

PHYSICAL/MEDICAL ISSUES

Tutorial: Fatigue

WHAT IS FATIGUE?

Two importantly different concepts are suggested by the word, fatigue. The first is sleepiness or drowsiness; the second is a more pervasive feeling of weariness, exhaustion, lethargy, or lack of energy. Sleepiness is a consequence of insufficient sleep and can be eliminated by adequate sleep. Fatigue in the second sense may or may not be associated with insufficient sleep and is not cured by adequate sleep. Fatigue in both senses can be associated with traumatic brain injury (TBI).

Fatigue can be caused by physical exertion (e.g., too much exercise), mental exertion (e.g., extended periods of studying), and emotional exertion (e.g., extended stress, depression, grief, or anxiety). Stress and anxiety can be both cause and effect of fatigue, creating a vicious cycle. Fatigue can also be caused by inadequate nutrition, physical injury, and chronic pain. Fatigue is an accompaniment of many serious diseases, such as diabetes and cancer. Fatigue can also be caused by medication treatments for many diseases and conditions. Chronic fatigue syndrome is a diagnosis given when all other causes of fatigue have been ruled out and fatigue has persisted for several months.

Sleepiness and fatigue can have a variety of effects on everyday functioning. When sleepy or fatigued, it is hard to focus attention and maintain focused attention over time; learning and memory are inefficient; judgment is impaired and problem solving suffers; irritability and a short temper emerge; work may become sloppy, with an increased likelihood of mistakes and accidents; safety judgment may be jeopardized; social competence is reduced. Young children deprived of sleep are more likely to show signs of irritability, hyperactivity, short attention span, and low frustration tolerance than more obvious signs of sleepiness, such as frequent yawning.

The opposite of fatigue is alertness, responsiveness, perceptiveness, focus, energy, quickness, and liveliness. This combination of positive attributes underscores the importance of diagnosing, treating, and managing sleepiness and fatigue when they are present after brain injury.

Fatigue is particularly common in adolescents, with or without disability. The full schedules of adolescents and the demands on their time often result in insufficient sleep and tiredness. There is some evidence that adolescent natural sleep rhythms are inconsistent with early rising necessitated by school schedules. Anemia (insufficient red blood cells) is also common in adolescents, particularly girls. Anxiety, depression, and other intense emotions are common in adolescents and can contribute to fatigue.

In addition to preventing sleepiness and fatigue, sleep makes several other contributions. For example, sleep contributes to brain development during periods of rapid brain growth, for example early in life and during the early adolescent years. In addition, several studies have shown that memories are consolidated during sleep (i.e., re-expression of memory traces, with some synapses strengthened and others weakened during sleep) and may be ineffectively consolidated in the absence of adequate sleep.

WHY IS FATIGUE IMPORTANT FOR MANY STUDENTS WITH TBI?

Following severe TBI, sleepiness and fatigue are common problems for months, years, or, in many cases, indefinitely. There are many reasons for the frequency of fatigue problems. First, after injury to the brain and often to other parts of the body as well, the healing process saps energy and results in fatigue. In

addition, sleep problems are common, with sleep-wake cycles disrupted by the injury. If there are physical impairments, greater-than-normal physical effort is required to perform even simple activities of daily living, adding to fatigue. In virtually every case, additional mental effort is required to pay attention, remember, organize, think clearly, and solve problems, further adding to fatigue. In addition, the impairments associated with the injury and the many changes in life cause emotional strain that further saps energy and contributes to fatigue.

Mild TBI is also known to be associated with fatigue. For example, many athletes report sleep problems, fatigue, headaches, dizziness, nausea, sensitivity to noise, vision problems, sensitivity to light, distractibility, trouble thinking, and a weak memory after sports-related concussions. Even if the student who has had a concussion or mild TBI appears fully recovered, cognitive and academic tasks may take more energy and contribute to fatigue. Furthermore, the difficulties experienced in daily activities, including academic activities, cause a variety of types of emotional strain, including frustration, depression, tension, confusion, and anger, which additionally contribute to fatigue.

WHAT ARE THE MAIN THEMES IN INTERVENTION AND SUPPORT FOR STUDENTS WITH FATIGUE PROBLEMS?

Understanding the problem

As always, the first task for teachers and parents is to correctly understand the problem. Symptoms of fatigue can easily be misidentified as behavioral problems, emotional problems, or specific cognitive problems. In most cases, fatigue interacts with these other areas of functioning in complex ways. But it is important to recognize the role played by fatigue and to implement intervention and support strategies designed to address fatigue problems. Sometimes cognitive and behavioral problems can be managed with a good night's sleep, making other time-consuming interventions unnecessary.

Pharmacologic Intervention

Medications designed to facilitate sleep may be useful for those students with TBI who do not sleep effectively. In addition, the physician responsible for pharmacologic management should try to avoid drugs that are known to contribute to fatigue. For example, some anti-depressant drugs may cause or worsen fatigue. The student's pediatrician or other medical specialist should be consulted if the student shows symptoms of fatigue or sleep problems, especially if medications have been prescribed for other problems.

Environmental Strategies

The following strategies should be explored for students with sleep or fatigue problems:

1. Adequate, regular, and consistent amounts of sleep each night. School staff should discuss with parents the importance of sleep and procedures to facilitate sleep.
2. Rest periods at school: Some students benefit from regularly scheduled or as-needed rest periods at school. This may include a period of bed rest in the nurse's office. Adolescents may resist this suggestion as stigmatizing or infantilizing. Their feelings should be an important part of the decision-making process.
3. A healthy, well-balanced diet, with adequate amounts of water throughout the day. Protein is particularly important for damaged and healing bodies. Vitamin supplements may be useful.
4. Regular exercise. Decreased physical activity, possibly associated with physical impairment or busy schedules, can lead to fatigue as well as stress or other emotional problems that exacerbate fatigue. For students with physical impairments, exercise regimens should be negotiated with a physical therapist to avoid exercises that could worsen the physical impairments. Exercise should be regular, at least three times per week.
5. Relaxation procedures: Adolescents may benefit from counseling that focuses on procedures for

- relaxing.
6. Depression counseling: In the event of serious emotional problems that affect sleep, counseling should be provided.
 7. A sleep-sensitive daily schedule: For example, relaxing activities rather than homework should be scheduled for the end of the day prior to bed time. Organizing homework over regular daily scheduled work periods is especially important for students with sleep problems. For students who require extra time to complete homework, reduced assignments may be negotiated with teachers. Alternatively, parents may negotiate with teachers acceptable ways of collaborating with the student on homework assignments. Every effort should be made to avoid the accumulation of large amounts of homework that need to be completed at one time.
 8. Pain management: If the student experiences chronic pain, pain management procedures, possibly including medication, should be designed in such a way as to facilitate sleep at night.
 9. Physical supports: For students with physical impairments, a balance needs to be struck between maximal use of residual physical abilities, on the one hand, and fatigue on the other. For example, for students who walk with difficulty, a wheel chair may be appropriate for negotiating long and busy corridors; a word processor or other writing tool may be appropriate for students who write with effort.

Written by Mark Ylvisaker, Ph.D. with the assistance of Mary Hibbard, Ph.D. and Timothy Feeney, Ph.D.