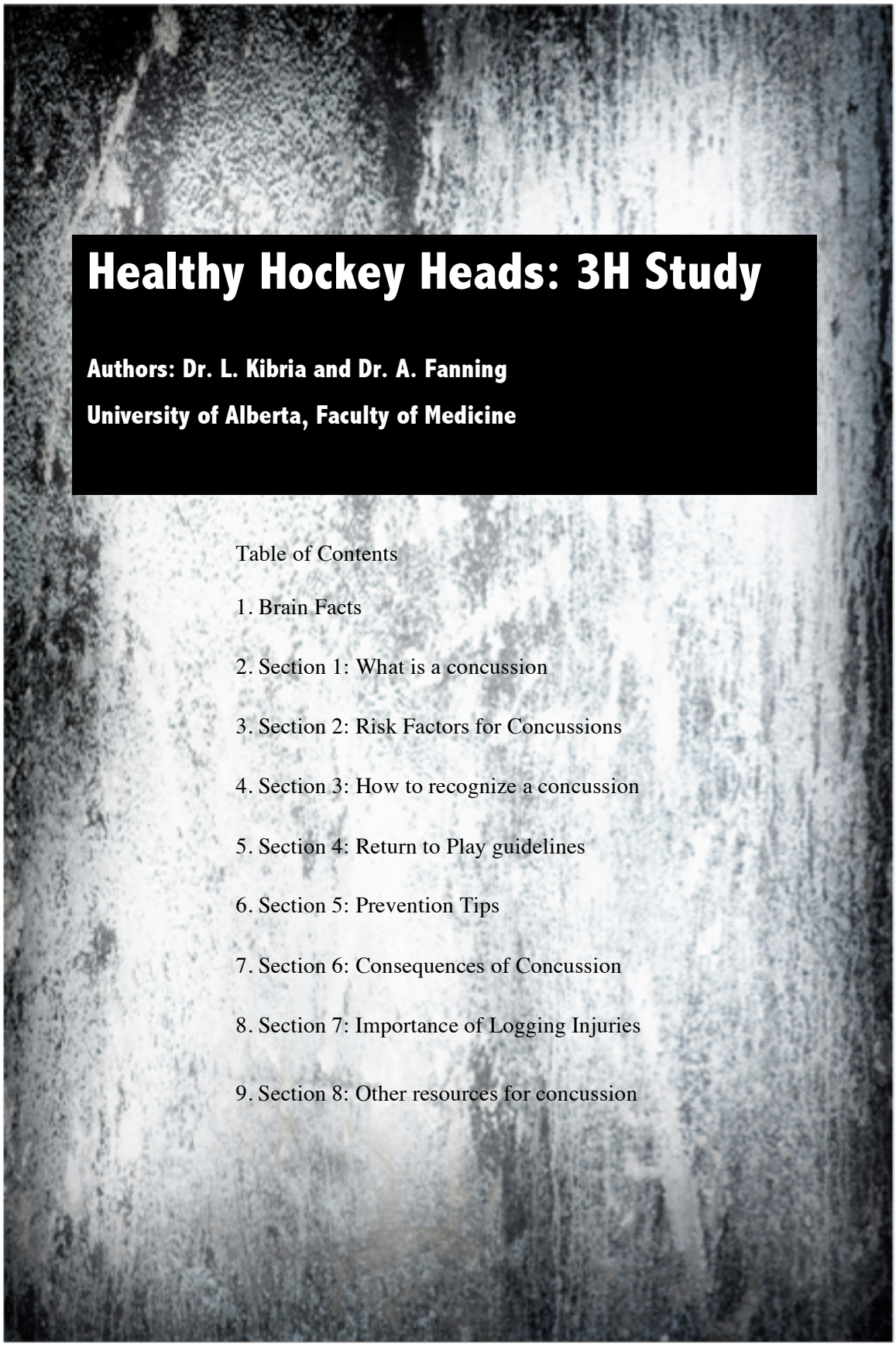


Healthy Hockey Heads: 3H Study

Authors: Dr. L. Kibria and Dr. A. Fanning

University of Alberta, Faculty of Medicine

Table of Contents

1. Brain Facts

2. Section 1: What is a concussion

3. Section 2: Risk Factors for Concussions

4. Section 3: How to recognize a concussion

5. Section 4: Return to Play guidelines

6. Section 5: Prevention Tips

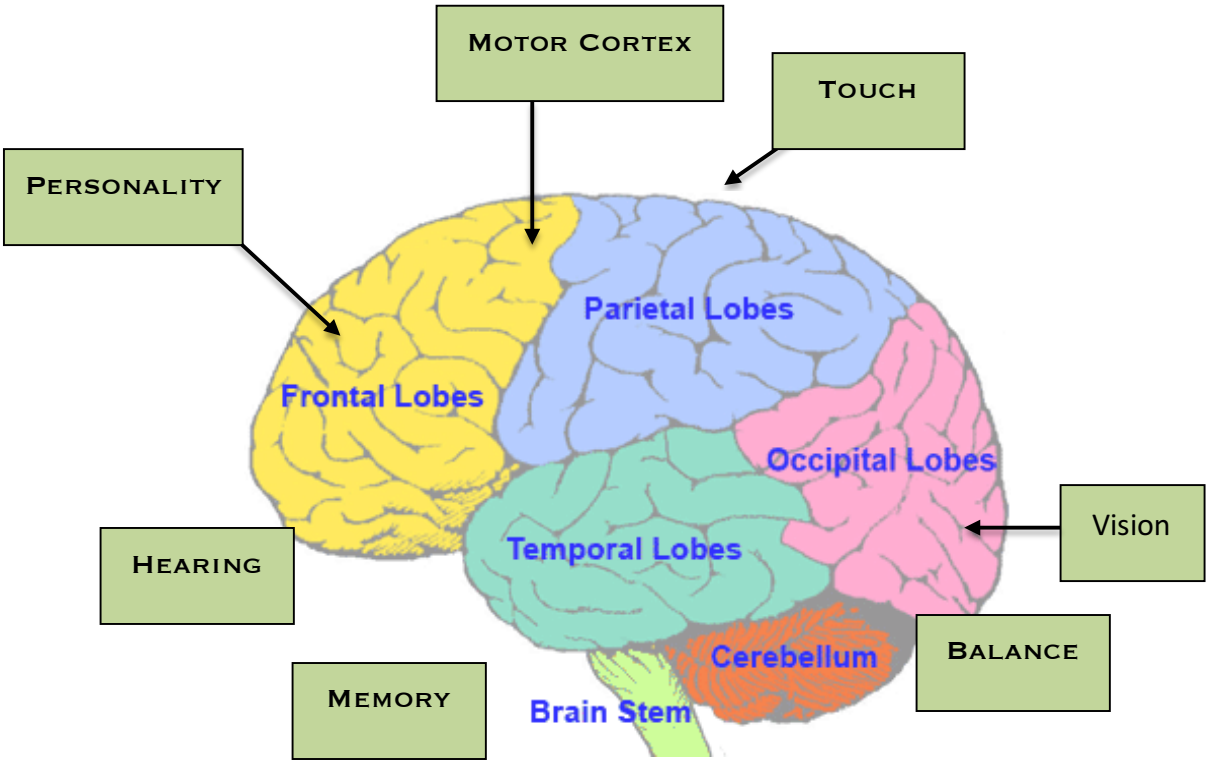
7. Section 6: Consequences of Concussion

8. Section 7: Importance of Logging Injuries

9. Section 8: Other resources for concussion

© Lisa Kibria.2016. This manual is protected by copyright and provided to you for this research study only. Reproduction and distribution is prohibited.

Brain Facts!



- Floats in the skull and is cushioned by a fluid called the cerebral spinal fluid!
- Weights about 3 lbs!
- Is not fully developed when you are under 13 years old!
- Can generate enough energy to power a low watt light bulb!

© Lisa Kibria.2016. This manual is protected by copyright and provided to you for this research study only. Reproduction and distribution is prohibited.

Section 1: "Feeling a bit out of it?"

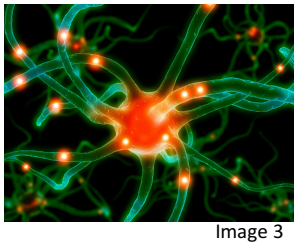


Image 3

What do you think a concussion is?

_____

_____

A Concussion: [3-5,7,13]

- Is an injury to the **Brain**. It can be mild, moderate, or severe.
- Is caused by a direct hit to the head, neck or by hitting any other part of your body.
- What actually happens: the brain can bounce against the inner surface of the skull, potentially pulling on nerve fibers, tearing blood vessels and causing bruising in the brain.
    - This can disrupt electrical activities in the brain and affect your concentration, memory, mood, and physical abilities.
    - Can impact your ability to attend and focus in school, participate in sports activities and socialize with friends and family.
- Can occur without losing consciousness.

The brain's recovery period will depend on your age, the severity of impact and history of previous head injuries.

Concussions, like any significant injury to another part of you body, needs to be addressed quickly because:

- **worsening your symptoms**
  can lead to a more serious head injury

Image 4

© Lisa Kibria.2016. This manual is protected by copyright and provided to you for this research study only. Reproduction and distribution is prohibited.

Section 2: Risk Factors/modifiers for concussions? [7]

- Ice hockey and football have more risks of getting a concussion than most contact sports
- Highest risk activity: Body checking.
- Some individuals are more susceptible to concussions.
- Depends on the age and level of play in hockey.
- The brain may be more susceptible to injury after the first concussion.

What are some other Risk Factors for Concussions?

Family and personal history of migraines, ADHD, learning disabilities, some players are more susceptible to concussions, mental health illnesses, medications (such as stimulants).

Image 5

© Lisa Kibria.2016. This manual is protected by copyright and provided to you for this research study only. Reproduction and distribution is prohibited.

Section 3: How to recognize a concussion?

Image 6

- You cannot see a concussion.
- Signs (what you may feel) and symptoms (what your parent/coach/doctor may notice is different about you) may occur right away, after a few hours or a few days later.

Signs and Symptoms of Concussions: [4,7,9]

- Since the brain is critical to many aspects of our functions there are many possible symptoms. The following chart is based on the Hockey Canada concussion Card and SCAT3.
- There is now a Child-SCAT3.
- Youth may experience more stomach pain, be more irritable Or have behavioral changes instead of typical signs and symptoms.

Examples of Signs and Symptoms:

- ✓ Headache/pressure in head/neck pain
- ✓ Nausea, Vomiting
- ✓ Dizziness, feeling "dazed", foggy
- ✓ Blurred vision
- ✓ Sensitive to light and or noise
- ✓ Drowsiness, tiredness, low energy
- ✓ Memory problems
- ✓ Irritability/sad/nervous/anxious
- ✓ Sleep disturbance
- ✓ Poor balance, coordination
- ✓ Poor concentration
- ✓ Decreased playing ability

© Lisa Kibria.2016. This manual is protected by copyright and provided to you for this research study only. Reproduction and distribution is prohibited.

If you experience ANY of the previous signs and symptoms after a head injury:

- You must TELL your parent(s), coach, team manager and or trainer right away!
- Be removed from play or the playing surface
- Be closely monitored and not left alone
- The player must see a pediatrician, emergency physician, family physician or any physician experienced in concussion management before returning to play.
- MUST NOT take any medications before seeing a physician

Have you ever had a head injury? If yes, what happened and what did you do?

_____
_____
_____
_____

Image 7

© Lisa Kibria.2016. This manual is protected by copyright and provided to you for this research study only. Reproduction and distribution is prohibited.

Section 4: Return to Play Guidelines

Montreal Children's hospital Trauma Concussion Kit [4,7,9]

Image 8

- Must be symptom free for 1 week.
- At least 24 hours between each step.
- If symptoms occur during any of these steps, player must rest for 24 hours until symptom free and return to previous step!

Step 1: Light Conditioning exercises

- OFF the playing surface. NO CONTACT.
- Warm up: 5-10 min, light Stretches
- Cardio workout: 5-10 min, Stationary bike, treadmill, fast paced walking, light jog, rowing and swimming
- Purpose: **Recovery from injury**

Step 2: General Conditioning and game specific skill work is done individually

- OFF the playing surface, no Contact
- Warm up: 5-10 min, light stretches
- Cardio workout: 20-30 min, gradual increase intensity and duration
- Purpose: **Increase Heart Rate**

Step 3: General conditioning and game specific skill work done individually and with a teammate

- On the playing surface, NO contact
- Duration of session: 60 min. Begin resistance training.
- Begin ice skating warm up: forward, backward, stop and start, cones.
- Begin on ice practice of hockey drills with partner: passing, shooting on goalie, other position specific drills like face offs and deflections.
- Purpose: **add movement**

© Lisa Kibria.2016. This manual is protected by copyright and provided to you for this research study only. Reproduction and distribution is prohibited.

Step 4: General conditioning for specific skill work and team drills

- On the ICE, but NO contact and no scrimmages!
- Practice team passing, shooting drills, individual defensive skills
- Practice break out drills, 3 on 2's, 2 on 1's, and defensive coverage drills
- Practice offensive and defensive plays
- Review body checking and protection techniques. Focus on skills needed.
- Purpose: **physical activity, improve coordination and cognitive exercises**

Step 5: full team practice with body contact

- ON the ICE, CONTACT, SCRIMMAGES
- Participate in a full practice to get yourself back in the lineup. If no symptoms then discuss about getting back in the game.
- Coaches must make sure that the athlete has regained his/her pre injury skill level and is confident in his/her ability to return to activity.
- Purpose: **Restore confidence and re-assess functional skills**

Step 6: RETURN TO COMPETITION

IMPORTANY TIPS on managing a concussion

- NEVER PLAY THROUGH AN INJURY! Err on the side of Caution
- Your brain needs time to **REST** both **PHYSICALLY** and **MENTALLY** in order to recover!
  - no strenuous activity, no gym
  - limited time on computer, phone, videogames, musical instruments.
  - return to school and workload may be gradual.
- Stay well hydrated and eat healthy!

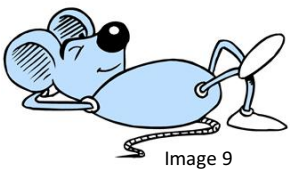


Image 9

© Lisa Kibria.2016. This manual is protected by copyright and provided to you for this research study only. Reproduction and distribution is prohibited.

Section 5: PREVENTION TIPS [4,7,9,18]

Always trying to win but not at the cost of trying to injure an opponent!

FAIR PLAY

- What is Fair Play?

_____

_____

_____

- Qualities of Fair Play:
    - Integrity
    - Being Fair
    - Respect the rules of the game
    - Be a team player by allowing everyone on the team equal opportunity to participate
    - Respect the coaches and officials.
    - Respect your team players and your opponents

Respect the RULES OF THE GAME

- Hockey Canada rule book section 6.4 and 6.5 Head contact
    - No hits to the head or from behind
    - Will result in a penalty

Practice your skills and use proper training techniques.

Use properly fitted equipment including mouth guards. It is important to note that helmets ***may*** help to reduce head injuries such as skull fractures but there is no significant evidence that helmets can prevent head injuries.

Image 10

© Lisa Kibria.2016. This manual is protected by copyright and provided to you for this research study only. Reproduction and distribution is prohibited.

Section 6: Potential Consequences of Concussions [7,9]

Image 11

- **Second Impact Syndrome**
  - Occurs when an athlete is still suffering from post concussion symptoms and sustains a second injury to the head. This can cause serious swelling of the brain and even death.

- **Post Concussion Syndrome:**
  - Persistent concussive symptoms for weeks to months post head injury.
    - Physical: headache, dizziness, nausea, vomiting, poor balance, blurry vision.
    - Cognitive: attention difficulties, poor concentration, memory problems.
    - Behavioral: depression, mood changes, agitation, aggression and irritability.

Section 7: Importance of Reporting and logging injuries

- Keep track of your injuries
- Promote safe and fair play
- Prevents future injuries since you are aware of your past injuries
  NOTE: add in injury log here!

Image 12

© Lisa Kibria.2016. This manual is protected by copyright and provided to you for this research study only. Reproduction and distribution is prohibited.

Section 8: Other Resources

Check out these great websites and print off fun stuff!!!

- Websites:
  - My Favorite Medicine: http://www.myfavouritemedicine.com/concussions/
  - CDC: Heads up concussion in Youth sports http://www.cdc.gov/concussion/HeadsUp/youth.html
  - Think First: http://www.parachutecanada.org/thinkfirstcanada
  - Hockey Canada: http://www.hockeycanada.ca/index.php/ci_id/170544/la_id/1#
  - Montreal Children Hospital trauma concussion kit: http://www.thechildren.com/trauma/en/treating/injuries/news.aspx?id=404
  - Hockey Alberta Safety course: http://www.hockeyalberta.ca
  - SCAT3: Sports Concussion Assessment Tool: http://casem-acmse.org/wp-content/uploads/2015/10/SCAT3_French.pdf

Image 13

© Lisa Kibria.2016. This manual is protected by copyright and provided to you for this research study only. Reproduction and distribution is prohibited.

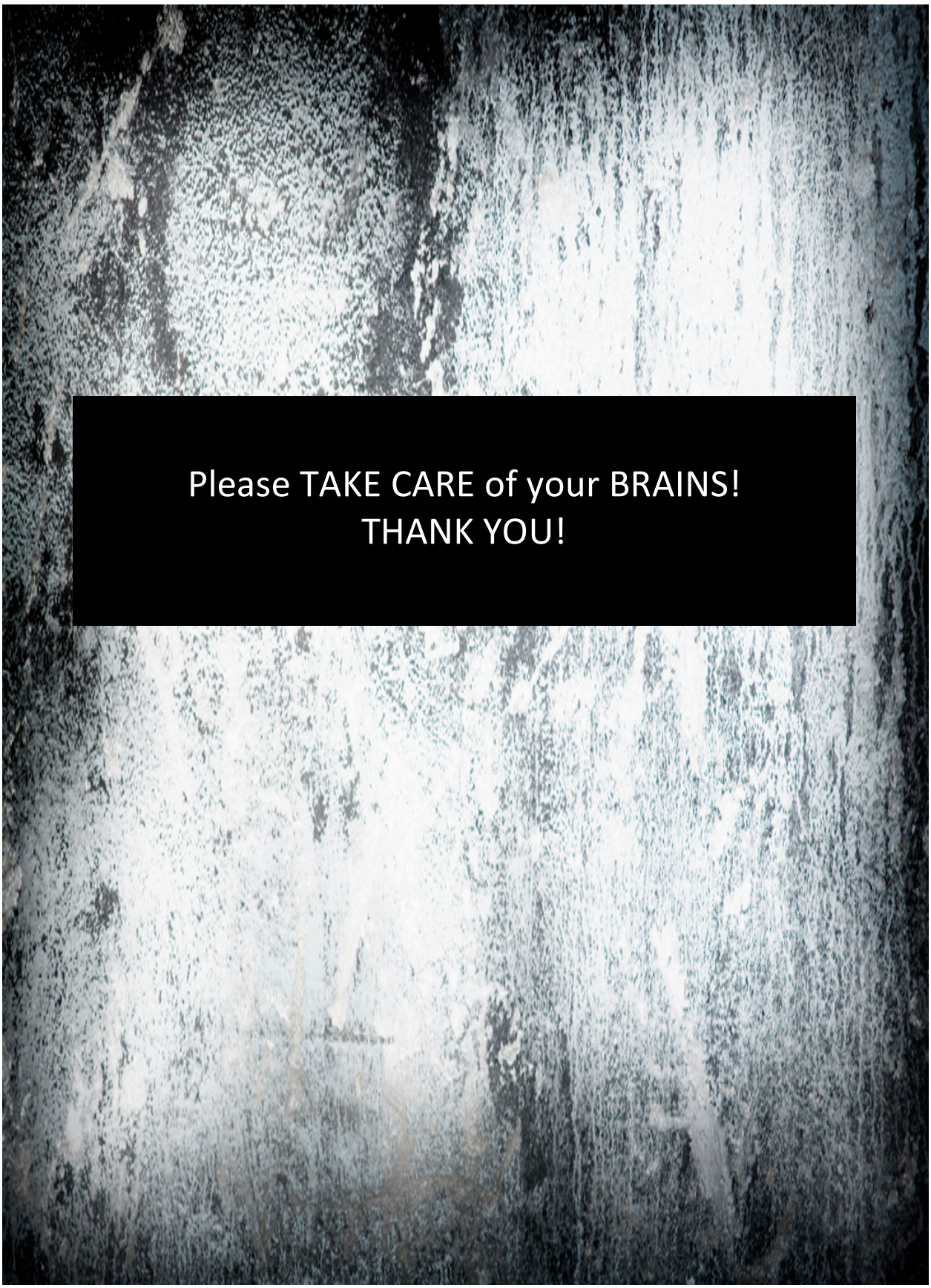
References:

1. ThinkFirst SMART HOCKEY. (2012). *Concussion*. Retrieved from http://www.thinkfirst.ca/programs/concussion.aspx.
2. Hockey Canada. (2012). *Head Contact Rule*. Retrieved from http://www.hockeycanada.ca/headcontactrule.
3. Evaluation and management of children and adolescents with sports-related concussion, Pediatric Child Health 2012; 17(1): 13.
4. MHC Trauma. (2009). *The MHC Trauma Concussion Kit*: new 2011 version. Retrieved from http://www.thechildren.com/trauma/en/treating/injuries/news.aspx?id=404.
5. Sports Concussion Library. (2011). *Definition of a Concussion*. Retrieved from http://www.sportconcussionlibrary.com/content/definition-concussion.
6. Hockey Canada. (2012). *2012-2014 Official Rule Book*. Retrieved from http://www.hockeycanada.ca/.
7. *DynaMed*. (2012, Oct 5). ***Concussion.*** Ipswich, MA:EBSCO Publishing. Retrieved October 9, 2012 from http://web.ebscohost.com.login.ezproxy.library.ualberta.ca/dynamed/detail?vid=5&hid=7&sid=7241fb73-26d2-4893-985d-4e2e5022b07b%40sessionmgr10&bdata=JnNpdGU9ZHluYW1lZC1saXZlJnNjb3BlPXNpdGU%3d#db=dme&AN=116529.
8. Your Amazing Brain. (2012). *National Geographic Kids Dare to Explore. Retrieved from http://kids.nationalgeographic.com/kids/stories/spacescience/brain/.*
9. Canadian Academy of Sport and Exercise medicine.(2008). SCAT2. Retrieved from http://download.lww.com/wolterskluwer_vitalstream_com/PermaLink/JSM/A/JSM_20_4_2010_05_21_ERRATUM_200555_SDC1.pdf.
10. Swaine BR and Tremblay C. (2007). Previous head injury is a risk factor for subsequent head injury in children: a longitudinal cohort study. *Pediatrics*. 119(4), 749-58.
11. Emery CA and Kang J. (2010). Risk of injury associated with body checking among youth ice hockey players. *JAMA*. 303 (22), 2265-72.
12. Grady, MF. (2010). Concussion in the adolescent athlete. *Curr Probl Pedatr Adolesc health care*. 40(7), 154-69.
13. Putukian M and Madden CC. (2009). Head Injuries: Netter's Sorts Medicine, 317-21.
14. Echlin PS and Johnson AM. (2010). A prospective study of concussion education in 2 junior ice hockey teams: implications for sports concussion education. *Neurosurg Focus*. 29(5), E6.
15. McCrory P and Meeuwisee W. (2009). Concensus statement of concussion in Sport 3rd International conference on concussion in sport held Zurich, November 2008. *Journal of Clinical Neuroscience*. 16, 755-763.
16. Covassin T and Elbin RJ. (2012). Educating Coaches About Concussion in Sports: Evaluation of the CDC's ''Heads Up: Concussion in Youth Sports'' Initiative. *J Sch Health*. 82 (5), 233-238.
17. My Favourite Medicine. (2012). *Handpicked Health: Concussion*. Retrieved from http://www.myfavouritemedicine.com/concussions/.
18. Alkins, C. (2009). *Hockey Canada Safety Program Participant Manual.* Ottawa, Ontario: Hockey Canada.
19. Sarmiento K and Mitchko J. (2010). Evaluation of the Centres for Disease Control and Prevention's concussion initiative for high school coaches: "Heads up: Concussion in high school sports". *J Sch Health*. 80 (3), 112-8.

Image Sources:

1. Image 1: Human Brain, http://spaceresearch.nasa.gov/general_info/05feb_superconductor.html
2. Image 2: The State of Queensland (Queensland Health). 2012. http://www.health.qld.gov.au/abios/asp/brain.asp.
3. Image 4, 5, 8, 10: Article provided by wikiHow, a wiki building the world's largest, highest quality how-to manual. Please edit this article and find author credits at wikiHow.com. Content on wikiHow can be shared under a Creative Commons License. http://www.wikihow.com/wikiHow:Attribution.
4. Image 3, 6, 7, 9, 11-13: Microsoft Clip Art. 2012.http://windows.microsoft.com/en-CA/windows-live/microsoft-services-agreement?CTT=114.

© Lisa Kibria.2016. This manual is protected by copyright and provided to you for this research study only. Reproduction and distribution is prohibited.



© Lisa Kibria.2016. This manual is protected by copyright and provided to you for this research study only. Reproduction and distribution is prohibited.