Focus on Disability Awareness
An Occasional Bulletin from the Office of Disability Services for LVC Faculty, Staff, and Administrators

Mild Traumatic Brain Injury (MTBI) And Post-Concussion Syndrome

Current estimates suggest that 1 to 1 1/2 million Americans incur a mild brain injury each year. Approximately 50% of these are the result of motor vehicle accidents, 25% result from falls or work-related accidents, 15% occur during acts of aggression or violence, and 10% occur in sports or recreational activities.

MTBI occurs when the brain is damaged by striking or being struck by an external object, or when the brain is shaken in such a way that it rotates or moves backward and forward within the skull. Neural tissue is frequently stretched or torn by these movements, and by its impact with the rough, bony ridges inside the skull. Subsequently, the transmission of impulses from one neuron to the next is disrupted. At the time of injury, a person sustaining MTBI experiences a change in mental status - disorientation, confusion, even brief loss of consciousness - but is responsive and does not demonstrate notable memory loss upon arrival at the hospital. Neuroimaging techniques are occasionally utilized, although the tools most commonly used (CAT scans, MRIs, EEGs) are not sensitive enough to reveal subtle tissue damage. In most cases, the person is told to go home, rest for a couple of days, and expect to resume normal activity thereafter. However, there is growing evidence that damage to neural tissue involves a biochemical process that is initiated (but not completed) at the moment of injury. Frequently, symptoms will persist or worsen in the weeks and months following the accident, and the diagnosis then changes from "concussion" to "post-concussion syndrome." It is important to understand that the effects of multiple concussions are cumulative, so that with each concussion, the likelihood that brain functioning will return to normal diminishes.

There are numerous cognitive, physical, and emotional sequelae to MTBI that can seriously impact one's ability to function in a learning and testing environment. The following list of symptoms includes those most commonly experienced:

- Decreased mental efficiency and speed of processing information, especially for large amounts of new information presented rapidly (e.g. lectures)
- Difficulty in shifting between tasks or doing two tasks simultaneously (e.g. listening to the professor while taking notes)
- Impaired flexibility of thinking (difficulty considering different viewpoints or grasping alternative solutions)
- Difficulty in making connections between ideas, understanding verbal abstractions
- Impaired ability to maintain concentrated mental effort
- Impaired incidental memory (e.g. remembering where you put your notebook without having to consciously plan to remember)
- Impaired spontaneous recall (e.g. remembering to bring your notebook to class)
- Impaired ability to effectively plan, organize, initiate, and complete work (looks deceptively like poor motivation or carelessness)
- Impaired ability to recognize one's own deficits, resulting in a denial of problems

- Increased impulsivity, disinhibition (e.g. saying things without forethought given to the appropriateness of the comment or its probable impact on others)
- Irritable temperament, feelings that run close to the surface and are experienced intensely or out of proportion to the situation
- Pervasive fatigue, most likely due to having to expend significant mental energy to accomplish tasks that were once accomplished automatically
- Headaches, dizziness, vertigo
- Sensitivity to light; proneness to visual overstimulation
- Visual tracking problems (being unable to coordinate and sustain eye movements that allow one to read text)
- Blurry or "double" vision
- Sensitivity to loud noises; proneness to auditory overstimulation
- Tinnitus (constant buzzing or ringing sound in the ears)
- Depression, either as a primary, biochemical process directly resulting from the injury, or as a secondary, emotional response to the effects the injury has on functioning

Neuropsychologists are perhaps best trained to understand the disruption to cognitive and emotional processes following MTBI, and utilize tests that reveal dysfunction in the areas of sensory and motor processing, information processing, attention and mental control, speech and language skills, verbal learning and memory, visuospatial processing and memory, and emotional functioning. Documentation consisting of a report of neuropsychological test findings is required to demonstrate the extent to which the injury impedes one's ability to function, and to determine the kinds of accommodations that may allow a college student with MTBI and Post-Concussion Syndrome to successfully obtain an education. Some accommodations that may be of benefit to the student with a mild brain injury include:

- Taking a reduced full-time or a part-time course load, with extensions to the normally allotted time to complete a degree
- Scheduling courses so that back-to-back class periods are avoided
- Scheduling classes for mornings only, when possible
- Provision of advance organizers of information to be covered in lecture
- Assistance of a peer note taker
- Textbooks on tape
- Instructions presented both orally and in writing
- Assistance in planning for long-term projects, provision of feedback at various stages of completion
- Tests taken in distraction-reduced environments with extended time
- Tests divided into subtests, with breaks allowed in between

As always, an empathetic attitude and a willingness to learn about the nature of the student's disability goes a long way towards facilitating academic success!