

BASKETBALL AUSTRALIA



CENTRE OF EXCELLENCE

Factsheets & Practical Recommendations for BA's High
Performance Programs

Sleep – Nutrition – Training – Recovery – Travel

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Sleep Factsheet

Sleep is one of the best forms of recovery. Follow these guidelines to ensure you are giving your mind and body the best possibility to improve from your training. Guidelines are based on a recent review on sleep for soccer players (Nedelec et al. 2015)

1. Ensure a minimum of 8 hours sleep every night, ideally 9-10 hours sleep. Sleep extension may improve performance (Mah et al. 2011) and reduces injury risk; 1.7 x higher with sleep below 8hrs. (Milewski et al 2014)
2. Maintain a sleep routine. Go to bed and wake up at a similar time each day while still ensuring maximal sleep quantity. Avoid using the snooze button.
3. Create a high-quality sleeping environment: Electronic and light free. Sleep in a dark, quiet, cool room. Make sure you are in a comfortable bed.
4. Avoid electronic stimulants (bright screens) 30 minutes prior to sleep. I.e. no smart phones/tablets in bed.
5. Drink a glass of milk and/or cherry tart juice before going to bed.
6. Try meditation and/or brain entrainment techniques prior going to bed. Smiling Mind is a good App for this.
7. Increase sleep quantity through naps in the early afternoon up to 30 min.

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Sleep Hygiene and Recovery Strategies in TEAM SPORT PLAYERS

By Mathieu Nédélec et al., Sports Medicine, October 2015

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Nutrition fact sheet

Pre-training/Pre-game

Organic Beetroot juice/Nitrates → 8mmol/L of nitrate (equivalent to two beetroot juice shots) for 2-7 days

Short-term dietary nitrate supplementation can improve intermittent exercise performance (Jones 2014, Wylie et al 2013)

Creatine - 20g Cr monohydrate per day for 5-7 days (Rapid loading phase) or 3g per day for 28 days (slow loading phase (Hultman et al 1996); 2-3 g/day (maintenance)

Creatine supplementation can increase performance during high-intensity exercise (Sahlin 2014)

Sodium bicarbonate – Dose 0.3g/kg body mass. Spread out consumption starting 2-3 hours prior to exercise and with a carbohydrate rich meal to reduce gastrointestinal upset (Carr, Hopkins et al 2011)

Bicarbonate increases extracellular buffering capacity and lactate H⁺ removal from muscle, thus increasing the capacity of the anaerobic glycolytic pathway. To avoid gastrointestinal discomfort, dividing the dose into several small doses with fluid and food and/or supplementing over several days prior to competition is recommended. (Sahlin 2014)

Beta alanine

Beta-alanine supplementation can increase muscle carnosine concentration and therefore muscle buffer capacity. Large doses 200-300g over 7-12 weeks periods are required (~6.4g/d for 6 weeks). (Sahlin 2014, Saunders 2012). An intake of ~1.2g/d can maintain muscle carnosine stores once elevated (Stegen 2014).

Caffeine - ~3-6mg/kg consume 30-60 min prior to exercise

Caffeine is effective in enhancing high-intensity exercise of prolonged nature. (Goldstein et al 2010)

Carbohydrate: Adequate CHO (1-4g/kg body mass) in 1-4h pre-game to ensure muscle glycogen stores are optimal (Burke, 2015)

During

Water and/or sports drink

Hydration & electrolyte replenishment ~50-60mmol/L Na, 10-20mmol/L K (Burke & Cato, 2015)

Caffeine chewing gum (Russel et al 2014)

Post-exercise

Chocolate milk

Milk as a post-session or pre bedtime drink may provide an anabolic stimulus, improve muscle-damage repair and positively influence sleep. (Nedelec et al 2015).

Montmorency cherry juice 2x 30ml/day

Tart cherry juice can enhance the recovery process and improve sleep quality (Nedelec et al 2015).

Whey-protein

After a training session or match, muscular stores of CHO are depleted. Consuming CHO and 20-25g of protein during recovery has been shown to positively affect subsequent exercise performance and could be of benefit for the athletes involved in multiple training or competition sessions on the same or consecutive days. (Beelen et al 2010)

Vitamins

Vitamins C and E may strengthen the antioxidant defense system by decreasing reactive oxygen species of athletes involved in maximal- or high-intensity exercise (Naziroglu et al 2010)

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Half-Time Strategies to Enhance Second-Half Performance in Team-Sports Players

Designed by @YLMSSportScience



Reference: Russell, West, Harper, Cook & Kilduff
Sports Medicine, December 2014



Training

Planning and monitoring training loads ensures optimal adaptation to training stimuli and reduces injury risk. Various methods are available to monitor internal (Rating of Perceived Exertion - RPE, Heart Rate) and external training loads (accelerometry, local positioning systems, notational analysis, video analysis).

Guidelines are based on relevant studies of training load monitoring:

1. Avoid acute training spikes that are 150% above the chronic training load
2. Avoid training loads below 60-80% of the chronic training load (García-Pallarés et al 2010, AIS white paper 2015)
3. Adjust return to sport loads according to the duration of forced rest. A simple guideline to follow is a one-to-one ratio, i.e. 1 day missed - 1 day modified training; 1 week missed – 1 week modified training depending on severity and injury/illness (AIS white paper 2015)
4. The less number of players you have in a drill, the higher the training load. For example, 2 on 2 is harder than 4 on 4. Adjust the intensity of your training session by taking the load of each drill into account. (Klusemann et al. 2012)
5. Reduce training monotony by varying the volume and/or the intensity of each session within a week. Additionally, ensure different forms of exercise/cross-training takes place for a period of time within the year.
6. Rest days – 24-48 h of rest should be scheduled into the week
7. Take high stress periods, e.g. academic exams into account. Double the injury risk during these periods (Mann et al 2015).

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Recovery Interventions

Hydrotherapy

Cold water immersion has shown to improve recovery more than other modalities (stretching/massage/compression garments) following basketball competition (Delextrat et al 2013, Montgomery et al 2008). It may however disrupt strength training adaptations and should be used cautiously in conjunction with strength training (Roberts et al 2015).

Recommendation:

Cold water protocols (cold water temperature ~11-16°C)

If fatigued/tired:

7 x 1 min warm – 1 min cold or 3 x 2 min warm – 2min cold

If sore:

3 x 1 min warm – 3 min cold or 10 min cold

Hot/cold showers (if pool/cold tub unavailable)

If fatigued/tired:

5 x 1 min warm – 1 min cold

or

7 min cold

If sore:

5 x 30 sec warm – 2 min cold

or

10 min cold

Massage

Many athletes consider sports massage as an essential part of their training and recovery routine and combined with stretching can have a positive impact on recovery (Calleja-Gonzalez et al. 2015)

Recommendation: Get a soft-tissue massage or use self-massage techniques 1-2 times a week

Compression garments/boots

Compression garment appears to facilitate enhanced recovery of muscle function and reduce muscle soreness (Hill et al. 2015)

Recommendation: Wear compression garments for ~2hrs post-exercise or during sleep (but only if they don't disrupt your sleep, sleep is more important!).

Foam Rolling

Foam rolling was beneficial in attenuating muscle soreness while improving vertical jump height, muscle activation and range of motion (Macdonald et al 2014)

Recommendation: Foam roll ~15-20 min after a high-intensity training session

References:

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Travel

Compressions socks

It is recommended that athlete's travel in medical grade compression socks (Vaile et al 2010)

Food

Ensure appropriate food intake at destination. Airplane food may be not ideal for your athletes. Pre-plan and organize own food for travel if required.

Hydration

Limiting ingestion of diuretics such as caffeine and alcohol in flight and drinking fluids may decrease the severity of jet lag and travel fatigue as well (Lee & Galvez 2012).

Recommendation: ensure athletes have their own drink bottle and drink to thirst during the flight.

Sleep hygiene

Sleep hygiene recommendations may help with reducing the sleep debt accumulated from long-haul air travel (Fowler et al 2015).

Recommendation: Ideally sleep according to destination night time during travel to reduce sleep debt following travel. Use noise cancelling head phones, eye mask and neck pillow to improve comfort.

Time of arrival at destination

Aim to minimise the time between the last full sleep period at the place of departure and the first full sleep period at the destination. (Waterhouse et al 2002)

Full adaptation to the new time zone is not always recommended, especially in the case of short trips (1-2 days). Individuals are unlikely to fully adapt to the new time zone over a day or two. Therefore, is feasible, stay on 'home time'.

Adaptation is however recommended for longer trips ($\geq 3-4$ days) (Arendt 2009)

Bright light exposure

Light exposure is the primary cue for circadian rhythms. Exposure to bright light of adequate intensity and duration can advance or delay circadian rhythms, depending on the timing of exposure. These techniques require careful compliance by avoiding unwanted light exposure, evening social nightlife preflight, and last-minute packing (Lee & Galvez 2012, Forbes-Robertson et al 2012).

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