sunshine.

Finally, there are clear tactical advantages for training in warmer climates and several athletes and coaches are using warm weather protocol and safe, successful cooling strategies to gain the edge every year and there is no reason that these advantages should be restricted to the top cohort of athletes.



**"THE TRAINING,
COACHING AND
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INTRODUCTION

Traditionally warm weather training is the staple part of almost every serious athlete's training routine. From pre-season tours in rugby for school pupils, to warm weather cycling training for professional cyclists or football camps for premier teams, athletes of all different levels of their development are finding themselves packing for sunnier, warmer climates in order to do the same things they do at home but abroad!

Other sports swear by it with Team GB running camps in Portugal, Spain, South Africa and the US. The 2020 Olympic Games will be held in the warm and humid conditions of Tokyo and exercise physiologists are finding themselves in a thermo-arms race to have the upper hand in all sports. Yet, there are also many examples of how athletes can push themselves too far. The IRONMAN World Championships, Marathon des Sables and the Badwater Marathon to name a few events where heat becomes one of the additional hurdles with well advertised negative effects such as Jonathan Brownlee in Mexico in 2016 and US Olympian, Sarah True at both IRONMAN Frankfurt and IRONMAN Nice 2019.

With the well documented positive effects of leading an active lifestyle more and more people are looking for active holidays and 'Sports Tourism' is on the up (UNWTO, 2018) and this is no better shown through a typical triathlete's expenditure.

UK triathletes on average are looking to spend approximately £830/year on a training camp (MultiSport Research for Triathlon Industry Association (TIA), 2019) with the training, coaching and camp industry worth over £66m in the UK.

So what are the benefits of choosing a training camp abroad and what should triathletes be considering when booking one?

This report will investigate and simplify the answers to these questions to help everyday athletes make informed decisions about their training and to ensure all athletes can make the most out of their warm weather training opportunities.



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PHYSICAL BENEFITS OF WARM WEATHER TRAINING

Heat training is an additional stress on the body. Much like the fact that athletes can't just add training miles upon training miles without risking over training, fatigue and injury, heat stress can have similar impacts as it is an additional training load.

However, when we know this, we can begin to use this training load as a means of improving performance.

1) THE ADDITIONAL TRAINING STRESS FROM HEAT

When a participant trains in warmer weather, an additional training stress is added onto an athlete. Blood becomes thicker meaning the heart has to work harder to pump oxygen in the blood around the body to the working muscles (Ron Maughan, 2004). As a result of this stress, the body adapts and increases blood plasma which remains changed in the body after the exposure to heat stimulus. This leads to an improved level of cardiovascular fitness. Furthermore, heat trained athletes will begin sweating earlier and heavier and the heart will pump more blood to the heart to ensure the body is more efficient at cooling (Sawka MN, 2011).

2) VITAMIN D

Over 70% of the population have dangerously low levels of Vitamin D (Hollick, 2008). Vitamin D has a role in calcium regulation and bone health and other body processes and critically has a role in muscle function. Many endurance athletes fit training times around busy schedules meaning they tend to avoid peak sunlight hours and in the winter this could mean training in the dark or indoors. This can have a negative effect on performance (Ogan & Pritchett, 2013) or can lead to injury and illness.

Exposure to sunlight increases the production of Vitamin D without the need of supplementation. This results in lower injury risk, better muscular function and improved strength training (Ogan & Pritchett, 2013).

For athletes living far from the equator over winter half of the year can certainly benefit from additional vitamin D and this can be obtained easily if training abroad in the warmer climates and not avoiding peak hours of sunlight.



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3) MUSCLE TIGHTNESS

Training in warmer weather can have far reaching benefits, but not just for training.

The longer days mean there is more time in the day for training. This has significant implications on recovery gains. Firstly, there is more time between training sessions, allowing better recovery. Secondly, rest between intervals can be taken without the risk of the participant cooling off significantly.

In colder conditions, rest intervals can reduce the temperature of the muscles leading to an increased chance of injury which by implication means an increased workload can be applied on the athlete. (Simpson., 2016) Equally, coaching points, discussions, new drills etc can all be done without athletes (and coaches) being distracted by fear of exposure to the elements meaning athletes can take their time to practice drills appropriately and learn more at times when their focus is highest.



4) HEAT AND ALTITUDE TRAINING

There is anecdotal evidence that there is a crossover between heat training and altitude training - this is known as cross-tolerance. In fact, many of the benefits of hypoxic training can be achieved through heat acclimatisation (Lee BJ, 2016).

Therefore, those athletes unable to get to high altitude due to time, finances or simply holiday allowance, need not worry that they are unable to climb higher, but instead should look to train warmer for similar physiological enhancements.

**"MANY OF THE BENEFITS OF
HYPOXIC TRAINING CAN BE
ACHIEVED THROUGH HEAT
ACCLIMATISATION"**



MENTAL AND PSYCHOLOGICAL BENEFITS OF WARM WEATHER TRAINING

1) SEASONAL AFFECTIVE DISORDER

Seasonal Affective Disorder, SAD is said to affect 5% of people in latitudes similar to the UK (Leora N.Rosen, 1990). Yet, according to studies, 90% of people will admit to having a lower mood in the winter months (M.D., 2006).

As a result of lower moods, serotonin drops, and athletes tend to indulge more in carbohydrate rich foods to boost serotonin levels and improve mood, which only results in weight gain. With a lower mood, the athlete can also find early mornings harder and those are the training sessions that are often then missed. Increased daylight or lightbox training is the best way of reducing this winter effect as that helps reduce the body's desire to hibernate (American Family Physician, 2000).

Mood state is said to be linked to levels of recovery – or readiness to train (Aschwanden, 2019) which can affect training. By improving positive moods, training can be improved. A change for athletes to warmer weather, longer days and exposure to sunshine can reduce the effects of SAD and subsequently lead to positive mood. This results in a better emotional state for athletes and thereby improving the recovery quality of the athletes allowing them to do more training.

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2) CHANGE OF TRAINING ENVIRONMENT

It is reasonable to say that triathletes train almost all year round. Approximately half UK triathletes train up to 8 hours per week in off season and about one third train more than 9 hours per week in the off season (MultiSport Research, 2019) indicating UK athletes are training all year round. By following a continual training programme, either individualised, or through the popular club environment, it is easy to see how 'flavour fatigue' might set in.

A change of training environment can provide a welcome boost to motivation which in itself will provide improved training breakthroughs without touching on the improved physiological improvements.

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3) REDUCTION IN MENTAL FATIGUE

Triathletes tend to stick to a routine or a schedule, this is usually optimum for training performance allowing training to be scheduled for the biggest performance gains.

However, it also means that athletes who take to warmer climates can disrupt this routine, resulting in a more flexible and adaptive mind. By changing the routine, the athlete has to adapt the training to suit the new environment and cannot get stuck in a cycle of sleep, train, work repeat or equivalent.

A break from this routine adds an overload of cognitive application to the new sessions and that can promote an increase in performance in the sport.

A removal from athlete's normal training environment can also lead to athletes spending time recovering their mental state which can become fatigued from all the stress of day to day concerns i.e. non training loads in any and all aspects of their life.

By changing the routine and location, the athlete is forced to think about the sessions more and less about daily life leading to a fresher, more mentally aware athlete.

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4) REDUCTION IN DISTRACTIONS

Most athletes train as a hobby and are surrounded by the distractions of work, family and social commitments, all of which can be detrimental to a training programme. Triathletes are renowned for fitting more into their schedule than most and often they cannot recover properly by not giving themselves the time to rest (Aschwanden, 2019).

A warm weather training experience, by its nature of being in a different location, may often allow participants more time to put the training time in and then allow them more time to recover too as the mundane jobs that fill everyday life cease to exist while away. This means that the athlete can actively rest whilst on a training camp.

This reduction in distractions also allows the individual to spend the time doing the activities that may often be neglected in a normal schedule: physio exercises, stretching, self-massage and other recovery techniques allow the athlete to train and recover well leading to better adaptations to the training.

A triathlete in a red and white singlet and shorts is running on a track. The background shows a clear blue sky, a stadium light tower, and some buildings in the distance.

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5) IMPROVED TEAMWORK

Triathlon is known as an individual sport and although there are a few 'team' events, most of the team experiences come from training as a group or with 'training buddies'. Warm weather training though is often completed as a group (Thomas G. Plante, 2010).

This group environment can foster improved training sessions as fatigue breeds camaraderie and reduces the feeling of perceived effort (Thomas G. Plante, 2010). Participants are able to do more training and by working in a group can often extend the training effect through team support and external motivation.

Equally, friendships can be built upon that would otherwise struggle to reach beyond turning up to a group session and racing home to do the next errand. These relationships can in their own right help improve performances either through friendly competitiveness in training sessions and races or finding new friends to train alongside in more sessions on their return home. All this helps to build a performance training environment and maximise training effect.



6) IMPROVED RELATIONSHIP WITH THE COACH

48% of UK triathletes work with some form of active coach (MultiSport Research, 2019). Be this through a club, a firm, or a friend. Remarkably a significant portion of training and sessions being delivered are online and have limited face to face experiences.

Therefore, a warm weather training camp is an opportunity for the athletes and coaches to improve their relationship. A coaching relationship goes beyond data and training measurements and often working with athletes, seeing their body language and understanding their training attitudes can help a coach understand the person behind the training (Gabriella Trzaskoma-Bicsérdy, 2007).

Clearly a better, more holistic understanding of the athlete, and an improved understanding of the nuances of the coach goes a long way to improving the synergy of a coach-athlete relationship. However, it also allows the coach to see how training can affect the athlete – be it the attitude of sessions, the approach to tougher work outs or the response when tired. All this gives a better insight to the working of the athlete which will only add to a coaching experience.



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EFFECTIVE WARM WEATHER TRAINING

1) METHODS OF HEAT TRAINING

Heat training and adapting to warmer climates can be achieved by three main methods

- **Environmental exposure** – The most obvious of methods: the athlete moves somewhere warm! When relocating to warmer climates, it is important for the athlete to gradually adapt their training load to allow for the additional stress of heat. Therefore, in the opening few days aerobic level activity should be completed through the hottest part of the day and using the cooler parts of the day to do any intensive workouts. Athletes should fully cool down post workouts and fuel (including hydration) appropriately. Using the room's air conditioning will not impact the body's acclimatisation, in fact, it could improve the recovery times.
- **Artificial training environmental exposure** – Not everyone is fortunate enough to be able to jet off to warm climates three weeks before a substantial race or event. However, a warm environment can be artificially created for the athlete to train in. Activities like Bikram or hot yoga (Perrotta, White, Koehle, Taunton, & Warburton, 2018) have positive effects on heat acclimatisation. As does wearing more layers than is necessary (Stevens, 2018), and indoor sessions in poorly ventilated or warm environments (e.g. turbo sessions indoors with a heater on!)
- **Raising of core body temperature** – Exposure to extremely warm environments like a sauna or a hot tub post exercise (Zurawlew MJ, 2016) or as part of a daily routine can dramatically improve heat adaptation.

Clearly being in a warmer environment helps to acclimatise the body to heat stresses. When adapting to warmer climates, allow 1-3 weeks to fully acclimatise.

If the warm weather training is a method of improved physiological performance, then results should last on return to cooler climates, and heat training should be a part of athletes training routine to assist in their training.

Within about 3 weeks, the physiological effects are reduced by 75% (KB, 1998).

However, heat exposure can return the athlete to where they were before relatively quickly and continual exposure will prolong the effects even if they are not somewhere warm.

**"WITHIN ABOUT 3
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2) DEHYDRATION AND HEAT TRAINING

Dehydration and heatstroke are not completely linked. An excessively high core temperature does not necessarily also lead to an increased level of dehydration and in fact a significant change in body weight may be an acceptable or even normal amount of loss without becoming dehydrated (Maugham R.J., 2007).

It is found that heat training on shorter intensive bouts of activity can cause an increase in core body temperature as a result of the thermal energy required by the body to do work. Longer, steady state efforts of exercise are likely to cause more dehydration as the body utilises stores of fluid. Clearly, when heat training, the increased thermal environment will mean that the athlete is likely to feel hotter and drinking can reduce that affect (Stephen Cheung, 1998)

Heat training causes the body to sweat sooner and more. Therefore fluid loss and subsequent replacement must be achieved after any heat training session. As the athlete becomes more acclimatised, they will not need as much fluid as their body becomes better at keeping itself cool. However, following a hydration strategy will help them bounce back from heat training quicker and prepare for the next session as well as help them perform well in longer endurance events. Athletes must make sure that their fluid intake is adequate however, losses of less than 4% of bodyweight is unlikely to impair performance (Goulet, 2013).



3) HOW TO RECOVER FROM HEAT TRAINING

Heat training is a stress. Therefore, it is important to think of it as such.

After training in the warmer environments, it is vital that the athlete adequately cools down. In extreme cases this may include cool showers and baths to effectively cool the core body temperature (Bongers, Hopman, & Eijsvogels, 2017).

Often, especially in warm environments, athletes tend to enjoy the warm location and spend time lounging by the pool or sunbathing. This is not adequate recovery and in fact continues the heat stress and will only prolong the recovery time before the adaptation can take place. Much like a training load, after a stress is applied, rest and recovery allows the body time to adapt.

Heat training should be considered in the same vein and therefore should not always be “on”. Finally, if the athlete is doing multiple workouts in one day, the subsequent sessions will start from an elevated core temperature, which will result in sub-optimal training and this must be carefully monitored.

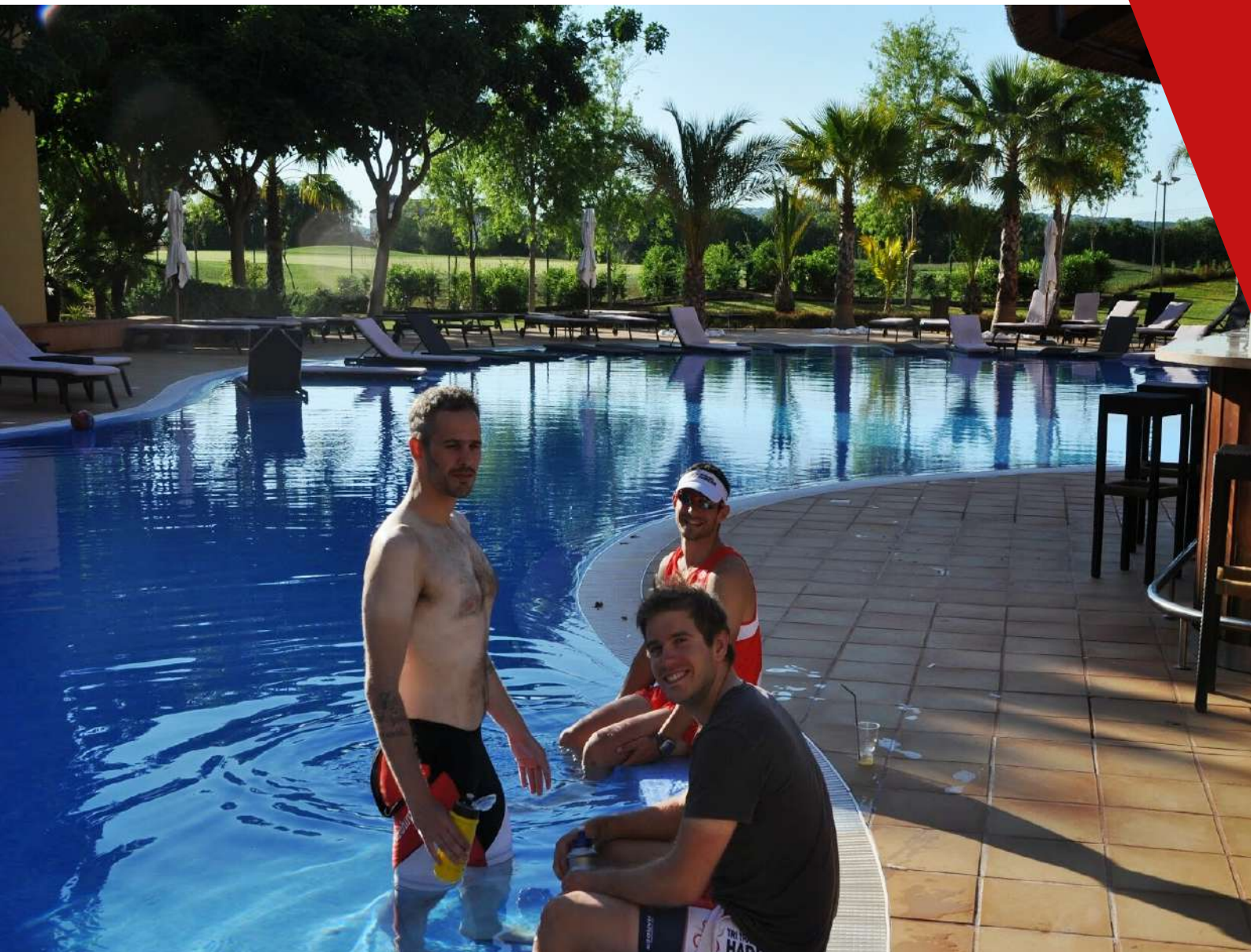


4) PRE-COOLING STRATEGIES

There are several strategies for staying cool.

Pre-cooling using cooling vests and towels to cool the core temperature down, similarly ice baths (Hutchinson, 2010) and iced smoothies (Rodney Siegel, 2010) can also be used as a means to cool down both before or after training in the heat.

Furthermore, cooling strategies help to reduce the perception of being hot that can in itself improve performance (Stephen Cheung, 1998).



5) DANGERS OF HEAT TRAINING

Heat training doesn't come without danger. Clearly stressing the body at any level has its risks.

It is important to listen to the body and learn from it. Athletes should start any heat training slowly and increase duration as their body adapts to the stress. In extreme situations athletes can and do die from heat related injuries.

With a fundamental risk of training in the heat being death, it is worth identifying heatstroke symptoms (NHS, 2018):

- **Headache**
- **Dizziness**
- **Loss of appetite and feeling sick**
- **Excessive sweating and pale, clammy skin but not sweating, even though hot**
- **Cramps in legs, arms and stomach**
- **Fast breath or pulse**
- **Temperature of 38°C or more (40°C is very serious)**
- **Being very thirsty**
- **Seizures**
- **Unconsciousness**
- **Death**

CONCLUDING REMARKS

Clearly there are a plethora of different reasons behind training in warm weather which add to the physiological strength, psychological advantage and indeed the overall well-being of an athlete.

Through these benefits, though certainly not to be considered a short cut, athletes can boost fitness in an easier, more efficient way than sticking to their regular training schedule and it is advantageous to book training escapes within a training programme.

Training in the heat can cause negative side effects which athletes and coaches should be aware of and there are methods that can promote the similar warm weather gains physiologically without having to get on an aeroplane.

However, often these neglect the other positive outcomes that are found by taking some time away from 'normality' and immersing oneself in a warm weather training environment.

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