Reaching for the Stars
Enrico Quilico, B.Ed.
Part One: Story of my accident

• Accident that caused my traumatic brain injury (TBI)
• Stay at the hospital
• Rehabilitation process
• Challenges with reintegration
Part Two: Journey toward TBI research

- Resuming studies and work
- Exercise and Sports
- Transition from Bachelor of Education to Master’s of Kinesiology & Physical Education
- Doctorate in Rehabilitation Science
Questions that inspire me...

• Am I making the best of a situation?
• Am I trying to reach my full potential?
• Am I listening to what the world is saying?
Average 23yr. old
I loved taking Risks
I loved Cars & Motorcycles
Life caught up with me at 100km/hr
Quite a Sight
Pressure in Skull and Craniotomy
First Black Friday
Shattered Elbow
Childhood Hero
Second Black Friday
Little Reaction
Initial Recovery
Montreal Rehab Institute
Turning Point: Goal of Getting Better
Back Home
(missing part of skull & very skinny)
BACK TO THE HOSPITAL
August 31st
Celebrated one year later!!!
Difficult Transition
Had to brake away
Started sharing my story in schools
Journey toward Traumatic Brain Injury research
Resuming Studies and Work
Exercise and Sport
Triathlons
Transition from Bachelor in Education to Master’s in Kinesiology & Physical Education
Incidence of TBI

- TBI is the number one cause of death and disability for people in Canada under the age of 40 years, with 50,000 brain injuries that occur annually (Canadian Institute of Health Research [CIHR], 2012).

- There are approximately 1.7 million brain injuries that occur every year in the United States which accounts for one third of total injury-related deaths (Centers for Disease Control and Prevention [CDC], 2010).

- The World Health Organization predicts that TBI will surpass many diseases as the leading cause of death and disability by 2020 (Hyder, Wundrlich, Puvanachandra, Gururaj, & Kobusingye, 2007).
Cognitive Impact

- The most common deficits induced by TBI are cognitive and include difficulties related to:
  - Attention
  - Memory
  - Executive function
  - Processing speed (Dikmen, et al., 2009).

- Cognitive impairment is present up to ten years following brain injury and is more common with moderate and severe cases (Colantonio, et al., 2004; Draper & Ponsford, 2008).
Psychological Impact

• The leading psychiatric condition related to TBI is major depression which is linked with
  ▫ Poor functioning
  ▫ Reduced quality of life
  ▫ Increased impairment
  ▫ Injury related disability
  (Hibbard, et al., 2004; Pagulayan, Hoffman, Temkin, Machamer & Dikmen, 2008; Diaz et al., 2012).

• Depression and poor psychosocial functioning may persist for up to 10-20 years after TBI
  (Hoofien, Gilboa, Vakil, & Donovick, 2001; Draper, Ponsford, & Schönberger, 2007).
Social Impact

• Behavioural difficulties associated with TBI may negatively impacts a person’s ability to function in society (Fitzgerald, Carton, O’keeffe, Coen, & Dockree, 2012).

• Areas that are typically affected after moderate to severe TBI include employment, interpersonal relationships and leisure Activity (Dijkers, 2004).

• TBI survivors have increased rates of health service use for up to 10 years after injury (Cameron, Purdie, Kliwer, & McClure, 2008).
Physical Fitness

• Aerobic fitness is compromised for TBI victims with peak aerobic capacities between 65-75% of the general population (Mossberg, Ayala, Baker, Heard, & Masel, 2007).

• Physical therapy and aerobic training are an essential part of rehabilitation after TBI (Mossberg, Orlander, & Norcross, 2008).

• Few studies investigated the long-term effects of endurance training after TBI (Mossberg, Amonette, & Masel, 2010).
Benefits of Exercise: Animal Studies

• Studies on animals have linked exercise after TBI with enhanced cognitive functioning (Griesbach, Hovda, Molteni, Wu, & Gomez-Pinilla, 2004).

• However, research also shows there is an optimal window for exercise to be beneficial. Starting too early could have a detrimental effect (Griesbach, 2011).
Benefits of Exercise: Human Studies

• Significant improvements in processing speed and memory was achieved through virtual reality exercise for individuals with TBI 15 years ago (Grealy, Johnson, & Rushton, 1999).

• While exercise has been found to improve cognition in healthy adults, there is insufficient evidence about the use of exercise to improve cognitive abilities after TBI (McDonnell, Smith & Mackintosh, 2011).
Benefits of Exercise: Mood and Self-Esteem

- Exercise is shown to alleviate symptoms of depression following TBI and increase positive mood states \( \text{(Driver & Ede, 2009).} \)

- Exercise is the preferred method of treating depression for individuals with TBI \( \text{(Fann, et al., 2009).} \)

- Exercise maintenance after TBI has further been associated with improved mood, sleep, community participation and quality of life \( \text{(Hoffman, et al., 2010; Wise, et al., 2012).} \)
Physical Activity after TBI

• Reavenhall and Blake (2010) investigated the determinants of PA individuals with TBI who live in the community.

• Driver, Ede, Dodd, Stevens, and Warren (2012) identified barriers to PA for individuals who recently suffered a TBI in rehabilitation.

• Self, Driver, Stevens, and Warren (2013) explored the subjective experience of PA following TBI in a comprehensive rehabilitation setting.
Central Research Question

What are the perceived facilitators and barriers to post-rehabilitation exercise for individuals with a moderate to severe Traumatic Brain Injury?
Methodology

• Interpretive Phenomenological Analysis (IPA)
  (Smith, Flowers, & Larkin, 2009)

  ▫ Explore the lived experience of exercise with a TBI for individuals outside the clinical setting.
  ▫ Interpret the phenomenon from the perspective of an insider.
Participants

- Seven men
- Severe TBI
- Between the ages of 18-50
- No longer in rehabilitation
Data Collection

- Two Separate Semi-Structured Interviews with each participant.
  - Interview One: establish background information and build rapport.
  - Interview Two: explore post-rehabilitation exercise after TBI in greater depth.
- Interview two was transcribed verbatim and analyzed according to the step-by-step process for Interpretive Phenomenological Analysis.
Results

• **Theme One:** *Impact of TBI* addressed how physical and psychological impairments affected the participants’ ability to participate in activities of daily living.

• **Theme Two:** *Personal development after TBI* highlighted greater awareness, emotional development and emphasized the importance of accepting disability-related impairments.
Results

- **Theme Three:** *Facilitators and Barriers to Exercise* identified available time, planning, resources and transportation as well as weather conditions, organization, support and motivation.

- **Theme Four:** *Exercise after TBI* revealed exercise habits, productive activity and importance of exercise as well as physical, social and psychological effects of exercise.
Look for it soon...

Facilitators and Barriers to Post-Rehabilitation Exercise following Moderate to Severe Traumatic Brain Injury

Quilico, E., Harvey, W., & Caron, J. (2014)
Moving to Toronto
Ph.D. in Rehabilitation Science

• Unique opportunity to work with some of the best TBI researchers in the world at one of the best universities in the world.

• Have relocated to the Acquired Brain Injury research lab at University of Toronto under the supervision of the Dr. Angela Colantonio.
Thank you!!!

The organizing committee of the Brain Injury Association of Canada for this incredible opportunity.

Family & Friends because I would never have made it this far without your unwavering support and belief in my potential.

Think First Quebec for the opportunity to begin sharing my story in schools and using my story for a purpose.

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References


