



Travel recommendations for female athletes

Impact of travel fatigue on performance
and recovery in elite female athletes



IMPACT OF TRAVEL FATIGUE ON PERFORMANCE AND

Travel is an integral part of any aspiring athlete's regime. Competition schedules often require frequent travel across time zones and the subsequent re-setting of the body clock to the new environment with minimal disruption.

Despite some physiological differences between the genders, there is surprisingly little variation between how males and females respond to travel.

The following is a comprehensive guide to planning and organising travel developed through the study of and experience traveling with elite athletes. Utilising the guidelines will assist in minimising the effect of extended aeroplane travel and subsequent travel fatigue upon athletes following trans-meridian travel. The recommendations will enable athletes to adjust more rapidly to the new time zone and reduce any adverse effects on athletic performance.

Overview

Daily or circadian variation exists in sports performances with peak performance occurring in the afternoon and early evening due to improved flexibility, reaction time, strength and mood at this time of day.

Female athletes have long been considered to follow similar fluctuations in circadian rhythms and performance as their male counterparts. While the menstrual cycle is known to elevate core temperature and cause subtle fluctuations in hormone levels and mood states, particularly during the luteal phase, it is not considered to adversely effect performance.

International travel is known to disturb circadian rhythms and have a negative impact on performance. Symptoms of decreased vigour, increased fatigue, altered mood states and headaches are most noticeable 1-2 days following travel. Work capacity and peak power are also reduced.

It is generally accepted that symptoms begin to disappear and functioning returns to baseline by the fourth day following flight. However, the more time zones crossed, the longer the recovery period. Also, be aware that some individuals may adapt at a slower rate.

A lack of sleep or very restless sleep during flight can worsen the effect of travel fatigue upon arrival in the new destination. Dehydration from the dry environment of the aeroplane cabin may also be detrimental and contribute to elevated heart rates and headaches.

Other factors influencing the degree to which athletes are affected and their recovery rate:

1. Number of time zones crossed.
2. Direction of travel – westward travel is easier to tolerate than eastward.
3. Fitness level of individuals – fitter people adapt quicker to travel (so staff may have more difficulty than athletes in adapting to new time-zones).
4. Travel experience – the more you travel, the more skills you have for coping with any jet lag and the faster you will adapt.
5. Personality – outgoing types appear to adjust quicker than introverts.

Pre-flight

Flight bookings

- Aisle seats/exit rows – Book for increased legroom and stretching space.
- Sports meals/special meals – Most airlines provide special meals including low fat, vegetarian and athlete meals. Request these at the time of booking or within 36 hours of travel.
- Female athletes tend to prefer low fat or vegetarian meals and have smaller caloric requirements than males.
- Departure time – On long-haul flights it is preferential to depart around lunchtime or in the early afternoon so that the athletes are able to sleep in flight and arrive at their destination in the morning.

Destination

Ensure you are aware of local customs and environmental conditions.

- Vaccinations or medications – (eg. typhoid, malaria) may be required in that country. Some countries have strict guidelines on the type of medications that they allow to be brought in. Check with your physician regarding this.
- Climatic conditions – Check conditions for the time of year in your destination and take appropriate clothing (jackets, gloves, hat, scarf, thermal underwear, waterproof shoes, winter pyjamas for cold conditions; shorts, T-shirts, swimmers, hat, glasses, sunscreen for hot conditions).
- Travel insurance – Make sure you have taken out adequate insurance to cover medical emergencies (particularly in the USA).
- Water quality – Check if the water is drinkable.
- Power Adaptors – Check the local power outlets and voltage. Make sure you have the appropriate adaptors and/or voltage converters.

Check the location of hotels in relation to the venue.

- Location – Try to get relatively close (this saves having to negotiate the local traffic, which can be difficult).
- Room bookings – Try to get rooms away from the busiest sections of the hotel and main roads. This will decrease noise levels.
- Non-smoking floor - Ensure it's a non-smoking floor and there's limited access to drink or food machines (junk food).

Athlete arrangements

Get prescriptions filled or buy additional medications for any existing conditions that may flare up while away (it is often difficult to find specific medications while overseas or work out if they contain banned substances.)

Pack a small medical kit if travelling alone or in small groups (large groups will require a more extensive first aid kit and should have a team staff member in charge of this). Include items such as bandaids, paracetamol, anti-diarrhoea medications, sunscreen, insect repellent and nausea medications. If you suffer from asthma or respiratory problems, it may be a good idea to take a humidifier for your room. The air often gets hot and dry with the heating on or stifling during the summer months, if the room is poorly ventilated. Taking sinus medication is also a good idea if you're travelling in the spring when pollen counts may be high or if training at altitude.

[Make sure these medications are all safe for use \(check the ASDA handbook or hotline 1800 020506 or ask your doctor if you are unsure\).](#)

A battery-operated alarm clock is good insurance. You won't have to rely on a wake-up call or other team mates to wake you up. You will not need an adaptor if the power output is different, and you won't be in trouble if the power blacks out. If you have a favourite cereal or snack bar, pack some for the trip.

Pack in your hand luggage:

- Humidifiers: These are facemasks worn during flight to minimise fluid loss from the lungs. They are available from Humidifier Technologies for \$30 and can be ordered by phoning (03) 9379 2941 or 0411 442204.
- Melatonin: Can be used if you have tried it before. This is a naturally occurring hormone that assists in the regulation of the wake/sleep cycle. It can be purchased through health food stores and a tablet (3mg or 5mg) should be taken 20 minutes before you want to go to sleep.
- Blow up neck pillow (taking your own pillow is also a good idea as it is comfortable and smells and feels like home).
- Eye patches.
- Ear plugs.
- Water bottle.
- Snacks (particularly if you don't like airline food).
- Books, Walkman, CD's, pack of cards, Gameboy, laptop – for entertainment.
- Lozenges or Buttermenthols (check ASDA handbook) to stop your throat and mouth from drying out.

In flight

Activity and Rest

Change your watch to the time of your destination as soon as you board the plane. During the flight, be sure to stretch periodically and get up and move around at regular intervals. Both will help prevent pins and needles in the legs or swelling. During transit stops, do light exercises such as walking and stretching. When not active, get plenty of rest – lie with your eyes closed for a couple of hours if you can't get to sleep (use eye patches).

Fluids and Foods

- Drink lots of water – dry cabin environments are reported to cause losses of more than 300 mL per hour. Females generally require less fluid than males due to their smaller size. However, all travellers should drink regularly as thirst is a poor indication of hydration status.
- Put water bottles in your seat pocket to encourage constant hydration.
- Avoid coffee and drinks containing caffeine.
- Avoid alcohol.
- Apple juice, milk drinks and yogurt are all good for keeping the throat moist.
- Don't overeat. Inactivity on the plane means you won't need a high calorie intake.
- Generally females require lower calories than males.

On arrival

- Where possible, try to arrive in the afternoon and do a light training session upon arrival.
- Try to stay up until the evening of the first night to allow your body to adjust to the new environment.
- Keep drinking plenty of fluids.
- Try to get outdoors or in well lit areas during the day for the first 2-3 days, as natural sunlight and social interaction are excellent tools for re-setting the body clock.
- Light exercise or stretching sessions are great. Mid-day or mid-afternoon movies are out – you just go to sleep. Shopping and sight-seeing are good alternatives.
- If you need to sleep, don't sleep more than 1-2 hrs during the day or you will 'anchor' yourself in the time zones from home.
- If you are in cold climates where the heater is on high in your rooms and the air is very dry, try filling the bath or basin with steaming hot water to make the air more moist overnight.
- Initial training sessions need to be easy to moderate.
- Recording your morning Heart Rate (HR) can be a useful tool for indicating how you are recovering from the trip.

Concerns for female athletes – Oral Contraceptives:

An important part of taking oral contraceptives is that they are taken daily at approximately the same time. Some low-dose contraceptives start to become less effective if taken 2-3 hours later than 'normal'. If you forget to take a pill for up to 12 hours, it is recommended you take one immediately, then resume taking the pill at the same time as previously. Other forms of contraception should be used for 5-7 days after this lapse or until the end of the cycle.

When travelling, it is often easy to forget to take medications such as the pill as you are not in your normal routine. You may have an extended day or night depending on which way you are travelling.

As international travel interferes with the body's circadian cycle, it is important that any contraceptive pill is taken at the same time as the place of departure during travel and throughout the stay. This may mean taking the pill in the afternoon in your new location (the time that corresponds to morning at home), or vice versa depending on when you normally take your pill. When travelling across the date-line it is often easy to get confused when to take a pill as you may miss a whole day or have the same day twice. When this occurs, the days on the packet may not correspond any more, which adds to the confusion.

Sit down before departure (with your physician, sports scientist or coach) and work out what times you need to take the pill to maintain its effectiveness.

As routine is an important factor in remembering to take your pill - try to work out a convenient time and stick to it throughout your stay. If you are staying for an extended time, it may be more advantageous to revert to the same time as you would normally take the pill. It may be easiest to take an 'extra' pill only 12-14 hours after the first one in the home location, to ensure no lapse in the levels of circulating hormones. Be cautious if a period of more than 24 hours passes before taking the next pill and use other forms of contraceptive if this occurs.

How to manage athletes following an international flight

Use predominantly low to moderate intensity aerobic exercise for the first 2-4 days. Be aware that some individuals may experience disrupted pacing and a reduction in their technical efficiency. Fine motor skills are often reduced during the first few days following extensive international travel. It is often good to use more aerobic, fitness sessions in the first few days – swimming, walking, light jog, rather than highly technical skills sessions.

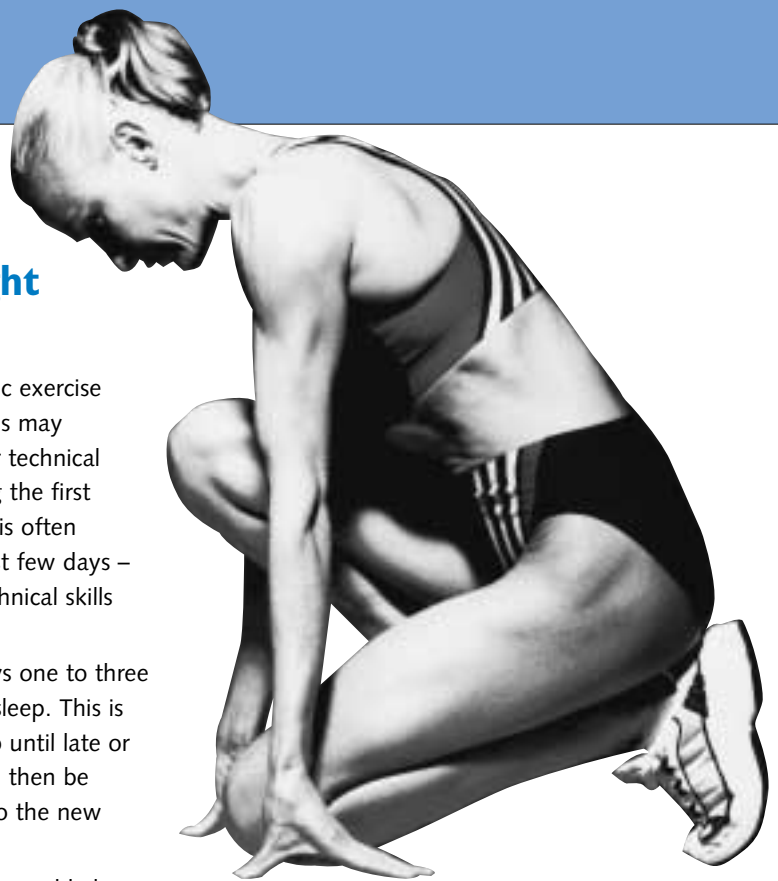
It may be beneficial to increase sleep-in time on days one to three and start training sessions later to encourage more sleep. This is particularly useful if athletes are not getting to sleep until late or if sleeping patterns are quite disrupted. Sessions can then be gradually brought forward as the athletes settle in to the new time zone.

Include activities during the day to maintain alertness and help resynchronise to the new environment (get out into the sunlight where possible). Athletes should have no more than 1-2 hours sleep during the day (particularly if athletes are not used to sleeping during the day). This will help prevent sleeping patterns getting 'anchored' to the place of departure. Otherwise you may sleep for 3-4 hours and then not be able to go to sleep that night.

Travel can be quite stressful on the body. Female athletes may experience delays in the onset of menses or have their periods come early.

Tools to help determine readiness to train

1. Coach observation – watch for technique flaws, lack of co-ordination and changes of mood.
2. Changes in weight – can be used to monitor hydration. A significant drop in weight from one day to the next is often due to fluid losses. Athletes should aim to maintain a constant weight for several days following arrival.
3. Quality and quantity of sleep – provide a good idea of how well the athlete is adjusting to their new environment. Poor sleep will have a negative impact on performance. Keep a diary of sleeping quality and quantity and check this daily to ascertain how well the athlete is adapting.
4. Submaximal exercise tests – can be used to ascertain the amount of physiological stress on the body following travel. A submaximal exercise test could be a 200m swim, 400m run or 2km cycle. The activity will vary depending on the sport and available equipment and should be sports specific (something that could normally be done in warm-up). The exercise is timed and a heart rate (HR) recorded. The test should be evenly paced to give a steady-state HR and should be at a set pace for each athlete. Pre-departure tests should be completed to determine a baseline. Research has shown that following travel, heart rates are often higher and performance times slower, for a given workload. As an athlete recovers from the travel and/or change in environment, the heart rate and times will return to similar levels as pre-departure. This signifies readiness to train.





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