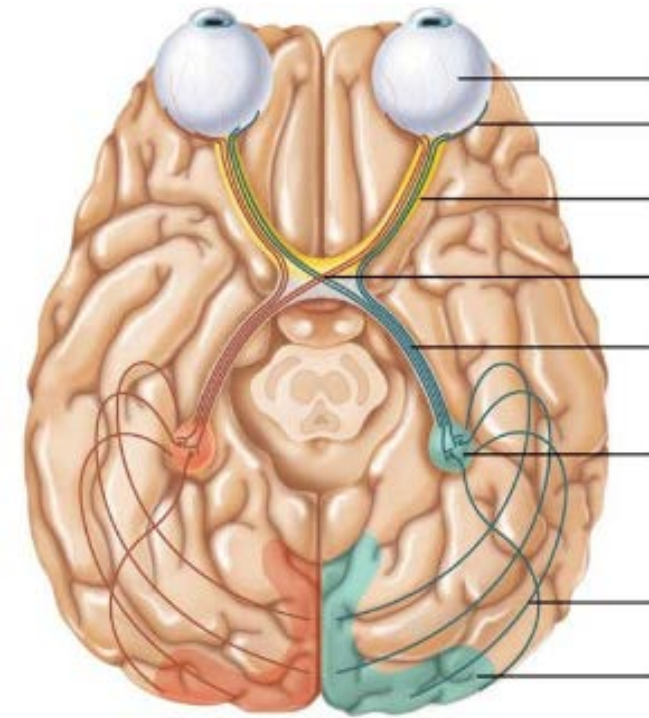


# Persistent Vestibular & Vision Dysfunction Return To Work/Sports/Learn



shutterstock.com · 145250743

1. Case Study
2. Evidence to support
  - Vestibular Rehabilitation
  - Optometry
  - Return to Work
  - Return to Sport
  - Return to Learn
3. Local Resources



# Disclosure

Personal disclosure:

- I have no current or past relationships with commercial entities.

Commercial support disclosure:

- This learning activity has received financial support from the Nanaimo Division, Nanaimo Medical Staff Engagement Society, and the Practice Support Program.



Day 0

## Concussion Event

- Pamela, 36 year old, healthy, RN at Private LTC
- Unexpected collision with out of control snowboarder outside ski lodge. Struck postero-lateral head on ice.
- No LOC, felt immediately “dazed” and “seeing stars”
- Helped into lodge by husband:
  - Disoriented
  - Nauseous
  - Dizzy
  - Unsteady
  - Headache
  - Mild Neck pain





Day 0

## Emergency Department Evaluation

- Husband drove to St. Joseph's
- Vomit in car ride to hospital then again in ER waiting room
- CT Head = negative, unilateral right gaze evoked nystagmus, no red flags

### Rx

1. Re-assurance that symptoms are normal after concussion; written info provided
2. Expected recovery within days to weeks
3. Cognitive and physical rest for 48 hours then gradually re-activate
4. Medications for symptoms; red flags for follow up
5. Follow up with family doctor



Day 4

## Family Doctor Follow Up

- Symptoms: Headache, Dizziness, Nausea, Disequilibrium, neck pain, memory/concentration
- Rivermead Post Concussion Symptom Questionnaire: 31/64
- Exam
  - Right gaze evoked nystagmus
  - Intolerance to lights, visual and head motion
  - No red flags

### R<sub>y</sub>

1. Re-assurance that symptoms are normal after concussion
2. Expected recovery within days to weeks
3. Graded activity without exacerbating symptoms
4. Off work for two weeks
5. Medications for symptoms; headache self management handout
6. Weekly follow ups



Day 11



Day 18

## Family Doctor Follow Ups

Symptoms: Vertigo, memory/concentration, stimulus intolerance, nausea, unsteadiness, headaches

Rivermead Scale: 26/64

Exam:

- Positive right Dix Hallpike test
- Right gaze evoked nystagmus
- Impairments of balance/memory/concentration on SCAT 5

### R<sub>y</sub>

1. Referral to certified vestibular therapist (1 week) and ENT (6 months)
2. Graded activity without exacerbation of symptoms
3. Off work – look into return to accommodated duties



Day 25

## Vestibular Rehabilitation

### Diagnosis

1. Right posterior canal canalithiasis (BPPV)
2. Left unilateral peripheral hypofunction
  - Balance Impairment
  - Gaze instability
  - Intolerance to head and visual motion
3. Mechanical neck pain
4. Loss of function
  - Return to work?
  - Return to activities?

### Treatment

1. Canalith Repositioning Maneuver x 1
2. Gaze stability, balance and habituation home exercise program x 4 weeks
3. Manual therapy and exercise x 4 weeks
4. Exertional testing  
Return to Work Guidelines  
Return to Play (skiing, mountain biking)

**Funding: Extended Health Benefits**

↑  
Day 29

## Optometry

### Problems

1. Photophobia (fluorescents, screens)
2. Difficulty with reading
3. Intolerance to “busy visual environments”

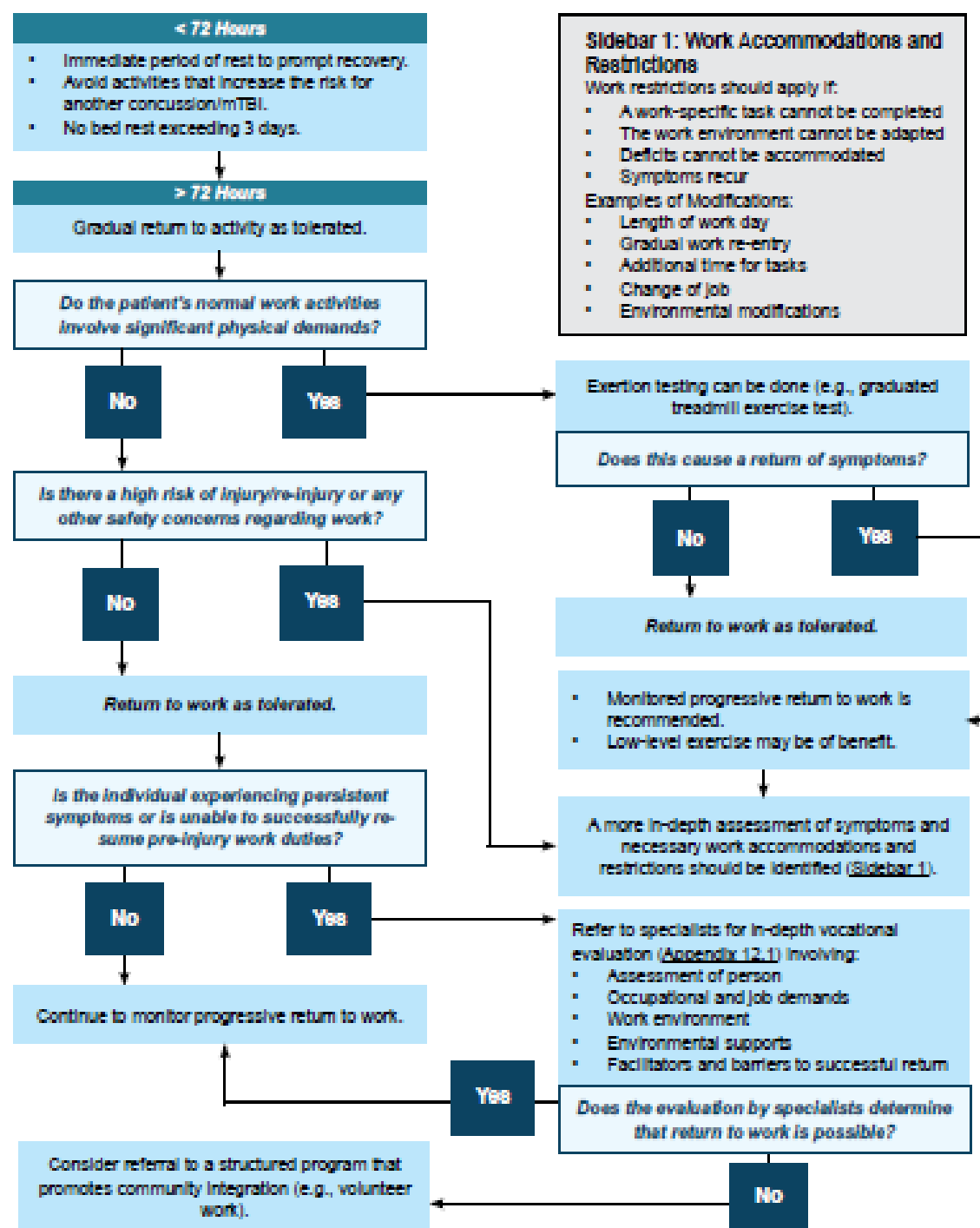
### Treatment

1. Blue light filter tint onto prescription glasses
2. Prism lenses and vision therapy exercises
3. Binasal occlusion progressively weaned



**Funding: Extended Health Benefits plus Private Pay**





**Sidebar 1: Work Accommodations and Restrictions**

Work restrictions should apply if:

- A work-specific task cannot be completed
- The work environment cannot be adapted
- Deficits cannot be accommodated
- Symptoms recur

Examples of Modifications:

- Length of work day
- Gradual work re-entry
- Additional time for tasks
- Change of job
- Environmental modifications

(O.N.F., 2018)



Day 46

## Return To Work

### Restrictions:

1. No safety sensitive procedures with patients (cognitive/balance deficits)

### Limitations:

1. Bright, noisy, busy environments < 1 hour consecutively
2. Total hours per shift 4 hours

### Plan:

Return to work starting at 3 days per week for 4 hours per day doing administrative data entry on unit outcomes in a quiet room.



Day 56

## Return To Work

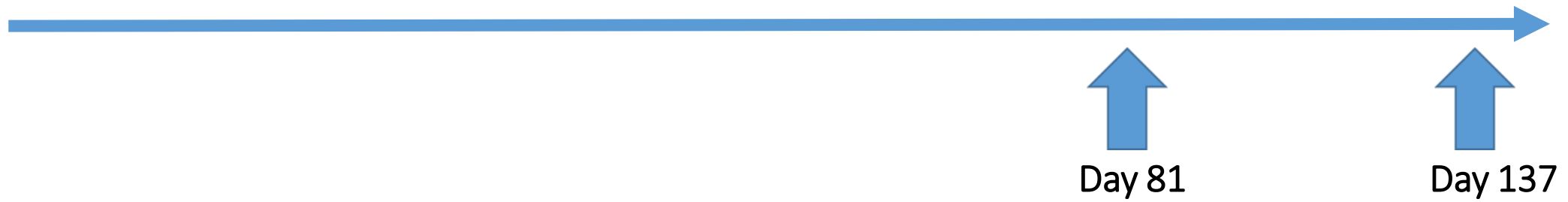
Plan unsuccessful due to:

1. Significant exacerbation of headaches
2. Frequent errors in data entry noted by LTC manager

Referral to Occupational Therapist with expertise in concussion management for in-depth vocational evaluation:

- Cognitive/psychosocial functioning
- Occupational and job specific demands
- Work environment/supports
- Facilitator and barriers to return to work

**Funding: EHC/Private/Employer/LTD**



## Return To Work

8 week graduated return to work supported by Occupational Therapist with feedback from:

- Family Doctor (medical clearance, medication management)
- Vestibular Therapist (strategies to mitigate symptoms)
- Optometry (strategies to mitigate symptom)

**Funding: EHC/Private/Employer/LTD**



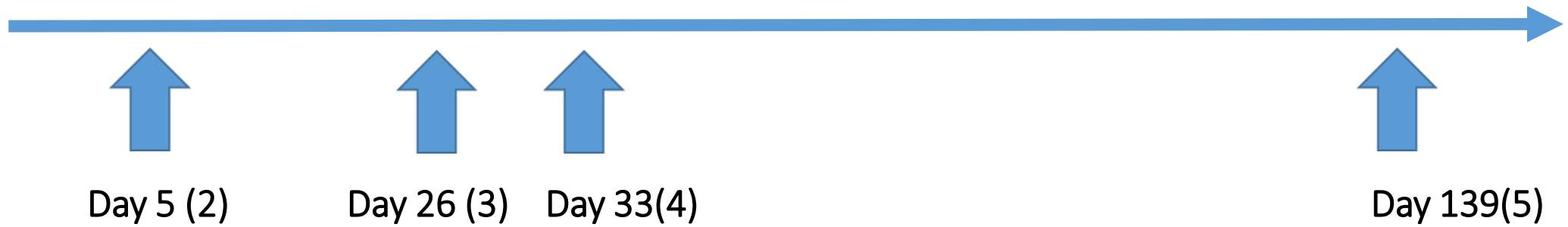
## Return to Play Communication Tool

Return to Learn should be completed before Return to Play.

STAGE 1: No sporting activity	STAGE 2: Light aerobic exercise	STAGE 3: Sport-specific exercise	STAGE 4: Non-contact drills	STAGE 5: Full-contact practice	STAGE 6: BACK IN THE GAME
Symptom-limited physical and cognitive rest	Walking, swimming, stationary cycling. No resistance training. Heart rate <70%	Skating drills (ice hockey), running drills (soccer). No head-impact activities	Progress to complex training drills (e.g., passing drills). May start resistance training	Following medical clearance participate in normal training activities	Normal game play
<b>Recovery</b>	<b>Increase heart rate</b>	<b>Add movement</b>	<b>Exercise, coordination, cognitive load</b>	<b>Restore confidence; assess functional skills</b>	
<b>Symptom-free for 24 hours?</b> Yes: Begin Stage 2 No: Continue resting Time & date completed:	<b>Symptom-free for 24 hours?</b> Yes: Move to Stage 3 No: Return to Stage 1 Time & date completed:	<b>Symptom-free for 24 hours?</b> Yes: Move to Stage 4 No: Return to Stage 2 Time & date completed:	<b>Symptom-free for 24 hours?</b> Yes: Move to Stage 5 No: Return to Stage 3 Time & date completed:	<b>Symptom-free for 24 hours?</b> Yes: Return to play No: Return to Stage 4 Time & date completed:	

If symptoms reappear at any stage, go back to the previous stage until symptom-free for 24 hours. You may need to move back a stage more than once during the recovery process.

**Medical clearance required before moving to Stage 5**



## Return To Sports

### Stage 2

- light walking started early by family doctor

### Stages 3 and 4

- sports specific balance, head and visual motion exercises during vestibular therapy

### Stage 5

- medical clearance to return to high risk sports (skiing, mountain biking) by family doctor or specialist – only once clinically recovered from concussion!



# Levels of Evidence

**LEVEL A:** At least one randomized controlled trial, meta-analysis or systematic review

**LEVEL B:** At least one cohort comparison, case studies or other types of experimental study

**LEVEL C:** Expert opinion, experience or consensus panel

# Recommendations for Vestibular Dysfunction

Recommendation	Grade
Symptoms of BPPV? Dix Hallpike test once C-spine cleared	<b>A</b>
Dix Hallpike test positive? Epley maneuver. Referral to ENT or certified vestibular therapist	<b>A</b>
Vestibular rehabilitation therapy for unilateral peripheral vestibular dysfunction	<b>A</b>
Evaluation by experienced healthcare professional with specialized training in the vestibular system prior to 3 months post injury.	<b>B</b>
Functional balance impairment? Assessment/treatment by qualified MD or certified vestibular therapist.	<b>C</b>
Hearing complaints? 1) In office exam 2) Audiology for hearing assessment if no apparent cause	<b>C</b>
Tinnitus – no evidence for or against the use of any particular treatment modality	<b>C</b>



# Recommendations for Vision Dysfunction

Recommendations	Grade
Vision changes can occur post concussion. If reported, complete a visual examination	C
When assessed in a medically-supervised interdisciplinary concussion clinic, patients with functionally-limiting visual symptoms could be referred to a regulated healthcare professional with training in vision assessment/therapy i.e. ophthalmologist, optometrist	C

## What is Vision Rehabilitation?

- Vision therapy exercises
  - Reading spectacles
  - Prism spectacles
  - Tinted spectacles

# Return to Work Considerations

**Workers post concussion who are employed report:**

- ✓ **Better health status**
- ✓ **Improved sense of well being**
- ✓ **Greater social integration within the community**
- ✓ **Less usage of health services**
- ✓ **Better quality of life**

**VS those who remain unemployed**

**(Cancelere et al, 2014)**

# Return to Work Recommendations

Recommendations	Grade
Work environment or duties pose risk to self or others? An in-depth fitness for duty and job analysis is advised	<b>C</b>
Restrictions or limitations? Accommodations facilitated with worker's employer to enable timely and safe return to work	<b>C</b>
Interdisciplinary vocational evaluation for unsuccessful resumption of pre-injury work should include: <ul style="list-style-type: none"><li>• Cognitive/psychosocial functioning</li><li>• Occupational and job specific demands</li><li>• Work environment/supports</li><li>• Facilitator and barriers to return to work</li></ul>	<b>B</b>
Persistent symptoms impede return to pre-injury employment? Educational activities, community roles and activities that promote community integration may be considered	<b>B</b>

# Return to Play Recommendations

Recommendations	Grade
RTP protocol follows a stepwise progression. The athlete proceeds to the next level if asymptomatic at the current level. Each step takes 24 hours so the athlete takes approximately 1 week to proceed through the full rehabilitation once they are asymptomatic at rest and with provocative exercise. If post concussion symptoms occur while in the step-wise program, the patient should drop back to the previous level.	<b>C</b>
When pharmacotherapy is begun during the management of concussion, the decision to return to play while still on such medications must be considered carefully by the primary care provider.	<b>C</b>

# Return to Learn Recommendations

Recommendations	Grade
The child/adolescent follow a step-wise return-to-learn plan	C
Additional assessment and accommodations if symptom worsen or fail to improve	C
Develop return-to-play program only after the child/adolescent has started the return-to-learn program.	C
Refer any child who has sustained multiple concussions to an expert in sport concussion to help with return-to-play decisions and/or retirement from contact sports	B

(ONF, Pediatric Guidelines, 2014)

# Return to School

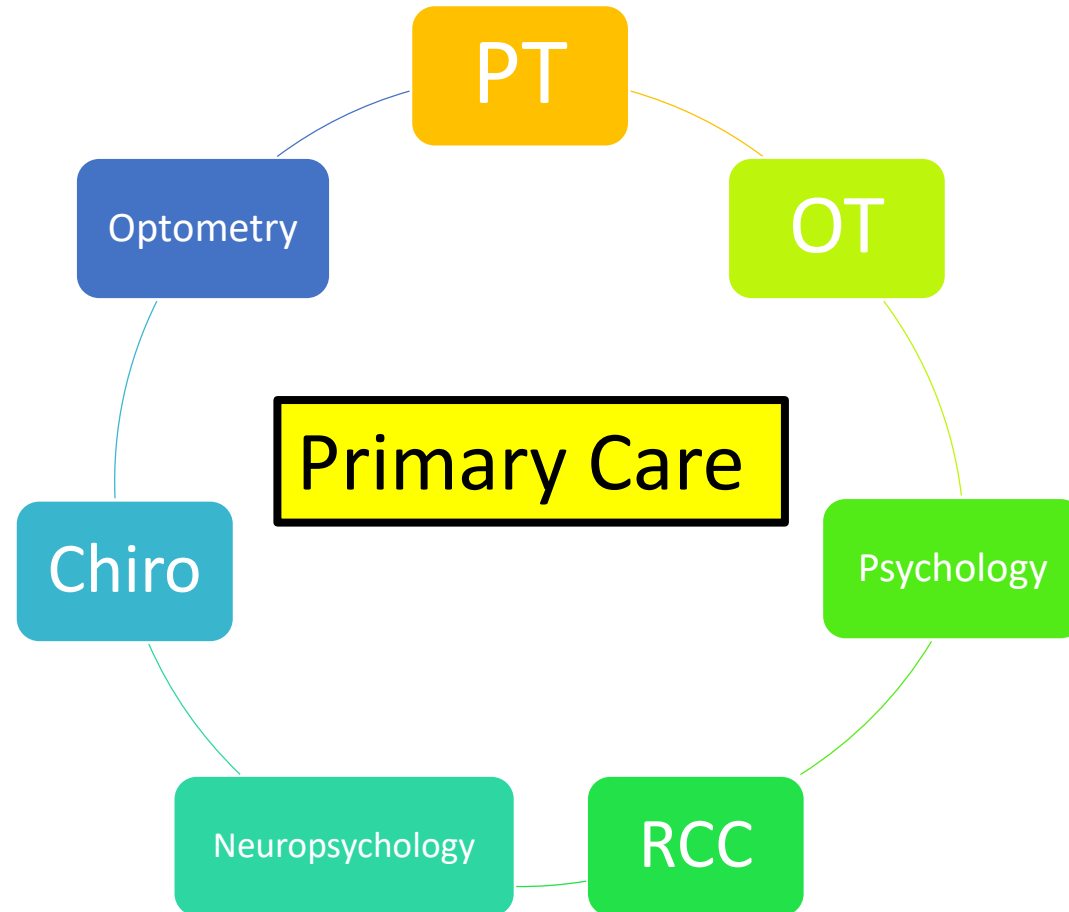
This tool is a guideline for managing a student's return to school following a concussion and does not replace medical advice. Timelines and activities may vary by direction of a health care professional.

AT HOME			AT SCHOOL			
STAGE 1:	STAGE 2:		STAGE 3:	STAGE 4:	STAGE 5:	STAGE 6:
<p><b>Physical &amp; cognitive rest</b></p> <ul style="list-style-type: none"> <li>Basic board games, crafts, talk on phone</li> <li>Activities that do not increase heart rate or break a sweat</li> </ul> <p><b>Limit/Avoid:</b></p> <ul style="list-style-type: none"> <li>Computer, TV, texting, video games, reading</li> </ul> <p><b>No:</b></p> <ul style="list-style-type: none"> <li>School work</li> <li>Sports</li> <li>Work</li> <li>Driving until cleared by a health care professional</li> </ul>	<p><b>Start with light cognitive activity:</b></p> <p>Gradually increase cognitive activity up to 30 min. Take frequent breaks.</p> <p><b>Prior activities plus:</b></p> <ul style="list-style-type: none"> <li>Reading, TV, drawing</li> <li>Limited peer contact and social networking</li> </ul> <p><b>Contact school to create Return to School plan.</b></p>	<p><b>When light cognitive activity is tolerated:</b></p> <p>Introduce school work.</p> <p><b>Prior activities plus:</b></p> <ul style="list-style-type: none"> <li>School work as per Return to School plan</li> </ul> <p><b>Communicate with school on student's progression.</b></p>	<p><b>Back to school part-time</b></p> <p>Part-time school with maximum accommodations.</p> <p><b>Prior activities plus:</b></p> <ul style="list-style-type: none"> <li>School work at school as per Return to School plan</li> </ul> <p><b>No:</b></p> <ul style="list-style-type: none"> <li>P.E., physical activity at lunch/recess, homework, testing, sports, assemblies, field trips</li> </ul> <p><b>Communicate with school on student's progression.</b></p>	<p><b>Part-time school</b></p> <p>Increase school time with moderate accommodations.</p> <p><b>Prior activities plus:</b></p> <ul style="list-style-type: none"> <li>Increase time at school</li> <li>Decrease accommodations</li> <li>Homework – up to 30 min./day</li> <li>Classroom testing with adaptations</li> </ul> <p><b>No:</b></p> <ul style="list-style-type: none"> <li>P.E., physical activity at lunch/recess, sports, standardized testing</li> </ul> <p><b>Communicate with school on student's progression.</b></p>	<p><b>Full-time school</b></p> <p>Full days at school, minimal accommodations.</p> <p><b>Prior activities plus:</b></p> <ul style="list-style-type: none"> <li>Start to eliminate accommodations</li> <li>Increase homework to 60 min./day</li> <li>Limit routine testing to one test per day with adaptations</li> </ul> <p><b>No:</b></p> <ul style="list-style-type: none"> <li>P.E., physical activity at lunch/recess, sports, standardized testing</li> </ul>	<p><b>Full-time school</b></p> <p>Full days at school, no learning accommodations.</p> <ul style="list-style-type: none"> <li>Attend all classes</li> <li>All homework</li> <li>Full extracurricular involvement</li> <li>All testing</li> </ul> <p><b>No:</b></p> <ul style="list-style-type: none"> <li>full participation in P.E. or sports until Return to Sport protocol completed and written medical clearance provided</li> </ul>
	<p><b>No:</b></p> <ul style="list-style-type: none"> <li>School attendance</li> <li>Sports</li> <li>Work</li> </ul>					
<b>Rest</b>	<b>Gradually add cognitive activity including school work at home</b>		<b>School work only at school</b>	<b>Increase school work, introduce homework, decrease learning accommodations</b>	<b>Work up to full days at school, minimal learning accommodations</b>	<b>Full academic load</b>
When symptoms start to improve OR after resting for 2 days max, <b>BEGIN STAGE 2</b>	Tolerates 30 min. of cognitive activity, introduce school work at home	Tolerates 60 min. of school work in two 30 min. intervals, <b>BEGIN STAGE 3</b>	Tolerates 120 min. of cognitive activity in 30-45 min. intervals, <b>BEGIN STAGE 4</b>	Tolerates 240 min. of cognitive activity in 45-60 min. intervals, <b>BEGIN STAGE 5</b>	Tolerates school full-time with no learning accommodations <b>BEGIN STAGE 6</b>	Return to School protocol completed; focus on <b>RETURN TO SPORT</b>

**Note: A student is tolerating an activity if symptoms are not exacerbated.**

Adapted from the Return to Learn protocol by G.F. Strong School Program (Vancouver School Board), Adolescent and Young Adult Program, G.F. Strong Rehabilitation Centre.

# Allied Health in Concussion Management



# Physical Therapy

## Scope of Practice

- Headaches (cervical, exertional)
- Dizziness (vestibular specialty)
- Imbalance (vestibular specialty)
- Physical Fatigue
- Visual changes
- Orthopedic injuries
- C-spine dysfunction
- Return to Work/Play/Learn

## Local Providers

- Advanced Health Care
- CBI Health Centre Wellington (Vestibular)
- Long Lake Physiotherapy
- Symphony Neurorehabilitation



# Occupational Therapy

## Scope of Practice

- Return to work
- Cognitive/physical Fatigue
- Attention/Memory/Word Finding etc..
- Sleep disturbance
- Return to activity

## Local Providers

- CBI OT Services
- JR Rehab
- Raincoast Rehabilitation

# Psychology/RCC

## Scope of Practice

- Depressed Affect
- Anxiety related to symptoms including post traumatic stress
- Irritability/lability
- Sleep disorder
- Headaches (CBT for symptoms)

## Local Providers

- Dr. Burrows
- Campbell and Fairweather Group
- Dr. Reeves
- Jan McNeill, RCC
- Others

# Neuropsychology

## Scope of Practice

- Cognitive Communication
- Attention/Concentration
- Memory
- Processing speed
- Word finding
- Mood disturbances
- Anxiety-related symptoms
- Fatigue – mental/cognitive
- Sleep disorders

## Local Providers

- Dr. Sandy Garnder
- Dr. Rosemary Wilkinson

# Chiropractors

## Scope of Practice

- Headaches – cervicogenic
- Dizziness/balance – cervical spine related
- Cervical spine dysfunction
- Orthopedic injuries
- Return to Sports

## Local Providers

- Woodgrove Pines Clinic
- Others?

# Optometry

## Scope of Practice

- Visual changes (blurry, disorders of version/vergence)
- Photophobia
- Dizziness/balance – vision assessment
- Return to Work/Learn – vision barrier

## Local Providers

- FYI Doctors
- Opto-mization



# Island Health Authority

- **Neuro Outpatient Rehabilitation Program, Victoria General Hospital**
  - Referral (GP or specialist)
  - Triage
  - Interview with client (2-4 weeks) to determine needs
  - If appropriate then 4-6 months before intake assessment:
    - PT/OT/SLP/Rec Therapy
    - Up to 12 week inter-disciplinary program
- **Brain Injury Program**
  - Self referral form
  - Triage assessment in “several weeks” to determine services
  - Nanaimo Brain Injury Society funding

# Nanaimo Brain Injury Society

## 1. Community Navigator Program

- Links clients to formal and informal treatment resources in the community
- Encourages self-management via peer support programs, education, goal setting and supported decision making.

## 2. Group Counselling weekly with Dr. Nancy Reeves, psychologist

- New service started September 2018
- 6 week program

## 3. Education Programs

- Monthly on topics: financial planning, mindfulness etc ..
- Understanding Brain Injury Public Workshops



**'What's important' should  
revolve around  
the patient...**

