~ What is a concussion?
A concussion is a type of traumatic brain injury or TBI, caused by a bump, blow, or jolt to the head that can change the way your brain normally works. Concussions can also occur from a blow to the body that causes the head to move rapidly back and forth. Even a “ding,” “getting your bell rung,” or what seems to be mild bump or blow to the head can be serious (CDC.gov).

~ Impact of School and Learning on your student’s symptoms
- Both physical exertions and COGNITIVE exertion (thinking) can have negative effect on the student. Cognitive Exertion and the added stimulation of the school environment can significantly increase symptoms, even when the student has begun to recover.
- Research has demonstrated generalized hyper activation with concussion that is likely related to symptom increases when returning to school.
- Symptoms may increase due to: Testing, Group Work, Movies, Shop Class, Overhead lighting, background noise (cafeteria, movement during and between classes), taking notes (especially off of a projector), sustained attention, etc. (www.impacttest.com)

~ What do we know today that we did not know just a few years ago?
- Concussion manifestations vary from individual to individual and student to student.
- There may be a significant risk if they return to school (or play) too quickly.
- Concussions seem to have more symptoms and last longer in females. vii
- Younger athletes (in high school or in lower grades) have been shown to exhibit longer recovery times when compared to college and professional athletes. vi
- A gene may exist that causes some individuals to be more susceptible to concussions. viii What we now know is that each concussion should be treated individually depending on the symptoms and the neuro-cognitive test results (www.Impacttest.com).

~ What is really going on in the brain after a concussion?
- Due to the metabolic imbalance that occurs following a concussion, it has been shown that increased blood flow to the brain during recovery may slow down the recovery process and worsen the symptoms of concussion.
- Most patients do not need to be placed on bed rest unless they are having severe symptoms (severe headaches, marked photophobia, disorientation, balance problems, extreme fatigue, etc).
- After a few days, the student may participate in any activity that doesn't cause increased symptoms (headaches). In some cases, activities such as reading, watching TV, working at the computer, taking hot baths and having heated discussions with others may increase symptoms.
- If patients develop increased symptoms while doing a specific activity, that activity should be discontinued. Continuing activities, or exercise that increases symptoms, can delay the recovery from the concussion.
- Many concussed individuals may be unable to concentrate (focus). They may not be able to read or absorb material and may develop an increased headache while doing so. When this occurs, they might be able to participate in an activity for only a few minutes before symptoms increase. If a rest break can be interspersed between those few minute intervals, these activities can be done. As the symptoms abate, longer intervals can be spent reading, watching TV and using the computer (www.Impacttest.com).

~ School attendance and activities may need to be modified
While some individuals may be able to attend school without increasing their symptoms, the majority will probably need some modifications depending on the nature of the symptoms. Trial and error may be needed to discover what they can and cannot do.
- If students are unable to attend school for an entire day without symptoms, they may attend for a half-day. Some students may only be able to attend for one period, some not at all, due to severe headaches or other symptoms.
Frequent breaks with rest periods in the athletic Trainer and/or school nurse's office may be necessary. Often, alternating a class with a rest period may be helpful. Math causes more symptoms in patients than other subject classes. As recovery proceeds, gradually hours spent in school may be increased.

Depending on their symptoms, some students may need to be driven to school to avoid walking and should be given elevator passes to avoid stairs. They should not attend gym or exercise classes.

Workload and homework may need to be reduced. Frequent breaks while doing homework may be helpful. Term papers should be postponed. Pre-printed class notes and tutors may help to relieve the pressure of schoolwork.

Tests: If there are concentration and memory problems, quizzes, tests, PSAT tests, SAT tests and final exams should be delayed or postponed. If test results are poor, a note to the school should request that the scores be voided. Extra time (un-timed tests) may be necessary initially when test taking is resumed.

If noise causes increased symptoms, students with concussions should not listen to loud music (in cars or on their I-Pods). They should avoid attending dances, parties, music concerts and sports events until the noise sensitivity abates.

If light causes increased symptoms or students have photophobia they should avoid bright sunlight and exposure to flashing lights (computer games). Sunglasses may be necessary (www.Impacttest.com).

A “School Liaison” to communicate the student’s concussion to classroom teachers and other school personnel is critical. At FWCD the athletic trainer(s) are this liaison, and they will notify the head of school, division head, school nurse, division counselor of the fact that a student has sustained a concussion. The divisional administrator should share this information with the student’s individual teachers. The information in this sheet should then be passed on to the faculty that works with the injured student. (www.Impacttest.com).

The classroom teacher should be aware of the student’s condition. Moreover, if any unusual behavior is noted, the teacher should report this information to the school liaison. Examples of unusual behavior include:

- Poor attention, concentration frustration, reduced short term memory recall or delayed processing, disproportionate reactions to situations, sensitivity to light, etc. (Children’s Hospital, Aurora, CO)

The classroom teacher may need to implement strategies based on the student’s condition. These may include changes in environment, curriculum, methods, organization, and/or behavior. See list below. (Hossler, P. Concussion Carry-Over in the Classroom, NATA News, July 2007)

<table>
<thead>
<tr>
<th>Environment</th>
<th>Curriculum</th>
<th>Tests/Homework</th>
<th>Organization</th>
<th>Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home only- no school</td>
<td>Reduced or abbreviated schoolwork/demands; Removal of distracting or extraneous information from materials; provide summary materials (graphs, templates, tables, etc.)</td>
<td>No exams (esp. mid-terms, SAT’s, etc.) until clear; Reduced homework at first; printed notes; taped lectures</td>
<td>¼ or ½ day or Full day as tolerated; Provide schedules/checklists for assignments</td>
<td>No technology (phone, text, tv, videogames, ipod, ipad, etc)</td>
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<tr>
<td>Allow nap time/ breaks in school</td>
<td>Reduced class load; Elimination of non-essential assignments; No standardized tests</td>
<td>Extended time on tests and projects; untimed exams; Repetition of important information; Use precise/direct language</td>
<td>Preferential seating to minimize distraction; Meet with teacher at end of day; tutoring, mentoring, or extra supervision as needed</td>
<td>Preferential seating to monitor attention/ Energy level</td>
</tr>
<tr>
<td>When frustrated or over stimulated- allow student to leave</td>
<td>Break information/assignments into manageable chunks</td>
<td>Quiet environment to take tests/ quizzes</td>
<td>Lunch in quiet room; leave classes early (crowded hallways)</td>
<td>Allow sunglasses and/or hat to reduce light sensitivity</td>
</tr>
</tbody>
</table>

~ References/ More information: