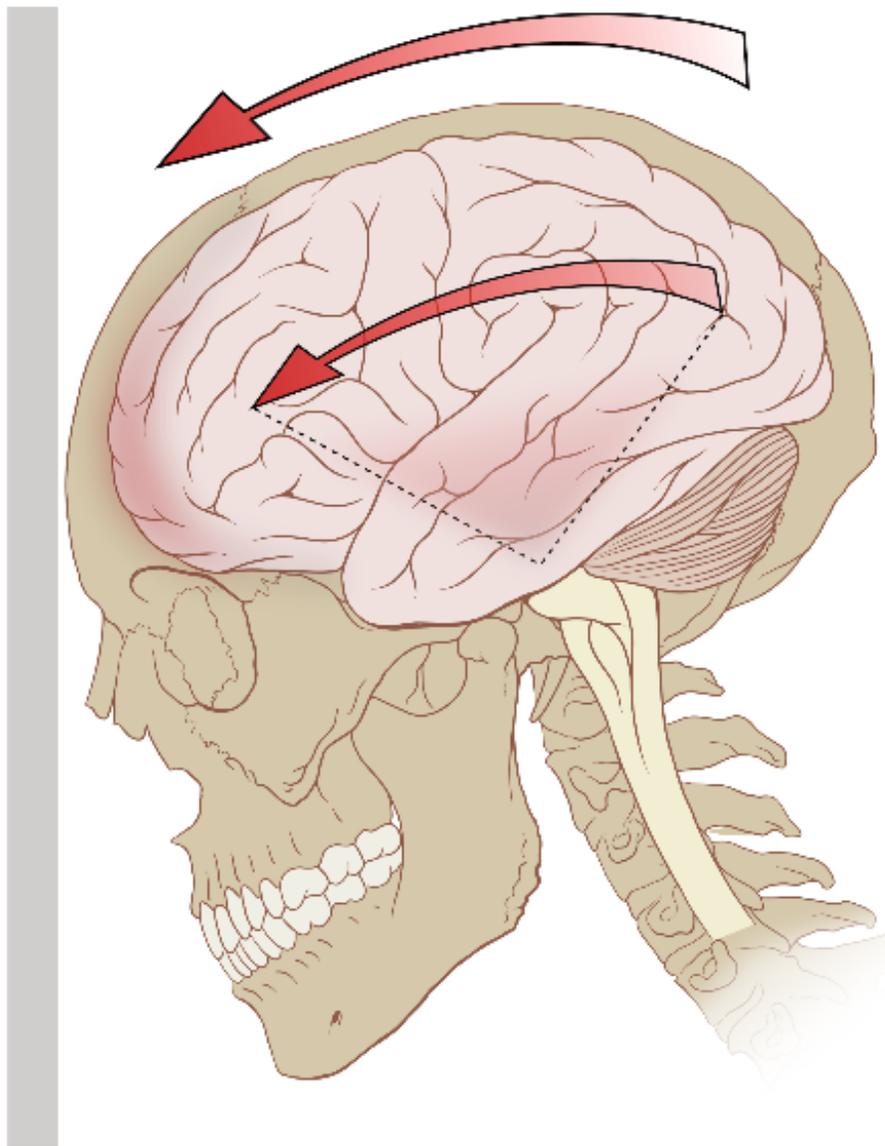


Understanding Concussion

Principles to Promote a Speedy Recovery



For comments / suggestions regarding this booklet contact
Jon Pertab - pertab@mail.com

The Brain

The brain is made up of specialized cells called neurons.

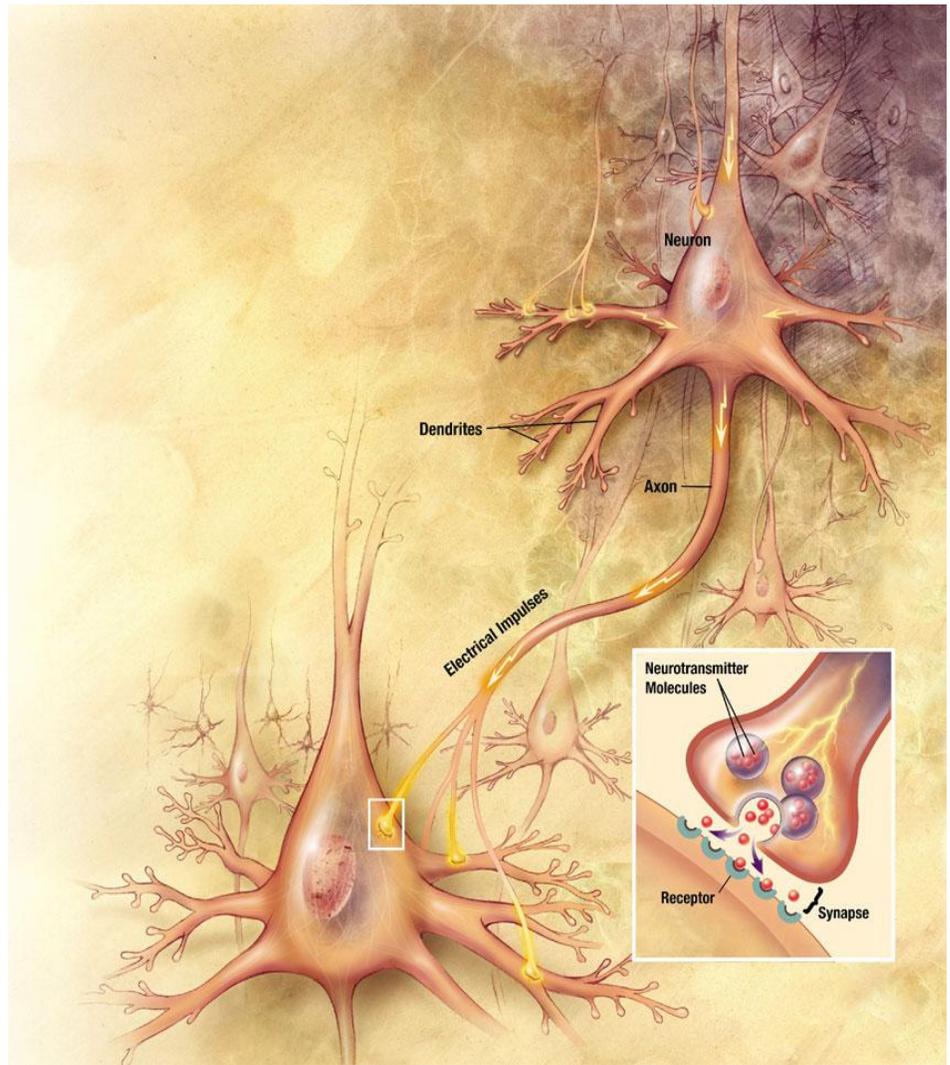
Brain cells have a cell body which processes information. They also have a wire-like structure (axon) that branches at its ends and connects to other cells.

Once a cell is activated the signal travels down the wire and sends a message to other cells it connects to.

The connection point between the wire and the next cell is called a synapse. The brain works on a kind of chemical electricity. When a signal reaches the end of the wire it does not actually touch the next cell. It transmits its message by spitting out chemicals (neurotransmitters) into the space – the type and quantity of chemicals tells the next cell what to do.

A concussion occurs when a blow to the head or rapid acceleration change (such as whiplash) causes a disturbance in brain function. It is as if the chemicals the brain uses to transmit information are shaken free in larger than normal quantities. Initial symptoms of confusion, disorientation, memory disturbance, or loss of consciousness can result.

The brain cells have pumps to return the chemicals to their right places. Initially these pumps struggle to keep up with the large amount of work. The problem is even more challenging than normal as blood supply to the brain is reduced by up to 50% after a concussion. Blood supplies energy to the brain so the pumps are also dealing with a temporary energy shortage.



Symptoms of Concussion

Until all those chemicals are returned to their proper places, people may struggle with symptoms in four main areas – physical, thinking, emotional, and sleep. This is a normal part of the recovery process and for most people symptoms resolve within the first few weeks. A smaller minority of people take longer to recover from a concussion and this booklet will explain how you can speed up the process of your recovery.

The Common Symptoms of Concussion

Physical		Thinking	Emotional	Sleep
<ul style="list-style-type: none">• Headache• Nausea• Fatigue• Visual problems• Balance problems	<ul style="list-style-type: none">• Sensitivity to light• Sensitivity to noise• Numbness or tingling• Vomiting• Dizziness	<ul style="list-style-type: none">• Feeling mentally foggy• Problems with concentration• Memory problems• Slowed thinking speed	<ul style="list-style-type: none">• Irritability• Sadness• Feeling more emotionally reactive or sensitive• Nervous or anxious	<ul style="list-style-type: none">• Drowsiness• Sleeping more than usual• Sleeping less than usual• Trouble falling or staying asleep

Think about it like this:

The chemical situation in the brain after a concussion is similar to the process that happens if you exercise hard after not having exercised for a long time. Your muscles will develop a build-up of chemicals (lactic acid) and be sore the next day. If you take it easy for a few days, remain active, and do some stretching, the body reabsorbs the chemicals.

For the vast majority of people, the concussed brain has the ability to reabsorb chemicals to normal levels but at the same time it has less energy to do so. You can help provide the conditions that help the brain to recover.



How to promote recovery

Whenever you use your brain for an activity, communication between the brain cells involves a release of chemicals. Pumps that reabsorb chemicals from normal brain activity require energy. Remember that for a while after a concussion you have less energy (blood) supply to the brain. If you use up all your available energy doing daily activities, there will be no energy left to reabsorb the chemicals released during the concussion. If you use more than your available brain energy during a day, you will be in an energy deficit – often symptoms will get worse and eventually force you to rest till your brain pumps can catch up.

To recover more quickly from a concussion you need to learn how to balance brain activity and rest so that you have an energy excess each day that the brain can use to reabsorb chemicals. If you are always in deficit your recovery will be prolonged.

Think about it like this:



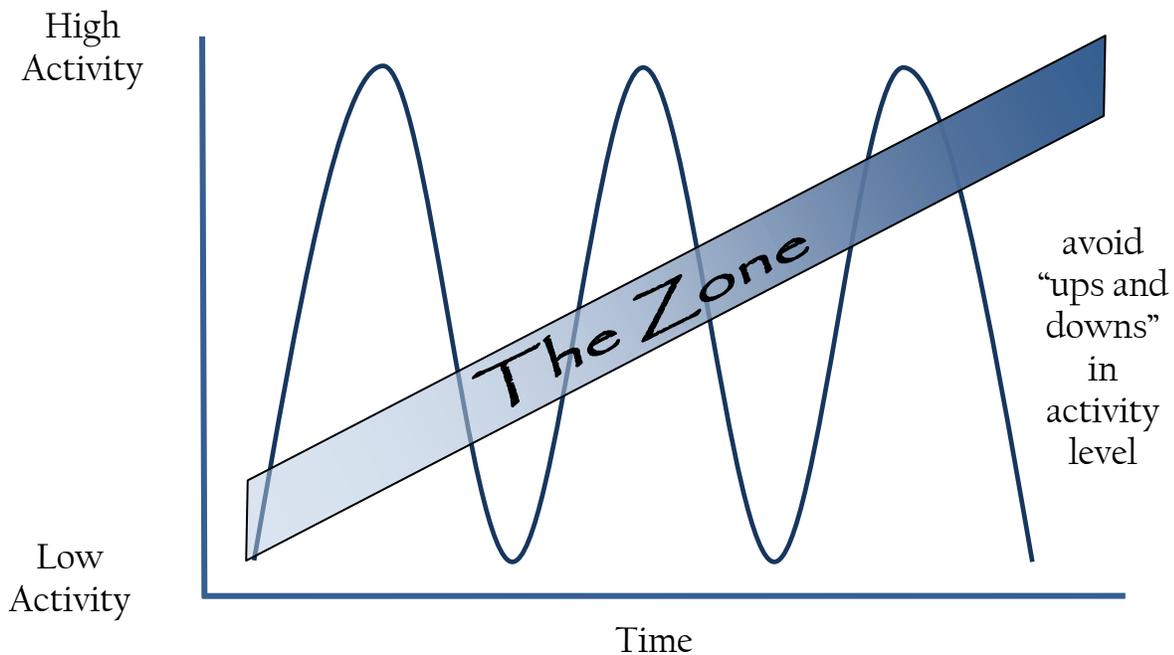
If you were a runner and sprained your knee, your doctor would not prescribe that you lie in bed for a few months. Without activity recovery would be slow and incomplete. Nor would they say to resume training at your normal level.

What they might recommend is to gradually increase your activity and use indicators like pain or swelling to let you know when you are exercising too much.

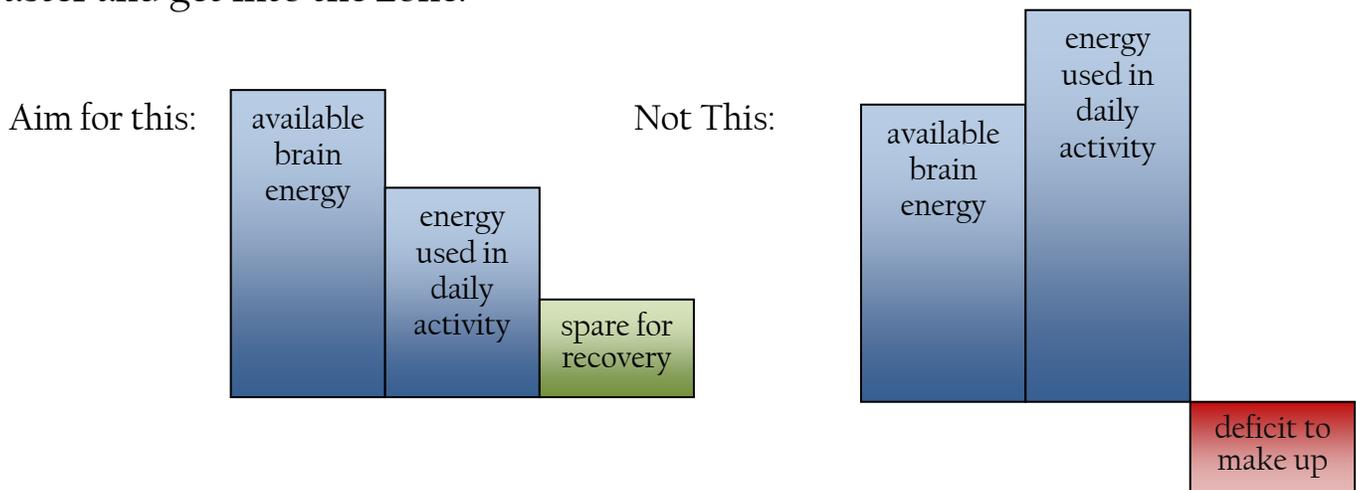
It is the same with your brain – gradually increase your activity. Use your level of fatigue and other symptoms as indicators of how to pace increases in activity.

Get in the Zone

After a concussion, some people will feel okay for a while and try to do all the things that they normally do (or make up for what they have not been able to do). They keep going after they start feeling tired and “push through” unpleasant symptoms. After a while their symptoms get so bad that they are forced to stop. It may take a day or two of total inactivity to feel okay again. AVOID THIS PATTERN – your brain cannot heal if you do this. “Pushing through,” results in even more chemicals being released that the brain can’t keep up with.



Your treatment team will help you get into a zone where your level of activity will maximise your recovery. If you keep in the zone almost all people notice that over time the amount of things they can do each day increases. Stay away from the roller coaster and get into the zone!



How do you know if you are in the zone?

Your body will usually signal you when you are doing too much. For most people this means that they start feeling fatigued or develop other concussion symptoms. Before concussion, most people ignore these signals to “push through” and “get the job done.” This is not going to work after a concussion. By increasing your awareness of body signals and increasing your ability to predict which activities will result in fatigue you will develop skills in staying in the zone. Your clinician will give you **weekly tracking sheets** to record your activity levels and also levels of energy.

Weekly Planner

Name: _____ Week Starting: _____

High Energy	10	9	8	7	6	5	4	3	2	1	Low Energy
	----- Rested and Energized -----			Consider micro-break		Consider major-break / nap			-- Wired Tired --		

Instructions: Record the things you do during each day and in the grey boxes record your energy levels

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Hours Slept							
Morning Activity	waking						
Lunch + Rest	average						
Afternoon Activity	after rest						
Evening Relaxation	average						
% (0-100) of typical activity	before bed						
% (0-100) of typical activity							

You will be able to discuss with your clinician what activities or experiences are draining for you (they are different for everyone) and develop skills in planning your weeks so that you:

keep your energy above a 5 most of the time.

At first, nobody is perfect at this so don't beat yourself up if you have a slip up.

(If fatigue is not a big issue we will have you track another symptom like headaches)

What should a person do if they become fatigued?

Each person has unique needs to maintain energy throughout the day. Often a midday nap or rest period is important. By tracking your activities and energy you will become an expert in monitoring your own fatigue and learning what exhausts you and what is refreshing. You can work with your clinician to plan out your weeks and gradually increase activity. Use the following scale as an **initial** guide.



Ten units of energy - you feel refreshed and energized, your thinking is clear and sharp; you are ready for action.

Daily demands take away from your available energy:

- Pain
- Poor sleep
- Emotional stress
- Reading
- Thinking
- Socializing

Six to seven units of energy - you still feel pretty good but may start to notice the first signs of energy drain - these signs are different for everyone but may include fatigue, irritability, sluggishness, noise sensitivity, headache, or other symptoms.

Take a micro-break, 5 to 15 minutes in a quiet, calm place.

Three to four units of energy - you have gone too far but may not realize it. You experience symptoms that interfere with your activities that may include slowed thinking, and difficulty dealing with problems or commotion; you are physically and emotionally on edge.

STOP what you are doing **AND TAKE A NAP**

One to two units of energy - if people “push-through” their fatigue and symptoms, they sometimes experience a state where they have difficulty relaxing their mind or body - **WIRED TIRED**. It may take several days to recover when this happens.