

*The Routledge Handbook of Applied Sport Psychology: A Comprehensive Guide for  
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By Hanrahan & Anderson

*It's Nice to Go Traveling, BUT ...*

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Extensive domestic and international travel is a necessity of life for many athletes, particularly those at elite or professional levels. On the one hand, travel opens up exciting opportunities to experience new places, cultures, and people, often providing wonderful memories that will last a lifetime. On the other hand, arduous journeys across multiple time zones are not uncommon and bring with them the challenges of travel fatigue, jet lag, sleep deprivation, and other threats to athletic performance and athlete well-being. Having travelled more than one million miles during the past 25 years in my role as an applied sport psychologist, I have experienced effective and ineffective team travel first hand.

### <a>Psychological and Physical Effects of Travel

Travel, whether by air, sea, or land, involves a complex interaction of many disparate influences. Activities such as watching beautiful scenery or interacting with friends are perceived by most people as pleasant things to do, whereas sitting for hours in an airplane or waiting to retrieve luggage at an airport are generally seen as less pleasant, sometimes stressful activities. In this section, I will address the influence of jet lag, sleep deprivation, mood responses, and effects of travel on athletic performance.

### <b>Effects of Jet Lag

One of the most fundamental effects of travel involves interference with the human body clock. If you travel rapidly across multiple time zones, your natural cycle for sleeping and waking becomes out of synchrony with the cycle of natural daylight and darkness at your place of arrival. The site of the human body clock is at the base of the hypothalamus, a region of the brain that is ultimately responsible for many of our daily fluctuations in appetite for food and sleep, which cycle over a period of about 24 hours. These fluctuations are known as *circadian* rhythms, from the Latin word meaning “about a day” (see Waterhouse, Reilly, & Edwards, 2004 for a review).

Jet lag is, in essence, a mismatch between your body clock and the actual time of day. The severity of jet lag symptoms depends upon several factors, including the number of time zones crossed, the duration of the flight, the time of departure and arrival, and the direction of travel, with travel from east to west generally producing less acute effects than travel from west to east. Common symptoms of jet lag include fatigue, insomnia, dizziness, irritability, gastrointestinal problems, general feelings of weakness, and minor cognitive impairments. Additional possible symptoms include attitude and motivation problems, mood swings, decreased general well-being, and increased perceptions of stress. The effects are usually temporary but can persist for over a week in some cases. The usual rule of thumb that is applied to adjustment to jet lag is one day for every hour of time change, although individual differences are substantial and more (or less) time may be required.

#### <b>Travel-Related Sleep Deprivation

During lengthy periods of travel, it is almost inevitable that some sleep deprivation will occur, either in the duration or quality of sleep, or both. Reilly and Edwards (2007) suggested that some aspects of physical performance, such as muscle strength, swim times, and treadmill running, can be maintained in the face of partial sleep deprivation. Importantly, however, they noted that “while athletes may be able to overcome the adverse effects of sleep loss in single all-out efforts, they may be unable to or unwilling to maintain a high level of performance in sustained exercise and in repeated exercise bouts” (p. 278). Also, Spiegel, Leproult, and Van Cauter (1999) demonstrated that sleep debt has a harmful effect on carbohydrate metabolism and endocrine function. After a relatively short period of sleep restriction (6 days of 4 hours per night), physiological functioning that is critical for athletic performance – glucose metabolism and cortisol secretion – was shown to be depressed by 30-40% compared to a subsequent sleep recovery period (6 days of 12 hours per night) among young, healthy males.

Furthermore, there is evidence that intermittent moderate exercise exacerbates rather than ameliorates the negative effects of sleep deprivation on performance-related indices such as reaction time, depressed mood, fatigue, and vigor (Scott, McNaughton, & Polman, 2006). Strategies to minimize the effects of travel-related sleep deprivation, such as using relaxation strategies to induce sleep while travelling, are probably helpful for athletes who regularly travel long distances to competitions.

### <b>Mood Responses to Travel

Given that mood fluctuations are a common symptom of jet lag and other travel-related matters, there is a strong case for monitoring athletes' mood responses during and after travel, especially across time zones. Such monitoring provides a mechanism for assessing psychological adjustment to the demands of the travel and for providing some forewarning of specific performance-threatening affective responses, such as fatigue, confusion, or depressed mood (Beedie, Terry, & Lane, 2000). Mood monitoring may be especially relevant when travel takes athletes to more extreme environments than they have previously experienced. For example, travel by athletes to extremely hot or cold environments is likely to result in significant mood disturbance, possibly reduced cognitive performance, and associated threats to competition performance (see Lane, Terry, Stevens, Barney, & Dinsdale, 2004)

Figure 36.1 shows mood scores for tension, depression, anger, vigor, fatigue, and confusion reported by a medal-winning bobsled athlete from one day after arrival (Arr +1) in Nagano, Japan for the 1998 Olympic Winter games through to the two competition days (Arr +16 and Arr +17). Mood responses showed a pattern of rapid fluctuation over the 16-day period, starting with low vigor and high fatigue typically associated with jet lag, and passing through a period of high anger and depressed mood about a week later, before stabilizing into an "iceberg profile" typically associated with superior performance (Morgan, 1980) on the second day of competition when the medals were being decided.

Prior to departing London for Japan at the beginning of February, the bobsled team and its coaching and support team, of which I was a part, had completed a return trans-Atlantic crossing between London and Florida for a training camp in mid-January. Given that Florida is 5 hours behind London and Nagano is 9 hours ahead, this schedule represented a 14 hour time change in the space of less than 3 weeks. The athlete in question experienced acute symptoms of jet lag. The significant mood disturbance he reported could be explained partly by time zone adjustments and sleep disruptions, especially the fatigue and vigor scores. The elevated scores for anger and depressed mood, however, were reflective of his over-reaction to relatively minor issues from home that he felt powerless to address while in Japan. These sorts of magnified emotional responses to what would be seen, at other times, as simple daily hassles are part of the emotional intensification brought about by the Olympic experience, but made worse by the underlying irritation that is a common symptom of travel fatigue and jet lag.

#### <b>Effects of Travel on Athletic Performance

A central question to be addressed is whether long-distance travel has a demonstrably negative effect on athletic performance. A review of the research literature published nearly 20 years ago concluded that “no compelling evidence exists demonstrating that air travel adversely influences athletic performance” (O’Connor & Morgan, 1990, p. 20). Since that review was published, however, further evidence has been produced that suggests that some of the issues commonly associated with travel across multiple time zones, notably jet lag, sleep deprivation, and travel fatigue, may indeed bring about significant performance decrements. Reilly and colleagues, for example, have described a range of associated performance decrements, including reduced muscle strength, slower sprint times, and impaired choice reaction times (see Reilly, Atkinson, & Waterhouse, 1997).

#### <a>Common Difficulties Experienced During Travel

Although travel is an exciting prospect for many athletes, it can be sufficiently fraught with difficulties to lose its appeal for regular travellers. Air travel, at its worst, involves the physical stressors of sitting still for long periods of time in a noisy, cramped environment while breathing poor quality air, eating unappealing food, and losing sleep. On top of these conditions, there are the psychological stressors of potential delays and missed flights, forgetting important items, time away from family and friends, guilt about shirking responsibilities back home, and concerns about terrorism. Although there is limited scientific evidence that these stressors, individually or collectively, represent significant threats to sport performance, they appear unlikely to enhance athlete well-being.

A significant travel challenge in some sports involves the safe transport of essential equipment. In tennis or badminton this challenge may involve little more than remembering to pack racquets and clothing, but in other sports, such as kayaking, rowing, shooting, and equestrian, the logistical complications of international travel with boats, guns, or horses are considerable. I have witnessed many occasions where a key piece of equipment was lost, broken, or impounded by overzealous customs officials, and the prospects of competition success disappeared with the equipment. At the 2003 World Shooting Championships, for example, an Olympic medallist's shotgun remained impounded at London's Heathrow airport as he boarded a plane for Cyprus, despite his paperwork being in order. Having to compete with a borrowed gun effectively shattered his chances of a medal, and he finished well down the field. Thorough advance planning and taking all necessary precautions are central to overcoming these types of travel challenges but, in addition, many athletes take crucial items of equipment in their hand luggage where air transport regulations allow.

There are several other seemingly minor but potentially significant challenges associated with successful domestic and international travel, in particular to high security competitions such as the Olympic Games. These challenges include accommodation, nutrition and

hydration, local transport, difficulties regarding accreditation and overbearing security arrangements, and acute homesickness as a result of being separated from family and friends for extended periods. Regarding accommodation, it is common for teams with tall athletes, such as basketball, volleyball, or rowing, to find that hotel beds are too small to allow for a good night's rest and, as a result, sleep deprivation becomes a significant issue.

While accompanying teams, I have several times heard defeats on the road attributed to the poor quality of the available food. In one instance, during an overseas trip to Thailand with the Brunei national sepak takraw<sup>1</sup> team, the athletes took several rice cookers and a supply of uncooked rice with them because they did not like the taste of the rice served in Thailand. It is common among athletes traveling overseas to address the problem of unfamiliar and/or unpalatable food by taking their own supplies where customs restrictions allow. Some teams even go to the trouble of taking their own chefs with them to major championships.

Hydration strategies are also of prime importance during travel, given that air-conditioned surroundings and/or humid climates can severely dehydrate athletes. In my experience, many athletes need frequent reminders to carry and consume sufficient quantities of water to prevent the negative effects of dehydration. Avoiding consuming local water is an absolute necessity when traveling to developing countries, especially those where water-borne diseases are prevalent. Although most athletes are sensible enough to drink only bottled water in such destinations, some are caught out by fruit or vegetables washed under restaurant taps or ice cubes made from local water. I have many times counseled athletes who have missed world championship events in places such as Egypt, India, and China because of severe gastrointestinal complaints.

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<sup>1</sup> Sepak takraw is a sport played in Southeast Asia, similar to volleyball, except that players can only use their feet, knees, chest, and head to touch the ball, which is made of rattan or synthetic alternatives.

The vagaries of local transport in unfamiliar locations can also produce significant stress. Timely arrival at competition venues, even at events that are otherwise impeccably organized, can prove challenging. For example, arrangements to transfer athletes and officials between the athletes' village and competition venues at the 1996 Olympic Games in Atlanta were, at times, so chaotic and unreliable that some teams relocated, at considerable expense, to rental accommodation nearer their competition venues, and at least one team resorted to highjacking an official bus to drive themselves to their competition, such was their fear of arriving late.

On the issue of security, at many international events, athletes and officials are required to wear accreditation around their necks to identify their status and the areas to which they are allowed access. In the past, some athletes have missed their events at the Olympic Games because they forgot to carry their accreditation, and I personally witnessed tennis champion Steffi Graf being temporarily denied access to the stadium during the Wimbledon Championships for the same reason, until common sense eventually prevailed.

It might be assumed incorrectly that homesickness is primarily restricted to children or inexperienced travellers. On tour with teams, I have often been faced with experienced professional athletes in tears because they were missing their loved ones. Indeed, time spent away from family while traveling with teams is frequently cited by prominent athletes as a reason why they have decided to retire from international competition. To counteract this issue, some international teams have allowed partners and occasionally children to travel with the team for all or part of a lengthy overseas tour. This strategy may help to solve the homesickness issue but may simultaneously create a problem of divided focus among the athletes, and such a strategy requires careful management.

When athletes are on the road, most will naturally want to stay in touch with friends and loved ones via their mobile phones. Not only can this practice prove and expensive in many

overseas destinations, it also may raise potential problems during competitions. I have known instances where, for example, a partner back home has ended a relationship by text on the morning of an Olympic race, or where a dozen friends have called with good luck messages just prior to competition. Most teams have strict rules about when athletes can and cannot use mobile phones, with many management teams restricting use to post-training or post-competition periods. Having clear rules about phone use becomes paramount when teams are traveling and especially during overseas competition.

It is not uncommon for traveling athletes to adopt strategies that may inadvertently exacerbate the effects of travel fatigue and jet lag. For example, constantly calculating the time back home when in a new time zone is generally to be avoided. Knowing that it is 2 a.m. the next morning in Sydney while you are in Europe, where it is 4 p.m. the previous afternoon, may help you to avoid waking up a family member or friend in the middle of the night with an ill-timed phone call, but it is also likely to make you feel tired and to slow your adjustment to the new time zone. The usual recommendation is to switch your watch to the time zone at your destination as soon as you board the plane and then try, as far as possible, to eat and sleep in accordance with the destination time zone. In-flight meal times, however, often make the latter part of this suggested strategy impractical.

#### <a>Recommended Strategies for Effective Traveling

There are a wide range of strategies that can minimise the potential negative effects of travel. The Fédération Internationale de Médecine du Sport (FIMS) has produced a position paper that includes a range of recommendations for effective travel (see Table 36.1).

Although these recommendations represent sound evidence-based advice, they may not suit everyone or every situation. From my own experiences, I find that a glass of wine with my airline meal (not recommended by FIMS) plus plenty of water to limit dehydration, greatly benefits the quality of my in-flight sleep. Furthermore, having taken an aspirin to guard

against risk of deep vein thrombosis, I find an extended sleep to be a better option than a series of catnaps punctuated by on-board exercise breaks, as recommended by FIMS. There are additional specific recommendations for female athletes. Gunning (1999) pointed out the need for women who take oral contraceptives to ensure they continue to take them at the appropriate time of day corresponding to their normal routine at home; otherwise the contraceptives may become less effective.

To augment these recommendations, other strategies can be put in place before, during, and after travel to good effect. Before travel, having all the basics in place related to tickets, passports, visas, vaccinations, currency, insurance, clothing, and equipment helps to minimize stress. Many athletes who travel regularly keep a list of essential items to reduce the risk of forgetting a vital piece of equipment. Also, it is a good idea to use online check-in to pre-book an aisle or exit seat, both of which allow easier movement around the aircraft, and exit seats also have more leg room.

During travel, there are obvious strategies, such as wearing comfortable clothing, trying to secure the best seats possible on a plane, and taking water and snacks with you. More important though, is trying to adopt the attitude that you are going to relax and enjoy the experience. I regard this attitude as one of the key aspects of successful travel. On frequent trips between Australia and Europe, the mindset I adopt is that for the next 24 hours (or in some cases 36 hours or even 48 hours) I have no responsibilities other than to turn up for my flight on time, I have no decisions to make other than choice of food, drinks, and movies, and if I want anything I press an overhead button and someone arrives to help me. Adopting a passive approach to travel can make it a much more relaxing experience.

After arrival, certain key strategies will help minimise the negative effects of travel. About two-thirds of those who travel across time zones will experience the effects of jet lag (Rajaratnam & Arendt, 2001). To counteract jet lag, it is important to stay awake during the

day and to avoid the temptation to take extended naps; although a short 20-minute nap after you have eaten lunch may prove beneficial (Reilly & Edwards, 2007). Legal stimulants such as caffeine, which is found in a wide range of beverages, may also improve alertness and cognitive performance after a long journey. If possible, try to complete your training in the morning and plan social activities for the afternoon. Another good strategy is to eat a high-protein breakfast, because protein increases adrenaline secretion, which promotes alertness, whereas it is recommended to increase carbohydrate intake during the evening meal, to promote serotonin synthesis, which causes drowsiness.

A somewhat contentious approach to counteracting jet lag symptoms is to use pharmaceutical strategies, such as taking sedatives or melatonin. Sedatives, including low-dose benzodiazepines, will help most individuals sleep better on flights, but they are not effective in helping athletes accelerate their body clock adjustments, and they can even slow this process (Reilly, Atkinson, & Budgett, 2001). Also, given the potential side effects of sedatives for some individuals, such as prolonged drowsiness and disorientation, they are generally not recommended for traveling athletes unless prescribed by a physician.

On the other hand, the sleep hormone melatonin appears to have significant benefits for the traveling athlete, although evidence of its efficacy is somewhat equivocal. Melatonin helps to move the body clock in the opposite direction to bright light. It delays the body clock at times in which bright light advances the body clock, and advances the body clock at times in which bright light delays the body clock (O'Connor, Youngstedt, Buxton, & Breus, 2004). Therefore, if used appropriately in the correct dosage<sup>2</sup>, melatonin can counteract symptoms of jet lag. Lewy, Saeeduddin, and Sack (2005) have clearly demonstrated its effectiveness in phase-shifting the human body clock. Moreover, Petrie, Conaglen, Thompson, and

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<sup>2</sup> Doses of melatonin between 0.5 mg and 5 mg have been shown to be effective, although 5 mg doses facilitate faster and better sleep. Melatonin is normally taken close to the target bedtime for the first 2-3 nights after arrival, having crossed five or more time zones (see Herxheimer & Petrie, 2002).

Chamberlain (1989) supported its efficacy for reducing jet lag symptoms more than 2 decades ago using a double blind, placebo controlled, crossover design.

Nevertheless, an often-cited study of 257 Norwegian physicians who visited New York for 5 days and were monitored for 1 week after returning to Oslo (Spitzer et al., 1999) showed melatonin to be no more effective at counteracting jet lag than a placebo. Also, a recent meta-analysis concluded that melatonin was not efficacious (Buscemi et al., 2006), although Arendt (2006) judged this conclusion to be controversial and suggested that it might be explained by variations in quality and content of individual melatonin preparations and the absence of large randomised controlled trials. Other summaries of the literature have strongly supported the efficacy of melatonin in the treatment of jet lag including a review by Herxheimer and Petrie (2002), which found that of 10 randomised controlled trials that had evaluated melatonin, eight had supported its efficacy in counteracting jet lag.

Although melatonin is a popular and seemingly effective treatment for jet lag, some concerns remain. First, the potency and purity of melatonin products available over the counter in the United States, for example, is not regulated by federal food and drug administration agencies (Naylor & Gleich, 1999). Second, although melatonin is generally regarded as safe with very low incidence of side effects from short-term use (Buscemi et al., 2006), it is not recommended for people with epilepsy or for those taking the anti-coagulant drug, warfarin.

When on tour, especially on rest days, it is important to keep a balance between free time and organised activities. The maxim that idle hands make mischief can apply in several different ways, from athletes staying out too late, over-indulging in food and drink, picking up an injury from an impromptu game of soccer, or turning up late or not at all for important team activities. Australian newspapers all too often include reports of rugby league players getting into bar room brawls while on the road, and sports journalists had a field day with the

2008 incident involving cricketer Andrew Symonds, who was omitted from the national team's tour of India for missing a compulsory team meeting because he chose to go fishing instead.

During down time, quite a few athletes like to rest or watch DVDs in their hotel rooms or lounge around the hotel pool, whereas others prefer to go shopping, and some seek out the cultural experience of the local environment. At the 2008 Beijing Olympic Games, the Australian team organised a well-received trip to the Great Wall of China for athletes who had completed their events. Most athletes were delighted by this experience, but not everyone is so enthusiastic about historic visits. One athlete, who finds cultural activities tedious, told me in Beijing that "we have our own walls back home and anyway I've already seen a picture of it."

Although often arduous, well-managed travel can carry significant benefits for sport teams. Road trips are stereotypically seen as positive bonding experiences for the individuals involved. The shared experiences, both positive and negative, can create bonds between players, coaches, and support staff that endure for a long time afterwards. Other obvious benefits of travel lie in the cultural and social experiences that come with it. I always advise athletes to include some sightseeing or visits to local cultural attractions if their training and competition schedules permit. I say this after consulting with many experienced athletes who came to the end of their sporting careers and regretted that they spent so much of their time in airports, hotels, and competition venues, and so little time seeing the wonders of the places they had visited.

#### <a>Summary

There are many ways in which a sport psychologist can help to promote effective team travel. Analysis of the role of traveling practitioners has shown it to involve about 50% organizational issues (Terry, Hardy, Jones, & Rodgers, 1997). Part of this organizational role

is educational, providing athletes, coaches, and other support staff with information to better prepare them for successful travel outcomes. Sport psychologists can also support team management in the planning and implementation of schedules for travel, rest and social activities, monitor the psychological responses of all involved during travel, help to resolve interpersonal issues that might arise on the road, and facilitate subsequent post-event evaluation processes.

At an individual level, travel provides many opportunities to discuss performance-related issues with athletes and coaches. Also, as an experienced traveller, I often keep a close eye on the wellbeing of the less experienced athletes, including helping to translate in countries where I have more language skills than they do or negotiating on an athlete's behalf if disputes arise. Box 36.1 summarizes some of the principles of successful team travel.

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Table 36.1

*Travel Recommendations from the Fédération Internationale de Médecine du Sport (based on O'Connor, Youngstedt, Buxton, & Breus, 2004)*

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1. Before the flight, athletes should:

- Be provided with educational information about jet lag and circadian rhythms;
- Carefully plan for the trip to make it less stressful and more enjoyable;
- Avoid sleep deprivation;
- Consider shifting the sleep schedule (30-60 minutes per day) toward that of the destination for a few days prior to departure;
- Consider using appropriately-timed bright light and darkness, melatonin, or exercise to shift circadian rhythms<sup>3</sup>.

2. During the flight, athletes should:

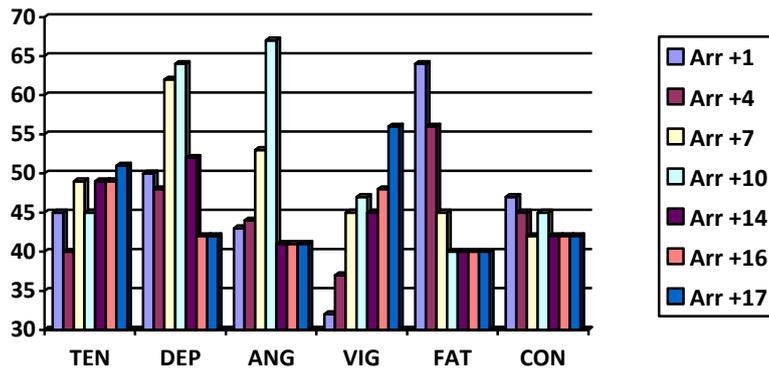
- Drink plenty of water or fruit juices and limit alcohol and caffeine intake to combat dehydration due to the dry air;
- Stretch, perform mild isometric exercises, and walk, at least every hour to minimize muscle stiffness and the risk for thrombosis associated with prolonged inactivity;
- Consider using earplugs or noise-cancelling headphones to minimize stressful noise exposure;
- Avoid taking sleeping pills in the absence of a consultation with a physician.

3. After arriving, athletes should:

- Avoid heavy or unfamiliar meals;
- Consider engaging in a low intensity exercise session, which might need to be performed indoors because light exposure at the destination might counter the desired circadian phase shift;
- Consider avoiding heavy training for the first few days after a long flight;
- Consider using appropriately-timed bright light and darkness, melatonin or exercise to shift circadian rhythms.

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<sup>3</sup> For a detailed description of how to utilize appropriately-timed bright light to shift circadian rhythms, the reader is referred to O'Connor et al. (2004, pp. 7-9).



*Figure 36. 1.* Mood profiles of an international bobsled athlete during the 1998 Olympic Winter Games in Nagano, Japan.

## Box 36.1

*Principles of Successful Team Travel*

- Planning is the key to successful travel for athletes and attention to detail is critical.
- Acknowledge the possible physical and psychological responses to travel.
- Systematically monitor these responses when traveling to increase awareness of the early warning signs of threats to performance and well-being.
- Minimize these potential threats by following recommendations to reduce effects of travel fatigue, jet lag, sleep deprivation, and mood disturbances.
- Pre-plan mood management strategies to counteract performance-threatening emotional responses (see Terry, Dinsdale, Karageorghis, & Lane, 2006).
- Control what is controllable and accept what is not (hopefully you will have been granted the wisdom to know the difference).
- Enjoy all the positives that travel has to offer.