



Keeping Athletes Fast, Safe & Healthy

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National Team High Performance



Sleep Extension

- Cheri Mah, Stanford Sleep Disorders Clinic and Research Laboratory
 - Sleep Extension (7 hours to 10 hours)
 - General Improvements
 - Mood
 - Reaction Time
 - Levels of Daytime Sleepiness
 - Athletes reported more specific improvements



Sleep Extension-Further Research

- Stanford Men's Basketball Study
 - 18 days @ 7.8 hours, then 41 days @ 10.4 hours
 - General Improvements
 - Statistically Significant Specific Improvements
 - Improved Sprint Time
 - Improved free throw shooting accuracy
 - Improved three-point shooting accuracy
 - Significance to swimming
 - Sprint time, on average, improved steadily during the 41 days



Why does Sleep Extension Work?

- Sleep to Win! By Haley A. Davis and Lames B. Maas Ph.D.
 - Sleep reinforces neural pathways
 - Big benefits begin at seven hours
- The secret to teen athletes' success might be their sleep By Mary Jacobs
 - Teen athletes that regularly sleep 8+ hours were 68% less likely to get injured than athletes who regularly slept less
 - “Toughing” it out when sleep deprived doesn’t work
 - “Biology is going to win”



Tips for Getting Better Sleep

- Dim the lights ½ hour before going to sleep
- Tablets, laptops and smart phones emit blue light which tricks the body into thinking it is daytime
 - Keep them away from the bed
- No caffeine after 4 PM
 - Likely stimulants in general



Who Cares?

- DARPA (Defense Advanced Research Projects Agency)
 - Keep soldiers awake or make sleep easier in any circumstance?
- National Basketball Association
 - Mulling over research that suggests back-to-back travel games create a competitive disadvantage for the travel team as a result of sleep loss
 - Increased risk of injury
 - Watered down product for fans



References

- Cheri Mah's research
 - <http://www.journalsleep.org/ViewAbstract.aspx?pid=28194>
- Sleep to Win!
 - http://www.huffingtonpost.com/2013/03/26/sleep-to-win-athletic-performance_n_2935705.html
- The secret to teen athletes' success might be their sleep by Mary Jacobs
 - <http://www.dallasnews.com/lifestyles/health-and-fitness/health/20130902-the-secret-to-teen-athletes-success-might-be-their-sleep.ece>



Iron Deficiency in Teenage Swimmers

- 17 Athletes
 - 9 Females and 8 Males
- All tested during the same week of training
- Standard USA Swimming National Team Protocol
 - Included Total Iron, Total Iron Binding Capacity, % Saturation and Ferritin



The Importance of Ferritin

- Ferritin is the storage form of Iron
 - Important for red blood cell production
 - USOC recommends athletes maintain a Ferritin level above 40 ng/mL
 - Clinically, dropping below 20 ng/mL is a concern for non-athletes and very serious for athletes
 - Risk for anemia
 - More significant for females



Ferritin Results

- Five out of Eight males were below 40 ng/ml
- Nine out of nine females were below 40 ng/ml
- Three out of the nine females were below 20 ng/ml
- 14 out of the 17 athletes need some sort of nutritional intervention
- 3 out of 17 athletes needed medical care



Recommendations

- Get an Iron Profile and Ferritin test along with your yearly physical if you are in high school
- Have a Registered Dietician speak to your athletes and their parents about the dietary needs of an athlete in training
- Work with a family physician or a team doctor if there is a deficiency



Resources

- National Institute of Health Dietary Fact Sheet
 - <http://ods.od.nih.gov/pdf/factsheets/Iron-HealthProfessional.pdf>
- USA Swimming National Team Blood Chemistry Program
 - <http://www.usaswimming.org/ViewNewsArticle.aspx?TabId=2175&itemid=4954&mid=13114>
- Blood Chemistry FAQ
 - <http://www.usaswimming.org/ViewNewsArticle.aspx?TabId=2175&itemid=5805&mid=13114>



The American Supplement Industry

The following video clip is taken from the documentary *Bigger, Stronger, Faster* by Christopher Bell