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Overview

- Health impact of sleep
  - Sport injury & healing
  - Illness prevention
  - Weight management
- The brain on sleep
  - Cognitive implications
  - Impact on academic performance

Sleeping Strong Prevents Injury

- Sleep is one way to prevent injury
- Lack of sleep ➔ loss of biomechanical functioning, coordination and alertness
Better Sleep Relates to Faster Recovery from Surgery, Illness, and Injury

- For TU athletes, better sleep quality related to fewer days in treatment
- More REM = more anti-inflammatories naturally released by brain

Athletes Build Muscle While Sleeping

- When building muscle → need more REM for muscle repair & growth
- Less sleep → decreased strength
- E.g., Experiment: restricted to 3 hours of sleep (3 nights):
  - Significant decreases in maximal bench press, leg press, and dead lift
  - Also noticed cognitive confusion and fatigue

(Reilly & Piercy, 1994)
Sleep Prevents Contracting the Common Cold

▸ Averaging fewer than 7 hours of sleep a night
  ▸ 3X more likely to get cold

▸ Plus, if less quality sleep
  ▸ 5.5X more likely to get cold

(Cohen et al, 2009)

Good Sleep Aids Weight Control
Disrupted Sleep ➔ Hormone Imbalance

+ hormone that makes you hungry (ghrelin)
- hormone that tells your brain you’re not hungry (leptin)
Insufficient Sleep is Related to Mental Health Problems

- Higher rates of mood disorders, particularly depression and anxiety
  - Less than 8 hours sleep/night = adolescents have 3x risk of a suicide ATTEMPT
- More difficulty regulating emotions
- Engagement in high risk behaviors


One night of sleep deprivation impacts mood regulation...

MOOD SWING
Sleep Impacts Brains

- Attention
- Motivation to learn
- Learning and memory

Ellenbogen, Payne, Stickgold., 2006

5 hours of sleep/night ~ 1 beer
An all-nighter ~ 4 beers
Optimal Sleep by School Age

<table>
<thead>
<tr>
<th></th>
<th>Elementary School (Age: 6-11)</th>
<th>Middle School (Age: 11-13)</th>
<th>High School (Age: 14-18)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hours of Sleep</strong></td>
<td>9-11 hours</td>
<td>9-11 hours</td>
<td>8-10 hours</td>
</tr>
<tr>
<td><strong>When to sleep</strong></td>
<td>Variable: Early as 7 PM</td>
<td>Variable: Early as 7 P.M.</td>
<td>11:00 P.M.</td>
</tr>
<tr>
<td><strong>When to wake</strong></td>
<td>Variable: 6 A.M.</td>
<td>Variable 6 A.M.</td>
<td>8:00 A.M.</td>
</tr>
</tbody>
</table>

**Note:** Variation of 11 hours of sleep for children 6-13 years old

(National Sleep Foundation, 2006)

Reference