

Concussion & You

A Handbook for Parents and Kids

DEVELOPED BY CONCUSSION EXPERTS AT
HOLLAND BLOORVIEW KIDS REHABILITATION HOSPITAL

INTRODUCTION

This Concussion Handbook is designed to help with your concussion management and recovery. Whether you're a kid or teenager who recently suffered a concussion, or a parent of someone dealing with concussion, the management techniques laid out in this concussion handbook can help to speed up the path to recovery.

The information in this Concussion Handbook is informed by experts in youth concussion from the Holland Bloorview Kids Rehabilitation Hospital Concussion Centre. The team includes healthcare professionals, from neuropsychologists and pediatricians to occupational therapists, who are sharing their concussion management methods.

A timeline for returning to your regular life

This handbook will provide information on returning to the various aspects of your daily life. The concussion researchers and clinicians at Holland Bloorview know that concussion recovery is a process, not a quick fix.

It's important to remember that recovery times can vary from days to weeks to months, and while some of that is based on the injury itself, you can also help improve your recovery time by resting your brain and body. You can also accidentally prolong your recovery by doing too much too soon, suffering repeated concussions, or if you have other complicating factors such as: ADHD, learning disabilities, headaches, sleep or emotional problems.



ENERGY
CONSERVATION



SLEEP

WHAT'S IN THE CONCUSSION HANDBOOK?

In this handbook you'll find:

- Information about concussion and its potential effect on your mind and body.
- Strategies to help with recovery, including:
 - * Energy conservation
 - * Sleep
 - * Nutrition
 - * Relaxation
 - * Return to school
 - * Return to physical activity and sport
- Self-management tools to ensure you are doing everything you can to recover quickly and get back to the activities you need, want and love to do.
- We have incorporated these strategies and tools into a Recovery Timeline with visuals to help you see how phases of recovery fit together.

Please note: The information in this handbook is for education only. If you have questions about your concussion, call your doctor or contact us at Holland Bloorview (concussion@hollandbloorview.ca).



NUTRITION



RELAXATION



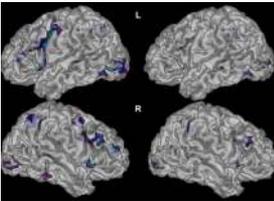
RETURN TO
SCHOOL



RETURN TO PHYSICAL
ACTIVITY AND SPORT

CONCUSSION: WHAT IS IT EXACTLY?

A concussion is a brain injury that can affect how your brain works. Concussions may happen because of a hit to the head, face, neck or somewhere else on the body. When a hit takes place, the brain moves back and forth inside the skull. If it moves hard enough, the brain can become injured. This can make your brain and body work and feel different.



“These brain scans show how a concussion impacts brain activity in response to increased mental demands. On the left is a non-concussed brain, showing lots of activity, while the right image shows a concussed brain with less pronounced activity. Our research is working to show the specific impacts of mild traumatic brain injury, or concussion, on a young brain.”

– DR. MICHELLE KEIGHTLEY

6 things you should know about concussions

1 Concussion is a brain injury.

2 A child's brain is still developing and requires a unique approach to care.

3 You can have a concussion without losing consciousness.



4 Concussion symptoms are more than just physical. They can be mental, emotional or behavioural.

5 Most concussions resolve quickly, however 30% of people have symptoms that last longer than 4 weeks.

6 It's essential for optimal recovery to rest your mind and body.

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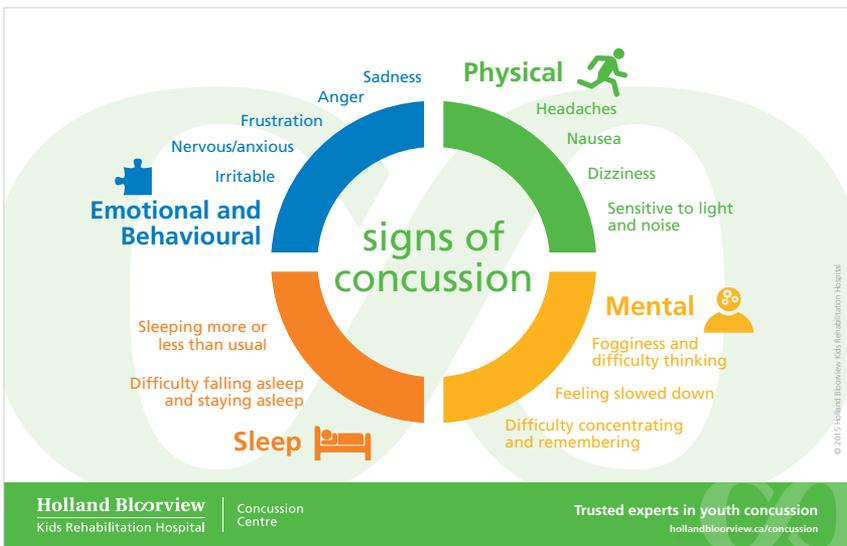
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HOW CAN I TELL IF I'VE HAD A CONCUSSION?

Everyone's concussion experience is different and not everyone reacts the same way. For some people, concussions heal quickly, and for others, the road to recovery is longer. It's hard to predict how long a concussion will last. Using the strategies in this handbook can help promote recovery and get you back to your daily life.

You can experience different signs and symptoms after having a concussion. Take a look at the chart below for details.



SO I'VE HAD A CONCUSSION: WHAT DO I DO?

When you've had a concussion, it's important for you to immediately:

- 1. Stop studying, working or playing**
- 2. See your doctor for help**
- 3. Rest your brain and body**

You and your doctor or healthcare team member need to work together to help you get better from your concussion. They will help you slowly go back to studying, working or playing.

Keep in mind - to get better you need PHYSICAL & MENTAL rest!

Taking steps to conserve energy, get enough sleep, relax, eat the right food and plan return to school or activities, will help you to conserve energy and manage your concussion.

The rest of the Concussion Handbook will show you how to conserve energy, sleep well, relax, eat right and return to school or activities.

The concussion recovery timeline

Everyone's timeline for concussion recovery is a bit different, but there are some general rules that will help you return to regular life safely.

- Using the sleep, energy conservation, relaxation and nutrition strategies from the beginning of your recovery process will provide you with the tools and skills necessary to let your brain heal, and make it easier to begin reintegration into school and then sport.
- At Holland Bloorview we recommend that you successfully return to school without post-concussion symptoms before you move on to returning to sport. This will reduce your chances of re-injury by moving you through the stages of lower risk to higher risk activities in the right order.



I had a concussion, I need to ...

- STOP studying, working, playing
- Get HELP from my doctor
- REST my mind & body
- SLOWLY get back to studying, working, playing

I think I have a concussion, how can I get better?

Stop: studying, using electronic devices and playing

Get help: get immediate medical attention, ask your doctor for advice

Rest: take time to rest your mind and your body

Take it slow: slowly get back to studying, working and playing

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ENERGY CONSERVATION



I had a concussion, I need to ...

- PRIORITIZE daily activities and decide which ones can wait
- Take BREAKS and work through tasks in stages
- CREATE non-distracting environments

After you've had a concussion, you need to rest your body (physical rest) and your brain (mental rest). Rest helps your brain heal so you can return to the activities you want or need to participate in. One way to help with resting is through energy conservation.

What is energy conservation?

Everything you do from the time you wake up to the time you go to bed uses energy. Through energy conservation you can save mental and physical energy allowing you to feel better throughout the day. Your brain will also have the proper fuel to heal your concussion.

How do I conserve energy?

You can conserve energy by using the “Four P’s” – Prioritize, Plan, Pace and Position.

The Four P’s concept is used frequently by occupational therapists. The multi-disciplinary team at the Concussion Centre, which includes occupational therapy expertise, has adapted the Four P’s principle for use in concussion recovery.

The diagram below explains the Four P’s:

PRIORITIZE

(#1 What’s important)

Decide: What is important? What are you able to do based on how you currently feel?

Break daily activities into:

- Urgent: must be done today.
- Important: must be done in next few days.
- For later: must be done this week or month.
- Don’t need to/can’t do: can it wait until you are feeling better?
- Help needed: can someone do it for you?

PACE

(#3 How are you going to do it?)

- Take breaks if you don’t feel well.
- After a concussion, your brain is less able to do tasks that were once automatic (e.g. tasks you have a lot of practice doing). It may take more time to complete tasks as you recover.
- Complete the task over stages (you may not be able to finish everything all at once).
- Plan tasks throughout the day so you aren’t doing too much at one time.

PLAN

(#2 What are you going to do)

- Organize what you need to do.
- Do tasks that use more energy at times in the day when you feel best.
- Make rest breaks part of your routine.
- Planning saves mental energy and helps you avoid trying to remember what to do and when to do it during the day.

POSITION

(#4 Where are you going to do it?)

- Noisy, busy and distracting environments make it hard to concentrate and will use up more energy.
- Think about your environment and how you stand/sit in it.
- Your environment can make a difference in how you feel.

SLEEP



After you've had a concussion, getting enough and good quality sleep is one way to help your brain heal so you can return to your daily life and go back to the activities you want or need to participate in.

Helpful sleep tips

To get a good night's sleep, remember to:

- Wake up and go to bed at the same time each day, even on weekends.
- Get up at the same time every day no matter what time you fall asleep.
- Create a relaxing, regular bedtime routine for yourself. You can do this by taking a warm bath or shower, using aroma therapy or listen to soothing music. Things you can also try are:
 - Deep breathing exercises: concentrate on your breathing
 - Mental imagery: close your eyes and think about doing something you enjoy or being in a relaxing place
- Sleep in a quiet, dark and cool room. Make sure your mattress and pillow(s) are comfortable.
- Use your bedroom for sleep only. Work/school materials, computers, cell phones, tablets and TVs should be in another room.



I had a concussion, I need to ...

- AVOID naps so I am not awake at night (If I need to nap, it shouldn't be longer than 1 hour)
- FINISH eating 2-3 hours before bed so I do not have a sore stomach before bed
- AVOID caffeine 6 hours before bed, because it can keep me awake
- WRITE down why I can't sleep so I can avoid what is keeping me awake (I shouldn't do this right before bed)

Sleep tips to recover from concussion

- 1**
Try to wake up and go to bed at the same time every day.
- 2**
Create a relaxing routine to help you fall asleep, try listening to soothing music or taking a warm bath before bedtime.
- 3**
Choose a quiet, dark and cool room where you are comfortable.
- 4**
Make your bedroom a restful sleep only zone.

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The food we put into our body gives us the energy we need to heal our brain and body, and help us recover from concussion.

Remember to:

- Eat a balanced diet.
- Have regular meals and snacks.
- Include healthy carbohydrates in your diet. A protein only diet may affect how your body heals from concussion. You need to eat healthy carbohydrates to give your brain fuel (e.g. whole grains, sugar from fruit and vegetables).
- Drink a lot of water. It is important to stay hydrated. Also, the more water you drink, the more you need to go to the bathroom, and so this forces you to take more rest breaks and pace yourself.

“There’s a common misconception that people eat so your body has energy, but the reality is that your brain needs fuels too – you’re not just feeding your body. Athletes eat protein for their muscles, but often forget they need carbohydrates for their brain. Your brain runs off glucose.”

– DR. NICK REED



**I had a concussion,
I need to ...**

- EAT a balanced diet
- Have REGULAR meals and snacks
- Include healthy CARBOHYDRATES in my diet
- DRINK a lot of water

RELAXATION



Taking time to relax and using relaxation strategies can help calm your brain.

Why is relaxation training important?

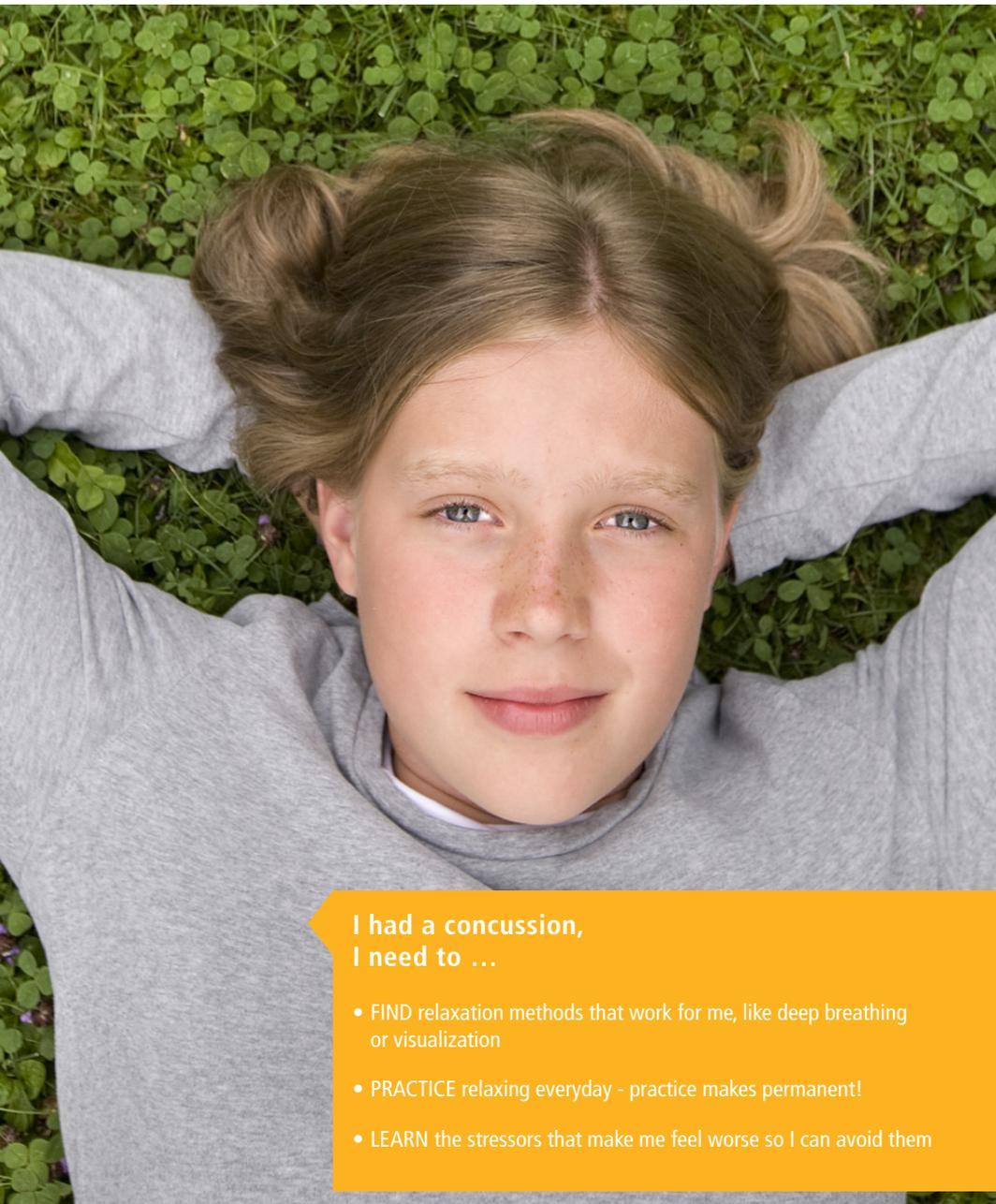
Relaxation:

- Is a way to give yourself a break to focus on you.
- Can help prevent anxiety and nervousness (caused by things like school exams, assignments, missed sleep, loud school hallways or cafeterias) from affecting how you feel.
- Can allow you to rest your brain and body so they can heal.

How does relaxation training work?

Relaxation training can help:

- You control how fast your heart beats, your blood pressure, the amount you sweat, how well you sleep and how alert you feel. During stress, your heart rate and blood pressure increase, your body produces more sweat, your breathing becomes shallow and your muscles can contract.
- Reverse some of the ways your body responds to stress and give you more control over your body, as well as help reduce anxiety, depression, irritability, insomnia and blood pressure.
- You recognize signs of stress in your body and reduce those stressors before they affect how you feel.



I had a concussion, I need to ...

- FIND relaxation methods that work for me, like deep breathing or visualization
- PRACTICE relaxing everyday - practice makes permanent!
- LEARN the stressors that make me feel worse so I can avoid them

RETURNING TO SCHOOL



This is a time when your brain needs all of its energy to heal, so it's very important to rest your brain and limit how hard your brain works until all of your symptoms have gone away.

Slowly returning to school is best. As a student, it can be hard for you to focus, remember and process information, which can affect how well you learn and perform at school. You and your school staff, including your teachers and guidance counselor, can work together to adjust your school work and school environment so you can gradually return to full school activities and performance.

Please share this information with your teacher!

Preparing to return to school

Return to school when your symptoms are gone or when you can go for longer periods of thinking without making your symptoms much worse.

Limit the following activities until symptoms have cleared:

- Reading.
- Using a computer, tablet or cell phone.
- Video gaming.
- Physical activity (e.g. gym class, sports, exercise).
- Walking or taking the bus (avoid noisy environments; a drive to school is a better option).
- Begin brief periods of reading or studying when your symptoms are better or go away (stop activity and rest if symptoms return).



I had a concussion, I need to ...

- SHARE my return to school plan with my teachers
- AVOID gym until I am symptom free

When you're back at school

- Have a contact person at school (e.g. guidance counselor, nurse) who can share information on your behalf about the injury (e.g. severity, necessary needs) with other teachers, the principal, etc.
- Talk to this person daily to discuss making changes at school as you need them.
- Know what you can handle, and attend core classes over non-core classes.
- If your symptoms come back while in the classroom, get help. REST is important and you might need to go to a quiet area at school to manage your symptoms, or go home.
- Try to avoid missing the same classes all the time.
- Avoid gym/physical activity until symptom free or you're approved by your doctor to participate. your doctor to participate.

RETURN TO PHYSICAL ACTIVITIES



Having a concussion and symptoms can make it difficult for you to go back to being physically active. It is critical that you are able to successfully return to school and social activities **before** returning to physical activity or sport.

Going back to activity or sport too soon before your brain heals can:

- Slow down your recovery from your concussion.
- Affect how you perform during the activity.
- Put you at risk for another concussion and for a more serious injury.

This is why it is important for you to rest your brain and your body. Return to physical activity and sport gradually, slowly and as you feel ready.

Work with your doctor to return to activity or sport. Your return to activity or sport must be approved by your doctor.

- Share any symptoms you are experiencing as you return to physical activity with your doctor.
- Your doctor will help you decide on next steps, and help you modify your return to sport to ensure you are safe and comfortable at each level of activity before progressing to the next.
- Most importantly, listen to your body as you go through this process. If your symptoms worsen while being physically active, it is your body's way of telling you that you are not ready.

"If you are having new problems at school and your normal day to day life (i.e. your symptoms get worse) then you aren't ready to return to sports. Your body/brain have to be ready to take on the added demand or risk."

– DR. PETER RUMNEY



**I had a concussion,
I need to ...**

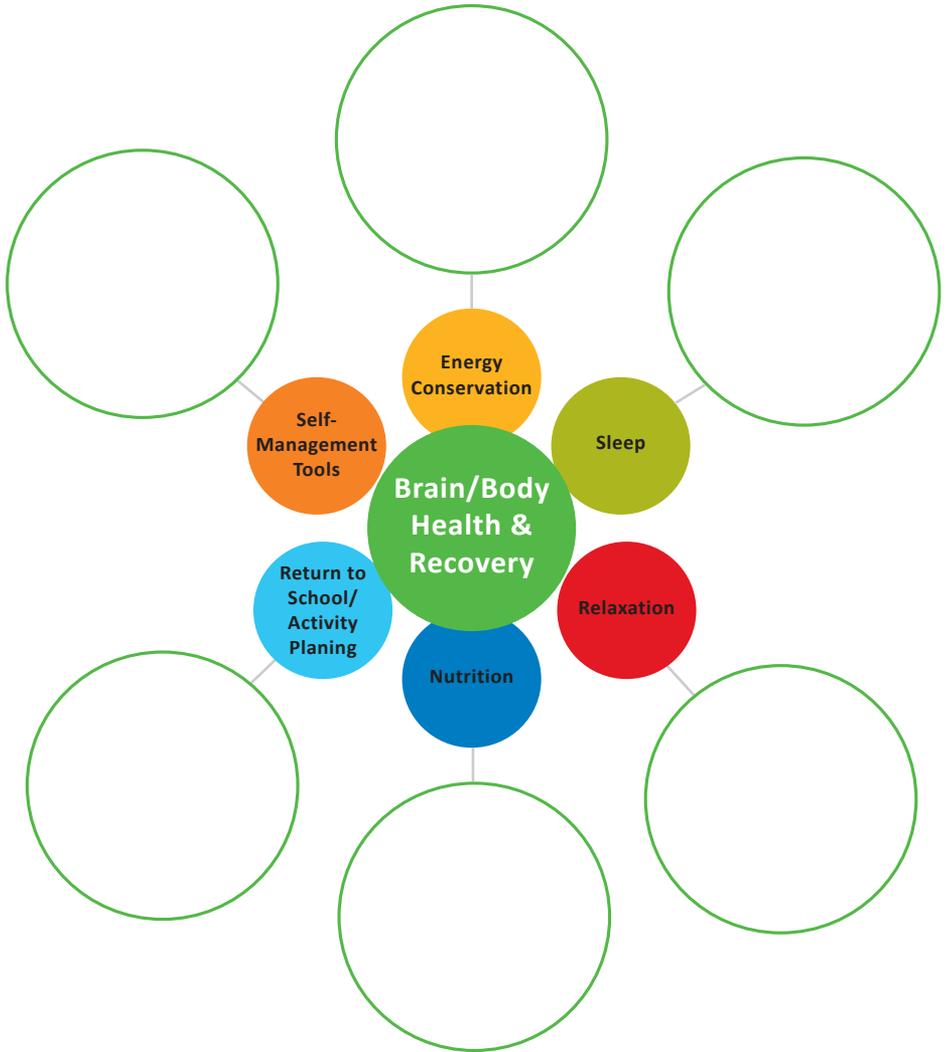
- WORK with my doctor on a return to sports plan
- MODIFY my activities to make sure I am safe
- SHARE my symptoms as I gradually return



SELF-MANAGEMENT
TOOLKIT

MAKE A PLAN. WHAT STRATEGIES WILL YOU USE?

Each of the six topics covered in this handbook are important for your brain, body health and recovery. Think of some strategies you could use for each topic and write them down in the circles. Setting goals, making a plan and regularly updating that plan to meet your needs will help you work towards a successful concussion recovery.



ENERGY CONSERVATION

Here is a list of questions that you should ask yourself when planning your daily activities and before performing a particular activity. Asking these questions will help to make sure you have enough energy to do the activities you need to throughout the day and to help your brain recover from the concussion.

Step 1

What is the activity?

Step 2

Apply the 4 P's

1. PRIORITIZE

Is the activity:

- Urgent (must be done today)
- Important (must be done in next few days)
- For later (must be done this week or month)
- Don't need to/can't do (think big picture - can it wait until you are feeling better)
- Can someone do it for you

2. PLANNING

When am I going to do the activity?

*Consider: energy levels, when feeling best, other activities during the day, etc.

3. PACING

How am I going to do the activity?

- *Consider:
- how your body feels (headaches, etc. = stop and rest)
 - can I do the activity over different stages?
 - can I break the activity down into easier steps

4. POSITIONING

Where am I going to do the activity?

What position will my body be in while I am doing the activity?

- *Consider:
- is the environment going to make me use more energy (distractions, stairs vs. escalator, etc.)
 - is my body position going to make me use more energy (standing vs. sitting, taking breaks to change body position, etc.)

Step 3

Evaluation of your plan and the activity

- did you perform the activity in a way that you are satisfied with?
- do you need to make changes to your plan to perform it differently?

For more information about energy conservation and the 4 P's, see page 8 & 9.

DAILY SCHEDULE AND ACTIVITY LOG

Planning out what you will do each day, and when you will do it, can help you make sure you don't take on too much too soon and that rest and relaxation are a priority within your daily routine. You can make your plan the night before and record what you actually did at the end of each day, including how what you did made you feel. This can help you organize your day and allow you to know what activities make you feel best.

Time	Planned Activities	Actual Activities	Post-concussion Symptoms
7:00 am-8:00 am			<input type="checkbox"/> No change: <input type="checkbox"/> up <input type="checkbox"/> down Primary symptoms:
8:00 am-9:00 am			<input type="checkbox"/> No change: <input type="checkbox"/> up <input type="checkbox"/> down Primary symptoms:
9:00 am-10:00 am			<input type="checkbox"/> No change: <input type="checkbox"/> up <input type="checkbox"/> down Primary symptoms:
10:00 am-11:00 am			<input type="checkbox"/> No change: <input type="checkbox"/> up <input type="checkbox"/> down Primary symptoms:
11:00 am-12:00 pm			<input type="checkbox"/> No change: <input type="checkbox"/> up <input type="checkbox"/> down Primary symptoms:
12:00 pm-1:00 pm			<input type="checkbox"/> No change: <input type="checkbox"/> up <input type="checkbox"/> down Primary symptoms:
1:00 pm-2:00 pm			<input type="checkbox"/> No change: <input type="checkbox"/> up <input type="checkbox"/> down Primary symptoms:
2:00 pm-3:00 pm			<input type="checkbox"/> No change: <input type="checkbox"/> up <input type="checkbox"/> down Primary symptoms:
3:00 pm-4:00 pm			<input type="checkbox"/> No change: <input type="checkbox"/> up <input type="checkbox"/> down Primary symptoms:
4:00 pm-5:00 pm			<input type="checkbox"/> No change: <input type="checkbox"/> up <input type="checkbox"/> down Primary symptoms:
5:00 pm-6:00 pm			<input type="checkbox"/> No change: <input type="checkbox"/> up <input type="checkbox"/> down Primary symptoms:
6:00 pm-7:00 pm			<input type="checkbox"/> No change: <input type="checkbox"/> up <input type="checkbox"/> down Primary symptoms:
7:00 pm-8:00 pm			<input type="checkbox"/> No change: <input type="checkbox"/> up <input type="checkbox"/> down Primary symptoms:
8:00 pm-9:00 pm			<input type="checkbox"/> No change: <input type="checkbox"/> up <input type="checkbox"/> down Primary symptoms:
9:00 pm-10:00 pm			<input type="checkbox"/> No change: <input type="checkbox"/> up <input type="checkbox"/> down Primary symptoms:

For more information on planning physical activity see page 9.

RETURN TO PLAY – PHYSICAL ACTIVITY LOG

After you successfully return to school and social activities, this Physical Activity Log can be used to help you slowly return to physical activity or sport. Log the type of activity (e.g. walking, running) and other details to know what your body can handle as you work towards returning to sports.

Date	Activity (Be specific)	Duration (Minutes)	Exertion (Scale 1-10)	Outcome
		___mins	___/10	<input type="checkbox"/> No rise in symptoms <input type="checkbox"/> Rise in symptoms <input type="checkbox"/> During; <input type="checkbox"/> After (how long after? _____) Which symptoms: Symptom 1: _____/6 Symptom 2: _____/6 Symptom 3: _____/6
Additional notes:				

Date	Activity (Be specific)	Duration (Minutes)	Exertion (Scale 1-10)	Outcome
		___mins	___/10	<input type="checkbox"/> No rise in symptoms <input type="checkbox"/> Rise in symptoms <input type="checkbox"/> During; <input type="checkbox"/> After (how long after? _____) Which symptoms: Symptom 1: _____/6 Symptom 2: _____/6 Symptom 3: _____/6
Additional notes:				

Date	Activity (Be specific)	Duration (Minutes)	Exertion (Scale 1-10)	Outcome
		___mins	___/10	<input type="checkbox"/> No rise in symptoms <input type="checkbox"/> Rise in symptoms <input type="checkbox"/> During; <input type="checkbox"/> After (how long after? _____) Which symptoms: Symptom 1: _____/6 Symptom 2: _____/6 Symptom 3: _____/6
Additional notes:				

For more information on return to physical activities see page 18.

NOTES

HELPFUL RESOURCES AND LINKS

As part of this handbook, we are including some helpful links and additional resources to help guide your return to daily activities, school, sport and work. The links and resources that we are providing you do not represent all of the valuable information that is available, but provides key sources that can help you in your recovery:

Holland Bloorview Kids Rehabilitation Hospital – Concussion Centre

Free concussion education sessions, groundbreaking research information, and information about Holland Bloorview's clinical services.
www.hollandbloorview.ca/concussionresearch

Ontario Neurotrauma Foundation – Pediatric Concussion Guidelines

New, comprehensive pediatric concussion guideline. Holland Bloorview researchers and doctors contributed to the ONF guidelines:
<http://onf.org/documents/guidelines-for-pediatric-concussion>

Canadian Paediatric Society

Information for parents, coaches and trainers:
http://www.caringforkids.cps.ca/handouts/sport_related_concussion#.UtQwZDVWN-o.email

Position Statement on Management of Children with Sport-Related Concussion

<http://www.cps.ca/documents/position/sport-related-concussion-evaluation-management>

CanChild

Mild Traumatic Brain Injury (Concussion) Education:
<http://canchild.ca/en/canchildresources/ABI-Resources.asp>

Centers for Disease Control and Prevention

Injury prevention and control - Traumatic Brain Injury: <http://www.cdc.gov/Concussion/>

Montreal Children's Hospital/McGill University Health Centre

Trauma concussion kit: <http://www.thechildren.com/health-info/safety-and-wellness/mch-trauma-concussion-kit>

Ontario Physical Health and Education (OPHEA)

Safety Guidelines: <http://safety.ophea.net/concussion-protocolsParachute>

Parachute

Concussion toolkit:
<http://www.parachutecanada.org/active-and-safe>
<http://www.parachutecanada.org/resources>

Children's National Medical Centre – Post-Concussion Symptom Inventory for Children

http://childrensnational.org/departments/safe-concussion-outcome-recovery--education-score-program/for-parents?sc_lang=en

HANDBOOK DEVELOPMENT AND SOURCES

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Holland Bloorview

Holland Bloorview Kids Rehabilitation Hospital is Canada's largest children's rehabilitation hospital dedicated to improving the lives of children with disability. As a fully affiliated hospital with the University of Toronto, we are home to the Bloorview Research Institute and the Teaching and Learning Institute, allowing us to conduct transformational research and train the next generation of experts in childhood disability. For more information please visit www.hollandbloorview.ca

Bloorview Research Institute

The Bloorview Research Institute is dedicated to improving the lives of children with disabilities through client and family-centred rehabilitation research.

Located onsite at the Holland Bloorview Kids Rehabilitation Hospital, the Bloorview Research Institute is recognized in Canada and around the world for its unique client population and leadership in the field of childhood disability. The Research Institute brings together a multi-disciplinary team of scientists who work collaboratively with clinical staff, clients, and families to generate clinically-linked and applied pediatric rehabilitation research.

Concussion Centre

The Holland Bloorview Concussion Centre is one of the first in the world dedicated exclusively to pediatric concussion. Our centre includes clinicians specifically trained in pediatric brain injury and researchers who are leading experts in the field of youth concussion care, research, and education. The Concussion Centre is focused on getting kids back to doing what they need, want and love to do after sustaining a concussion.

Proudly supported by:



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