



October 15, 2015

Dear school officials, public officials, parents, teachers, coaches, and students:

I am a Pediatrician and Sports Medicine trained physician, parent of two middle school athletes, and strong supporter of youth activity and movement in order to maintain health. Remembering that sports is a means of learning about life, society, and yourself, I am always hopeful our communities can find ways for everyone to be active and engage in physical movement. It is this overall view of healthy living through sports that leads me to strongly believe we should start school later for our middle and high school students.

The American Academy of Pediatrics has been clear in recommending starting school no earlier than 8:30am for all middle and high school children. This is re-enforced with similar endorsements by the American Academy of Child and Adolescent Psychiatry, American Thoracic Society, and the CDC. Teenagers are not little adults, nor are they physiologically children anymore. We all know puberty is a time of great change physically and emotionally, but what many are not aware of is the shift in circadian rhythms (our internal clock) occurring simultaneously. Teenagers of many animal species are programmed to go sleep later, BUT they still require more sleep, approximately 9 hours per night. With the hectic schedules our society has created for teens, many of them cannot achieve this needed goal. In 2010, one study found only 8% of high school students slept close to 9 hours per night, while 33% were sleeping 6 hours or less. Very quickly these children fall into a sleep deprived state!

Many others will speak to the general effect of sleep deprivation on mood, behavior, academic performance, and cognition. In this letter, I will focus on athletics and how starting school later can help our young active teenagers, and possibly open the discussion on how to get ALL teenagers to become more active.

Regardless of their sport, athletes want to continuously improve their performance. More and more of our young athletes are training year-round for one sport with many of them overlapping with other sports throughout the year. Top that off with work, academics, and a social life and there is not much time left for sleep. But sleep is critical! In 2012, one study found teens sleeping at least 8 hours per night had a 68% LOWER risk of being injured than those sleeping less than 8 hours. Those sleep deprived correlate directly with athletes suffering overuse and fatigue related injuries (stress fractures, tendinopathies, myofascial pain).

Why is sleep important to an athlete? When we sleep, our bodies cycle through REM and NonREM stages in order to allow memory repair and consolidation, rebalancing of hormones, and recovery of tissue damage from normal use and injury all of which are critical for normal growth, learning, and remaining healthy. With sleep deprivation, our stress hormone (cortisol) is elevated, our restoration of glycogen (stored fuel) is decreased, and the ability to metabolize glucose is diminished by 30-40%. This leads to less fuel for the brain, decreased immune function to fight off illness, and an increased risk of obesity. Living in this chronic fatigue state will increase the athlete's risk of injury and possibly evolve into overtraining syndrome, where the body just can't physically perform to its capacity anymore.



Athletes develop new skills and abilities by pushing their bodies and minds beyond what they think they can do, let it recover and adapt to this new norm, and then push it once again. This is how strength, endurance, and accuracy improve. Those with adequate sleep have been found to increase free throw accuracy, faster sprint and reaction times, and better mood. Those with inadequate sleep function with decreased focus, cognitive slowing, memory impairment, diminished attention and poor vigilance, all having a negative impact on performance. It appears athletes can power through a single, high intensity test when tired, but without adequate sleep, they fatigue easily on sub-maximal, repeated efforts, which most sports require. They don't have the energy reserve to keep up to their normal level of performance.

We all want to do what is right for our children. In this case, biology is telling us 9 hours of sleep per night is what our teens need. If I offered a medicine that would decrease the risk of injury, improve academic and sports performance, and allow maximal normal growth to occur with the side effects of a lower risk of obesity and improved mood in your teen all for FREE, who wouldn't come get that pill! We have access to that medicine right now, adequate sleep for teens! Shifting school start times will likely affect the timing of after-school activities. In regards to athletics, this can be done collaboratively amongst school districts and still allow the approximately 20 minutes required of "pre-game warm-ups" and full completion of the game.

Thank you for your consideration of this critical change to our school systems. A healthier starting time will help the most important people in that system, our teens.

Sincerely,

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Pediatrics & Sports Medicine Physician OA Centers for Orthopaedics Division of Spectrum Medical Group (Portland, Saco, Windham and Brunswick)

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This letter has been reviewed and endorsed by the following board certified Sports Medicine, Pediatric and Family Medicine physicians caring for teen athletes in York & Cumberland counties:

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## RECOMMEDATIONS FOR NORMAL SLEEP HYGIENE

You can change your sleep hygiene. Pick 1 or 2 things from the list above, which seem most likely to be changed. Once successful, then move onto items which seem more challenging for you. Expectation would be for improved sleep within a couple of weeks if these changes were applied consistently!

1. **Try to go to bed and get up at the same time each day.** Deepest sleep occurs between 9:30PM and 11:00PM, so try to gradually pull your bedtime back to this range. A change of 15 minutes each night is often tolerable so don't try to change too drastically.
2. **Use bed for sleep only.** No reading, hanging out, or watching TV in bed as these activities train your body to be awake in your sleeping spot. If you must do these activities in the bedroom, use a small chair and sit-up until you are ready to actually lie down and go to sleep.
3. **Get 10-30 minutes of early morning sun.** Sun sets your sleep-wake cycle. Waking up with sunshine will set your circadian rhythm to sleep later in the evening.
4. **Exercise.** Mild to moderate exercise daily help to regulate the sleep-wake cycle. A walk at lunch or after dinner is often enough.
5. **Avoid napping.** If you must take a nap, limit it to 45 minutes or less. Napping interferes with deep sleeping at night.
6. **Avoid large meals or drinks in the last hour before bed.** Foods with tryptophan in them can help induce sleep (turkey, warm milk).
7. **Avoid caffeine in all forms after 4PM.** Coffee, tea, soda, chocolate.
8. **Avoid tossing/turning in bed.** If you are still awake after 20 minutes in bed, get up and read a boring book (phone book). Go back to bed when you begin to feel tired. Avoid TV, computer, or interesting books.
9. **Relax before bed.** Take a warm shower or bath. It's easier to fall asleep if your body temperature is dropping.
10. **Learn relaxation exercises.** Deep breathing, muscle relaxation, meditation, or imagery before bed each night will signal to your body it is time for bed.