

# THE WHOLE ATHLETE EXPERIENCE

## FC UNITED SPORTS PERFORMANCE



### RESEARCH DEMONSTRATES THESE SIDE EFFECTS OF SLEEP DEPRIVATION:

- **Autonomic Nervous System Imbalance:** The Parasympathetic and Sympathetic Nervous Systems rely on each other to stress and heal the body daily. When the Sympathetic system is hyper active from lack of sleep, the body can't heal itself.
- **Malproductive Dietary Changes:** Research shows that sleep deprivation causes changes in hormones Leptin and Ghrelin. This altered state provides a powerful dual stimulus to food intake that may culminate in weight gain.
- **Comprised Recovery:** Sleep triggers the production of Human Growth Hormone, which is primarily responsible for muscle recovery during sleep. This results in maximized preparedness for the next training session.
- **Reduced Speed and Accuracy in Cognitive Function:** leads to impaired decision-making
- **Immune System Dysfunction:** Increased pro-inflammatory cytokines
- **Changes in Mood**

**REMEMBER: THE ATHLETE THAT RECOVERS, PERFORMS.**

## RECOVERY III: SLEEP

The Sleep Issue: Recovery by Sleep is the last major element in the RECOVERY newsletter series.

- Part 1 covered Self-Care Recovery, offering insight on how to use various training modalities to restore function.
- Part 2 covered Recovery Nutrition and the importance of fuel timing.
- Part 3, Sleep is the final secret in an athlete's toolbox.

You know you should sleep. But do you truly understand why? This last part of the Recovery series dives deeper into the Sleep concept using prevalent research to debunk myths and reveal some truths about how to improve recovery simply by sleeping better.

A cellphone can run very efficiently for a long time with daily charges to restock the battery power. Sleep is the body's version of a battery restock. But, unlike a cellphone, the body is NOT A MACHINE. It needs more attention and upkeep than just a 4 hour recharge. **The harder you train, the harder you have to recover. The best chance at a full recovery is a full night of quality sleep.**

Much of the content in this newsletter is research based. Until recently, sport scientists' were less concerned with sleep, fixating their interests on how to advance human performance through hard training. This is a necessary question to answer, but it is not balanced.

The shift in researchers' interest occurred when athletes stopped breaking through barriers and started breaking down. The answer they found: SLEEP.

**RESEARCH STUDY 1:** Cheri Mah, lead sleep researcher, works with Olympic and NCAA athletes to evaluate how length and quality of sleep impact athletic performance.

Her current study, "*The Effects of Sleep Extension on the Athletic Performance of Collegiate Basketball Players*" aimed to study the effects of extended sleep duration on collegiate basketball players for a number of weeks. She also examined sleep's effects on athletic performance, as well as reaction time, daytime sleepiness, and mood.

### Conclusions:

**This study concluded that extending sleep beyond one's normal length improved her athletes athletic performance, rate of perceived exertion, shooting percentages and accuracy, mood, and vigor.**

**This study reveals an athlete's inability to accurately assess how much sleep one actually obtains each night, thus leading to a misperception regarding the duration of sleep that constitutes adequate nightly sleep time.**

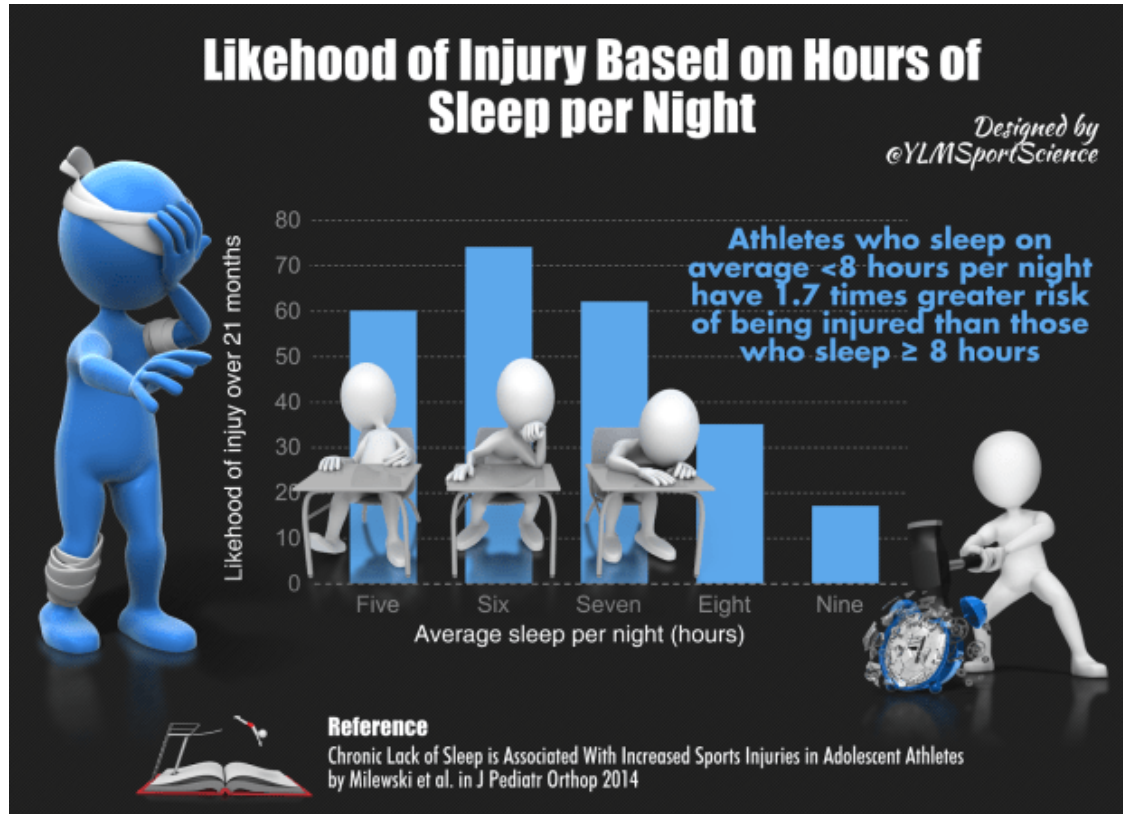
# SLEEP STUDIES CONTINUED

## RESEARCH STUDY 2:

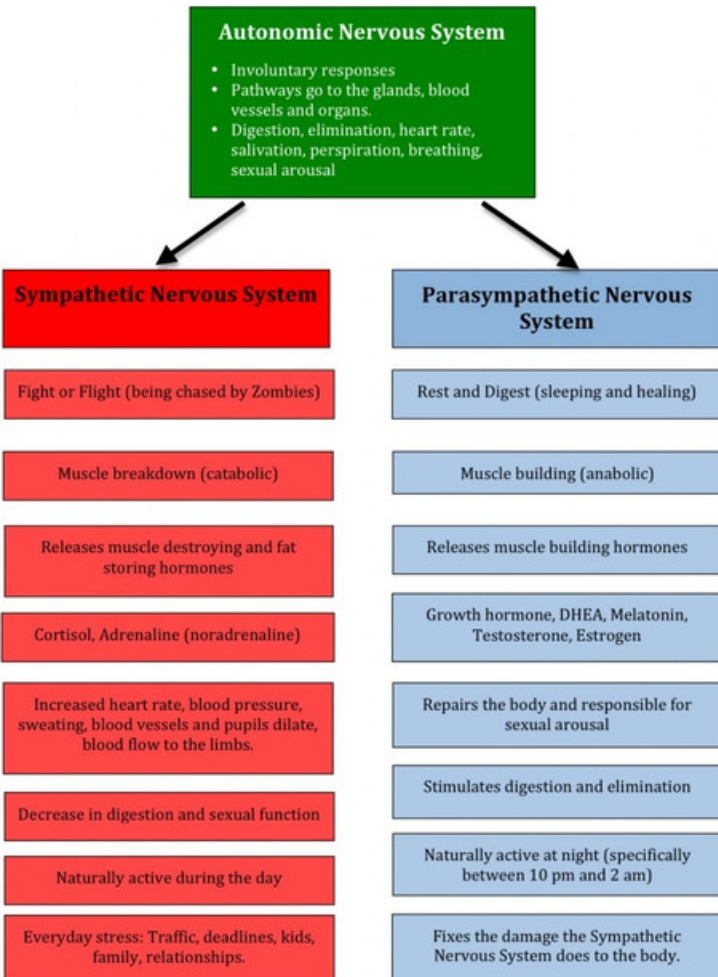
Researchers found that a chronic lack of sleep resulted in increased sport-related injury in adolescent athletes.

The graph illustrates the dramatic increase in injury in those athletes that slept less than eight hours per night. **Athletes that slept an average of 6 hours per night were the most at risk!**

**This is largely due to: imbalanced sympathetic/parasympathetic nervous system relationship. The Sympathetic system is hyperactive and disables the Parasympathetic.**



CHECK OUT THE SECTION BELOW FOR DETAILS ON THE RELATIONSHIP BETWEEN PARASYMPATHETIC/SYMPATHETIC NERVOUS SYSTEM FUNCTION.



## WHY SLEEP HAPPENS:

**The Central Nervous System** controls every aspect of performance potential, including skill function, the exact biomechanical degree of movement, the firing sequences of muscles during activity, reflexes and reactions, and countless interrelated physiological functions, including both the central system (heart and lungs), and the peripheral system (muscles). It is highly susceptible to fatigue.

**The Central Nervous System houses the Autonomic Nervous System.** This system manages all involuntary functioning.

**The Sympathetic Nervous System allows the body to respond functionally during the day's demands.** However! This causes a degree of damage to the body.

**The Parasympathetic System repairs that damage.**

**If you want the Parasympathetic system to do its job (YOU DO), you have to allow it to turn on. It turns on at full capacity when the Sympathetic System shuts down during Sleep.**

## TOO LITTLE SLEEP AND AN UNHEALTHY DIET COULD INCREASE THE RISK OF INJURY

Reference: von Rosen et al, SJMSS 2016

Designed by @YLMSSportScience

### WHAT DID THEY DO?

A questionnaire was e-mailed to 340 adolescent elite athletes on two occasions during a single school year: autumn semester and spring semester

### RESULTS

#### Recommended intake



8 h of sleep during weekdays

#### IMPACT ON THE RISK OF INJURY

**-61%**

Sleeping more than 8 h of sleep during weekdays reduced the odds of injury with 61%

**-64%**

Reaching the recommended nutrition intake reduced the odds with 64%

### RESEARCH STUDY 3:

To illustrate the broader picture of Recovery, Study three combines the elements of the last newsletter, Recovery Nutrition, with this month's issue of Sleep Recovery.

This graph depicts the athletes' decisions to meet recommended fruit, vegetable, and fish (protein and Omega-3 fatty acid) intake in addition to meeting the recommended 8 hours of sleep during weekdays.

#### Conclusion:

With a better understanding of the relationship between total sleep time and the nutrition necessary to fuel the recovery actions that occur during that time, athletes may be able to optimize training and competition outcomes by identifying strategies to maximize the benefits of sleep.

#DOTHEBASICSRIGHT



## SLEEPING MYTHS AND TIPS

**Naps are bad for you: FALSE.** The more intense your training is, the more sleep you need. If you can not sleep enough at night, you can mitigate fatigue with a nap during the day. If you can sleep for 9+ hours a day, naps included, this is 9+ hours of recovery.

**More than 8 hours is bad for you: FALSE.** Sleep is an individual experience, but research supports that intense training requires intense recovery. Professional athletes report sleeping up to 12 hours every night.

**"I am great on 6 hours of sleep.":** For athletes and non-athletes, this is not maintainable. You can FUNCTION off of 6 hours, but this is not OPTIMAL. Athletes that regularly sleep 6 hours or less are most susceptible to injury.

**"You should not eat before bed.":** FALSE. Eating a large, calorie dense meal before bed is shown to disrupt REM patterns. However, eating a protein source right before bed is shown to increase muscle development significantly.

**Late Practice or Rough Schedule?** Nap 30–60 min after school. This will increase preparedness and contribute to any lost sleep from the previous night.

**Extend your quality sleep on the nights that you can.** Two weekend and three weekday nights of extended sleep (8–9.5 hours) will improve athletic performance and help manage any night of restricted sleep.

**The QUALITY of sleep matters.** Sleep that benefits the body are felt from time spent fully asleep, not the times spent in bed on the phone or tossing around.

**Looking to maintain or grow muscle mass?** Research shows that a 15–20g Casein protein snack before bed is the most effective form for this purpose. Muscles grow during sleep, muscles need protein to maintain growth. Casein protein metabolizes slowly and provides a constant source for your muscles during sleep.

## LOOKING AHEAD:

That's all for this year! Take advantage of your time away to eat, sleep, and train for optimal Recovery when the New Year's schedule resumes. Reminder: Winter Training Packets are posted on the Sports Performance section of the website. This is an excellent resource to guide you downtime training routine. Questions? [Taylor.h@fcunitedpremier.com](mailto:Taylor.h@fcunitedpremier.com).

Stay tuned for the January edition. Newsletters are released on the third Friday of every month.

Happy holidays!

- Taylor Hynes

\*\*References and research pulled from U.S. National Institute of Health, National Institute of Medicine, Cheri Mah, and YLM Sport Science.