

# Effect of Sleep on Sports Performance and Sports Injury

## Stanford University Sleep Study:

Author - Cheri Mah, American Academy of Sports Medicine: [www.aasmnet.org](http://www.aasmnet.org)

- Study concluded that extra sleep over an extended period resulted in improved athletic performance, mood and alertness.
- Study followed five healthy females and five healthy males on Stanford Swim Team
  - Following two weeks of “normal” sleep the athletes then slept ten hours per day for seven weeks.
  - Athletes with more sleep reduced sprint times by .51 seconds per 15 meters, reacted .15 seconds faster off starting blocks, improved turn time by .1 seconds and increased kick strokes by 5 kicks.
  - Athletes’ daytime sleepiness decreased significantly with higher ratings of vigor and lower ratings of fatigue.
- Cheri Mah has also worked with Stanford football, golf, cross country and track teams.
  - Many athletes have set multiple new personal records.
  - Stanford University Athletic Department has incorporated extra sleep time into all of their sports per Lea Maurer (former US Olympic swimmer and current Stanford Water Polo Coach)

## Science Daily Study:

Author – Dr. Matthew Milewski, American Academy of Pediatrics. [www.sciencedaily.com](http://www.sciencedaily.com)

- Study concluded that adolescent athletes who slept 8 or more hours each night were 68% less likely to be injured than athletes who slept less.
- Methodology: Study followed 54 female and 58 male athletes in grades 7 – 12.
  - Athletes answered questions regarding: number of sports they play, time committed to athletics, use of private coach, enjoyment level with sport and the average amount of sleep they got each night.
  - Researchers then reviewed students’ records regarding reported injuries.
  - Hours of nightly sleep was significantly related to decreased likelihood of injury.
  - Gender, time committed to sports, number of sports played, private coaching, strength training and enjoyment of sport were not associated with injury.
  - Incidence of injury was 2.3 times greater as grade level of athlete increased.
- Two most important factors in sports injury were hours slept and grade level.

### **Dallas Morning News Article**

Author: Mary Jacobs, Title: The Secret to Teen Athletes' Success Might be Their Sleep, [www.dallasnews.com](http://www.dallasnews.com)

- Article interviewed multiple coaches and experts and determined that sleep is critical for sports performance and injury prevention.
- Dr. Michael Landers found that sleep deprivation affects proprioception (the sense of balance that allows one to feel their weight shifting even when the eyes are closed). Sleep deprived teens will have less balance and be more prone to fall and possibly suffer an injury.
- Kyla L Wahlstrom (Director of Center for Applied Research and Educational Improvement at the University of Minnesota) discussed later start times at High Schools in Minneapolis and Edina, MN.
  - Coaches were initially opposed to later start times since they were worried there was less practice time.
  - Coach feedback after implementation was positive.
  - Hockey, Football and Basketball coaches stated that athletes remembered plays better.
    - REM sleep helps with memory consolidation.

### **Washington Post Article**

Athletic Performance and Injury, [www.washingtonpost.com](http://www.washingtonpost.com)

- Article addressed impact of sleep on sports performance and injury.
- Mary Carskadon is a sleep expert and a Professor of Psychiatry and Human Behavior at Brown University.
  - Psychomotor Vigilance Test is designed to show links between insufficient sleep and reaction time.
    - Lack of sleep can lead to completely missed cues (i.e. batter doesn't see pitcher releasing ball) or slow reaction.
    - Slow reaction can also impact performance in other sports such as track.
- Helene Emsellem is Medical Director at Center for Sleep and Wake Disorders in Chevy Chase, MD.
  - Studied how people gather info while awake and learn it while sleeping.
  - REM sleep is when brain puts information into context.
    - For example, an athlete who is given pointers on how to swing a baseball bat during the day can replay the lesson during REM sleep to the point of knowing the pointers reflexively.
  - Brain restores synapses during sleep which enables retention of learnings.
- Micheal Twery – Director of National Center on Sleep Disorders Research reports athletes don't metabolize fat as well if they get insufficient sleep.

## **Sports Injury Clinic**

How Sleep Reduces Injury Risk: from [www.sportsinjuryclinic.net](http://www.sportsinjuryclinic.net)

- Provides a good summary of the relationship between sleep and sports injury.
  - Fatigue: Metabolic rate decreases when sleep deprived. Slower metabolism equals reduced energy production and early onset fatigue.
  - Reaction Time and ability to process information decreases when tired.
  - Attention and Concentration Span decreases when fatigued and can increase likelihood of injury.
  - Repair of muscles and soft tissues occurs while sleeping. Sleep deprivation can increase levels of the stress hormone Cortisol which impairs recovery times.
  - Performance: Lack of sleep can impact performance.