ROAD TO RECOVERY

As a member of the Canadian Olympic Team's medical squad you are some of the best sports medicine professionals in the country. You are responsible for getting Canada's athletes to their events, ready for the competition of their lives.

It is your job to assess what you know about your athlete's injury and to develop a treatment plan to effectively nurse them back to health in time for the Vancouver 2010 Olympic Winter Games. Time is tight, and you must use all the various therapies that will possibly help.

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Injuries are a part of every athlete's life, but an injury just months before the Olympic Games can be devastating. Most athletes only get one chance to fulfill their dreams of Olympic glory.

Aerials skier Deidra Dionne was a medal contender heading into the 2006 Olympic Winter Games when she landed head-first during a training run, tearing the ligaments in her neck, rupturing a disc and straining her spinal cord.

"It was horrible. My first thought was for my health. Then I thought, 'the Olympic Games are so close, there goes my dream.' I was determined to get back."

Deidra didn't have to recover on her own. A medical team was tasked with determining the extent of her injury, and what she would have to do to return to "game shape". She was able to compete at the 2006 Olympic Winter Games, even though she finished well out of medal contention.

"I had surgery, and months of rehab. It was one of the hardest things I've ever had to do. I had to be tough, but I made it."

Dr. Jack Taunton is the Chief Medical Officer for the Vancouver 2010 Olympic Winter Games, and has helped scores of athletes like Deidra recover from serious injuries. He says the team is made up of a number of people with specific skills.

"The doctor is the leader, in a sense. He or she makes the initial investigation and diagnosis through different tests, such as M.R.I's, bone scans, ultrasounds and so on. Those tests help determine the extent of the injury and the type of injury."

Freestyle aerials bronze medalist Deidra Dionne

Once the diagnosis is made, the medical team works out a treatment and rehabilitation plan. Different injuries require different approaches. Injuries are often complex and require various treatments to get the athlete back to competition.

Massage therapists work on injured muscles and help ease tight joints. If the injury is a pinched nerve, a chiropractor may be called in to help. Physiotherapists use a variety of manual and electrotherapy techniques to speed the recovery process.

Massage therapy

And above all, there are the exercises. Dr. Bob McCormack is the Chief Medical Officer for the Canadian Olympic Team and has worked on recovery plans for a number of top athletes. McCormack says it's important to map out the athlete's exercise routine in set stages.

"The first stage is called the 'healing stage' and it can be the hardest for the athlete. They have to rest the injured area but also work the parts of their bodies that aren't hurt."

"Then after a while you can gradually start 'stage two' exercises, which start to work the injured area. This includes exercises such as light weights and fast walking. The final stage involves power exercises such as full weights, running and jumping. Only then will you know if the athlete will be ready for a full competition."

Once the plan is in place and underway, the physiotherapist is the team member who is charged with maintaining the day-to-day workouts. Marc Rizzardo is the Chief Therapist for the 2010 Canadian Olympic Team.

"Often the athlete is working only with the physiotherapist, doing exercises and stress tests. You have a timeline and you check it together every day, sometimes twice a day, to see if the athlete is able to meet their targets."

The physiotherapist gives constant updates to the other members of the medical team and coaching staff. That way, if the athlete is behind or ahead of schedule, they can make quick adjustments to the treatment plan. They may also need to decide if the athlete can indeed return on time.

And of course, there is more than just the athlete's body to consider. Dr. McCormack says the medical team can include a sports psychologist. Seeing the days slip by before your event can easily undermine your confidence.

"Athletes often want to come back too soon. They can also get down if they don't think they are coming back quickly enough. So the team has to include a mental training coach. That person's job is to keep the athlete hopeful but realistic."

Getting an injured athlete to the starting gate requires a team of professionals dedicated to salvaging the Olympic dream.

The Assignment Outline An athlete's recovery from injury will vary depending on the level of care they receive and the athlete's ability to follow the recommendations of the medical practitioners working with them. The team physician works with the team of practitioners to assess the injured athlete and provide a recommended treatment plan to best help the athlete recover. The Canadian Olympic Committee assigned you to be the Chief Medical Officer for Team Canada during the Vancouver 2010 Olympic Winter Games.

It is your job to make the first assessments of an athlete's injuries and to assign the most effective combination of medical practitioners to rehabilitate your athlete as soon as possible. The team of practitioners that you have to work with includes: medical doctors, athletic therapists, massage therapists, physiotherapists, chiropractors, dieticians, sport psychologists and acupuncturists.

Your Task:

1. Work individually or as a team to complete the 'Medical Team Research Chart'. Use the internet to research the various practitioners and determine their primary methods of therapy, the body systems affected by their treatment, and the types of conditions treated by this practitioner.

2. Using the 'Medical Treatment Form', assess the options that you have for your athlete and appoint a team of three practitioners to rehabilitate your athlete.

NOTE: this treatment form would include details such as: athlete's sport, height, weight, diagnosis, history, type of therapists chosen, type of therapies recommended, description of injury and symptoms, body systems affected, chosen methods of therapy and how it will benefit the athlete/positively affect the body system, estimated amount of recovery time, frequency of recommended treatment and supporting practitioners and recommended methods of therapy.

3. Present your case and treatment to the rest of your class.

ROAD TO RECOVERY

Medical Team Research Chart

Medical Practitioner: _____

Primary methods of therapy	
Affected systems (lymphatic, nervous, circulatory, respiratory, skeletal, etc.)	
How these systems are affected	
Typical conditions treated by this practitioner	

Athlete Case #1
Sport: **Cross-Country Skiing**

With only a month before the Olympic Winter Games, a 50km Cross-Country skier is complaining of a sore hamstring. It has bothered him for weeks, but took a turn for the worse when he was doing some speed work yesterday. It is now sore to touch, and far too sore to ski. There is mild bruising and obvious swelling. He is scared that every day of missed training will put him further and further behind his goal of a climbing the medal podium at the Vancouver 2010 Olympic Winter Games.

Maelle Ricker
Photo courtesy of Oliver Krauss/FIS

Athlete Case #2
Sport: **Ice Hockey**

In the final game of a pre-Olympic tournament, one of Canada's forward for the women's hockey team was taken off the ice with a sprained knee. An initial assessment has identified it as being a grade 1 sprain to her medial collateral ligament. She has four weeks until the Vancouver 2010 Olympic Winter Games begin.

Athlete Case #3
Sport: **Figure Skating**

One of the Canada's best figure skaters has been practicing her triple axel all season. Just as she thought it was mastered, she took a severe fall and has sustained a groin strain. The good news is that the Games are still six weeks away. The bad news is that groin injuries can sometimes take a while to heal. She is very discouraged.

Athlete Case #4
Sport: **Freestyle Skiing-Aerials**

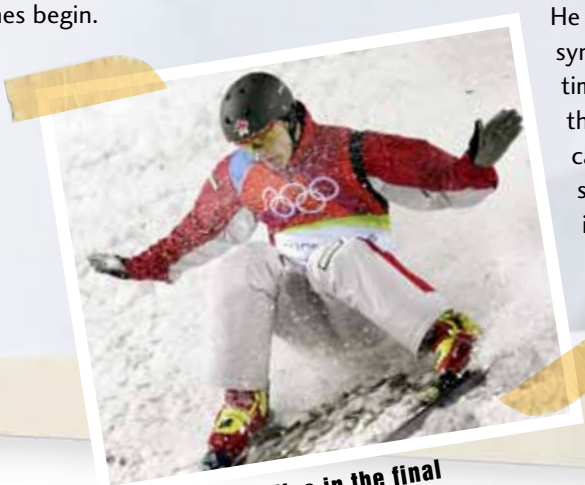
Practicing a mere 4 weeks from their competition date, one of Canada's aerial skiers landed incorrectly and suffered an anterior dislocation of his shoulder. With the clock ticking, the medical team must try to salvage the athlete's Olympic dreams.

Athlete Case #5
Sport: **Bobsleigh**

The brakeman of the women's Bobsleigh team sprained her ankle getting into the sled at the top of a practice run. It has been assessed as a Grade 2 sprain. The coach feels that if they can get her back to health three days before competition, then it is worth keeping her in the position and not finding an alternate brakeman. Time is tight; the competition starts in only 2 weeks.

Athlete Case #6
Sport: **Speed Skating**

Training harder than ever to win gold at our home Games, one of Canada's best long track speed skaters is suffering from patellar tendonitis (jumper's knee). He has ignored the symptoms for some time and it is now at the point where he cannot train without severe pain. There is only a month until the Games.



Warren Shouldice in the final of the men's aerials at the 2006 Olympic Winter Games.

ROAD TO RECOVERY

Case Analysis: Medical Team Selection

Case # _____:

Scenario: _____

Systems affected by this injury: _____

Practitioner	Can this practitioner affect the case of your athlete? (Yes or No)	Recommended type of treatment utilized to treat injury	What is your rationale for this form of treatment?	Which other practitioners complement this form of medical practice well?
Medical Doctor				
Massage Therapist				
Physiotherapist				
Chiropractor				
Athletic Therapist				
Acupuncturist				

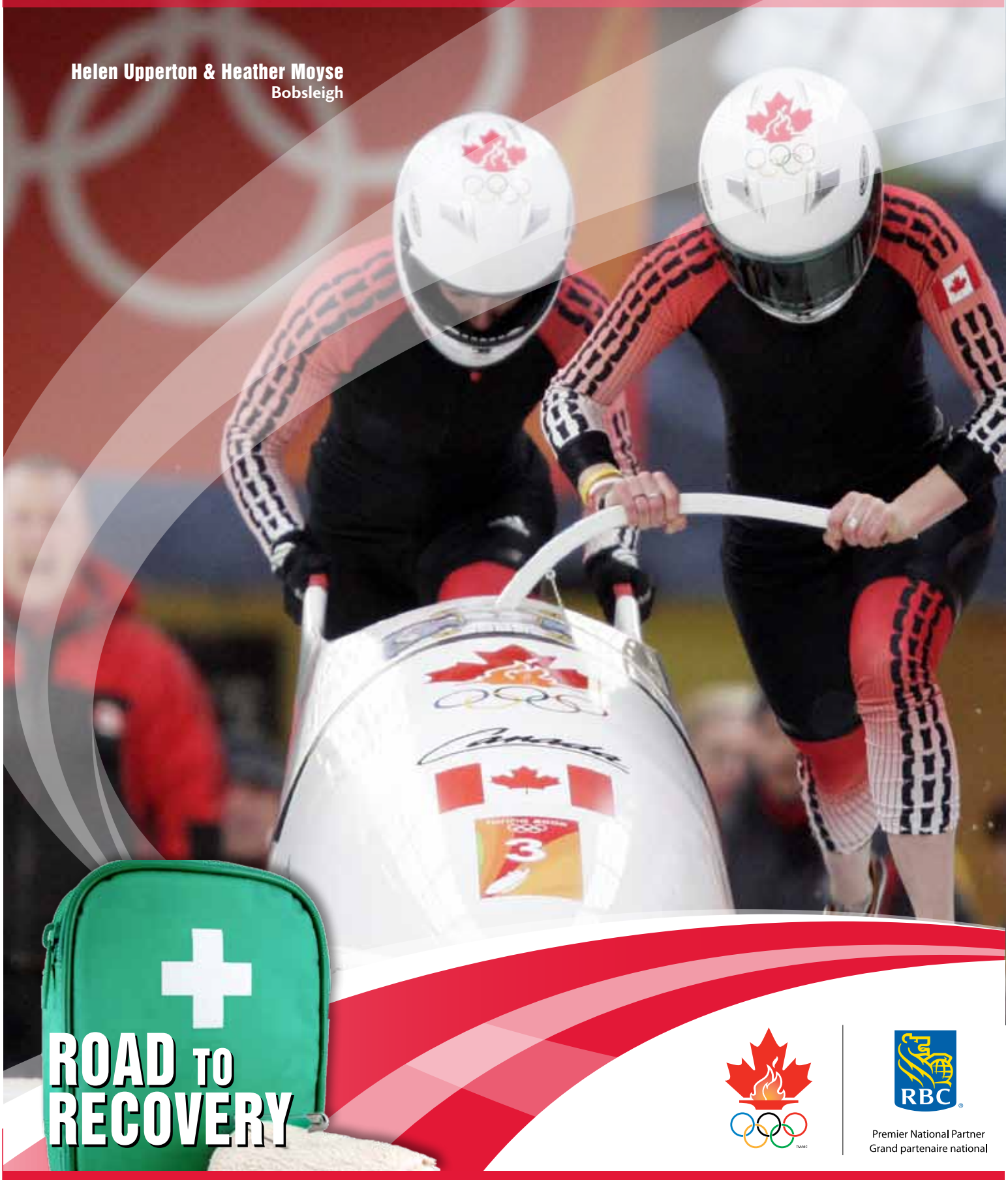
Follow up Questions

- After completing the chart below, identify the 3 most important practitioners in the rehabilitation of your athlete's injury.
- Given the combination of practitioners you have recommended, do you think you will be able to rehabilitate your athlete to compete at the Vancouver 2010 Olympic Winter Games? Why or why not?
- Based on the case description, would you recommend that a sport psychologist be involved in the treatment plan? Why or why not? If so, how?

ROAD TO RECOVERY

Teacher Resources Guide

Helen Upperton & Heather Moyse
Bobsleigh



ROAD TO RECOVERY

Canadian Olympic School Program

Medical Team Research Chart Answer Key

	Primary methods of therapy	Affected systems (lymphatic, nervous, circulatory, respiratory, skeletal, etc.)	How these systems are affected	Types of conditions treated by this practitioner
Medical Doctor	Assesses and evaluates the injury, leads in the determination of a treatment plan, educates patients, prescribes medication as necessary, order imaging and tests as required.	Potentially all	Depends on the treatment plan	Most often a doctor is involved in all significant athletic injuries
Massage Therapist	Systemic manipulation of soft tissue	Lymphatic Circulatory Musculoskeletal	**Lymphatic System** - Massage therapist apply a compressive force, that aids in the movement of excess tissue fluid from injured areas via lymphatic vessels. **Circulatory System** - Massage increases the flow of blood to the injured areas, hastening a flow of fresh oxygen and nutrients to the area to speed healing. **Musculoskeletal System** - Massage is used to break down scar tissue and muscle knots/adherences.	Most soft tissue injuries
Physiotherapist	Treatment of movement disorders through the use of manipulation, exercises, heat or electronic therapies. Works to mobilize and manipulate joints, address soft tissue issues, educate patient, re-train movement patterns and oversee the rehabilitation process.	Musculoskeletal Neurological Cardiovascular Respiratory	**Neuromuscular System** - concerned with both nerves and muscles. Nerves include the brain, spine and nerves throughout the body. Neuromuscular refers to neuromuscular junction - where nerves and muscle fibers meet, and also includes neuromuscular transmission - the transfer of information, impulses, from the nerve to the muscle. **Musculoskeletal System** - an organ system that gives us the ability to move using our muscles and bones (muscular and skeletal systems). The musculoskeletal system gives us form, movement and stability. The musculoskeletal system includes our bones, muscles, cartilage, tendons, ligaments, joints, and other connective tissue. **Cardiovascular System** - include the heart and the circulatory systems. The circulatory system carries nutrients and oxygen via blood vessels to the tissues of the body and removes waste and carbon dioxide from them. Respiratory Systems - include organs that are involved in breathing, such as the lungs, bronchi, trachea, larynx, throat, and nose.	Variety of conditions related to various areas of physiotherapy: cardiopulmonary, geriatric, neurological, orthopaedic, pediatric and integumentary
Chiropractor	Manipulation of the spine, joints, or soft tissue to normalize spinal function, relieve various disorders and promote the body's innate ability to heal	Musculoskeletal Nervous	**Nervous System** - by adjusting the spine or other joints, nerve impingements are relieved and enabling the proper functioning of the nervous system	Often used to ensure that the nervous system is functioning properly in the injured area.
Athletic Therapist	Rehabilitation techniques, therapeutic modalities, soft tissue mobilization, physical reconditioning and supportive strapping procedures	Musculoskeletal	**Musculoskeletal System** – by utilizing rehabilitation techniques, various forms of therapy and mobilization techniques, injuries caused to this system are supported to prevent further injury until, repaired, strengthened restored to full function	Used to rehabilitate athletic injuries to musculoskeletal system
Acupuncturist	Treatment of pain or disease through the insertion of needles into the skin at specific points.	Nervous Lymphatic	Although research has shown that acupuncture works, there are varied theories about how. There remains no definitive explanation.	It is used to reduce inflammation and muscle spasms, to reduce pain, and to promote healing.
Sports Psychologist	Treatment of performance enhancement, and Injury prevention via Imagery, goal setting, simulation	Nervous	**Nervous System** - When stimulated or faced with a stressful situation, the brains cortex is stimulated which controls various systems in the body.	Performance anxieties, goal setting, mental imagery, focus

Case Analysis: Medical Team Selection

Case #1 Scenario: XC Skier (hamstring strain) Systems affected by this injury: neuromuscular

Practitioner	Can this practitioner affect the case of your athlete? (Yes or No)	Recommended type of treatment utilized to treat injury	What is your rationale for this form of treatment?	Which other practitioners complement this form of medical practice well?
Medical Doctor	Yes. The physician will oversee the management of the athlete.	May prescribe medications (e.g. anti-inflammatories). May order further diagnostic imaging to determine the extent of injury and prognosis (e.g. MRI, Ultrasound, etc). May prescribe bracing or supports (e.g. compression sleeve for thigh). Team Physician will refer athlete to appropriate health care professionals.	Depends on medication prescribed (e.g. reduce pain, swelling, muscle spasm, etc).	All others
Massage Therapist	Yes	Various massage techniques (e.g. effluerage, petrissage, tapotement, manual compression, etc). May also prescribe therapeutic exercises.	To promote circulation (blood & lymph) and reduce swelling. To increase soft tissue extensibility and prevent formation of adhesions. To promote general relaxation of muscles and the athlete (psychological benefits). To decrease pain	Physiotherapy or Athletic Therapy, Acupuncture
Physiotherapist	Yes	Manual therapy (gentle massage techniques, gentle stretching), Electrotherapeutic modalities (ultrasound, pulse galvanic stimulation, interferential current), Therapeutic exercises (e.g. core stability, hip girdle stability, progressive resistance exercises for hamstrings, proprioception exercises), education (re: home exercises, cross training options, use of thigh sleeve or core/compression shorts, graduated return to activity). Thermal modalities (ice, heat). Note: athlete will require further examination to determine exact cause of hamstring problems (e.g. lumbar spine, pelvis malalignment, muscle imbalances, etc)	Manual therapy: promote circulation (remove swelling), prevent scar tissue (adhesions). Electrotherapeutic modalities: promote circulation (remove swelling). Therapeutic exercises: to promote strong repair of injured soft tissue, to prevent excessive scarring, to restore normal movement patterns and proprioception. Thermal modalities: ice in acute stage of injury to reduce inflammation, heat in later stages of healing (repair, remodelling) to promote blood flow and tissue extensibility.	Massage Therapy, Acupuncture, Athletic therapist (if physiotherapist unavailable)
Chiropractor	Possibly? If lumbopelvic malalignment is a factor in this athlete's injury.	Adjustment (manipulation of joints). Other manual therapy techniques such as Active Release Therapy (ART). Some Chiropractors prescribe therapeutic exercises and use electrotherapeutic modalities.	To restore normal joint motion and neuromuscular function. To restore soft-tissue extensibility.	Physiotherapy or Athletic Therapy, Massage Therapy, Acupuncture
Athletic Therapist	Yes (considerable overlap with sports physiotherapist in terms of scope of practice – will often be one or the other treating the athlete)	Manual therapy (gentle massage techniques, gentle stretching), Electrotherapeutic modalities (ultrasound, pulse galvanic stimulation, interferential current), Therapeutic exercises (e.g. core stability, hip girdle stability, progressive resistance exercises for hamstrings, proprioception exercises), education (re: home exercises, cross training options, use of thigh sleeve or core/compression shorts, graduated return to activity). Thermal modalities (ice, heat).	Manual therapy: promote circulation (remove swelling), prevent scar tissue (adhesions). Electrotherapeutic modalities: promote circulation (remove swelling). Therapeutic exercises: to promote strong repair of injured soft tissue, to prevent excessive scarring, to restore normal movement patterns and proprioception. Thermal modalities: ice in acute stage of injury to reduce inflammation, heat in later stages of healing (repair, remodelling) to promote blood flow and tissue extensibility.	Physiotherapy, Massage therapy, Acupuncture
Acupuncturist	Yes	Acupuncture	To promote Qi (energy) flow. This may reduce pain, reduce swelling, and promote tissue healing.	Athletic Therapy or Physiotherapy, Massage Therapy

Follow up Questions

- After completing the chart below, identify the 3 most important practitioners in the rehabilitation of your athlete's injury.
- Given the combination of practitioners you have recommended, do you think you will be able to rehabilitate your athlete to compete at the Vancouver 2010 Olympic Winter Games? **Yes** Why or why not? **Grade 1-2 muscle strains generally recover well within a 4-6 week time frame. May require compression/core shorts or thigh compression sleeve.**
- Based on the case description, would you recommend that a sport psychologist be involved in the treatment plan? Why or why not? If so, how? **Yes, may help in alleviating anxiety regarding missed training and goal of reaching podium.**

Case Analysis: Medical Team Selection

Case #2 Scenario: Hockey (MCL sprain) Systems affected by this injury: neuromuscular (ligamentous injury)

Practitioner	Can this practitioner affect the case of your athlete? (Yes or No)	Recommended type of treatment utilized to treat injury	What is your rationale for this form of treatment?	Which other practitioners complement this form of medical practice well?
Medical Doctor	Yes. The physician will oversee the management of the athlete.	May prescribe medications (e.g. anti-inflammatories). May order further diagnostic imaging to determine the extent of injury and prognosis (e.g. MRI, Ultrasound, etc). May prescribe bracing or supports (e.g. knee brace). Team Physician will refer athlete to appropriate health care professionals.	Depends on medication prescribed (e.g. reduce pain, swelling, muscle spasm, etc).	All others
Massage Therapist	Unlikely, unless the athlete reports developing muscle tightness related to the injury (guarding muscle spasm) or from reduced training volume.			
Physiotherapist	Yes	Manual therapy (gentle transverse frictions), Electrotherapeutic modalities (ultrasound, laser), Therapeutic exercises (e.g. cross training to maintain fitness, progressive exercise program for lower extremity – avoiding motions that stress the MCL, and proprioception exercises), education (re: home exercises, cross training options, use of knee brace or athletic taping, graduated return to activity). Thermal modalities (ice, heat).	Manual therapy: promote circulation & prevent scar tissue (adhesions). Electrotherapeutic modalities: promote circulation and tissue repair. Therapeutic exercises: to promote strong repair of injured soft tissue, to prevent excessive scarring, to restore normal movement patterns and proprioception. Thermal modalities: ice in acute stage of injury to reduce inflammation, heat in later stages of healing (repair, remodelling) to promote blood flow and tissue extensibility.	Athletic therapist (if physiotherapist unavailable), Acupuncture
Chiropractor	Unlikely			
Athletic Therapist	Yes (considerable overlap with sports physiotherapist in terms of scope of practice – will often be one or the other treating the athlete)	Manual therapy (gentle transverse frictions), Electrotherapeutic modalities (ultrasound, laser), Therapeutic exercises (e.g. cross training to maintain fitness, progressive exercise program for lower extremity – avoiding motions that stress the MCL, and proprioception exercises), education (re: home exercises, cross training options, use of knee brace or athletic taping, graduated return to activity). Thermal modalities (ice, heat).	Manual therapy: promote circulation & prevent scar tissue (adhesions). Electrotherapeutic modalities: promote circulation and tissue repair. Therapeutic exercises: to promote strong repair of injured soft tissue, to prevent excessive scarring, to restore normal movement patterns and proprioception. Thermal modalities: ice in acute stage of injury to reduce inflammation, heat in later stages of healing (repair, remodelling) to promote blood flow and tissue extensibility.	Physiotherapy, Acupuncture
Acupuncturist	Yes	Acupuncture	To promote Qi (energy) flow. To reduce pain, reduce swelling, and promote tissue healing.	Athletic Therapy or Physiotherapy

Follow up Questions

- After completing the chart below, identify the 3 most important practitioners in the rehabilitation of your athlete's injury.
- Given the combination of practitioners you have recommended, do you think you will be able to rehabilitate your athlete to compete at the Vancouver 2010 Olympic Winter Games? **Yes** Why or why not? **Grade 1 sprains generally recover well within a 4-6 week time frame. May require protective bracing or taping.**
- Based on the case description, would you recommend that a sport psychologist be involved in the treatment plan? Why or why not? If so, how? **Not unless athlete starts to develop anxiety regarding return to play/competition.**

ROAD TO RECOVERY

Case Analysis: Medical Team Selection

Case #3 Scenario: Figure Skater (groin strain) Systems affected by this injury: neuromuscular

Practitioner	Can this practitioner affect the case of your athlete? (Yes or No)	Recommended type of treatment utilized to treat injury	What is your rationale for this form of treatment?	Which other practitioners complement this form of medical practice well?
Medical Doctor	Yes. The physician will oversee the management of the athlete.	May prescribe medications (e.g. anti-inflammatories). May order further diagnostic imaging to determine the extent of injury and prognosis (e.g. MRI, Ultrasound, etc). May prescribe bracing or supports (e.g. core shorts). Team Physician will refer athlete to appropriate health care professionals.	Depends on medication prescribed (e.g. reduce pain, swelling, muscle spasm, etc).	All others
Massage Therapist	Yes	Various massage techniques (e.g. effluerage, petrissage, tapotement, manual compression, etc). May also prescribe therapeutic exercises.	To promote circulation (blood & lymph) and reduce swelling. To increase soft tissue extensibility and prevent formation of adhesions. To promote general relaxation of muscles and the athlete (psychological benefits). To decrease pain.	Athletic Therapist or Physiotherapist, Acupuncture
Physiotherapist	Yes	Manual therapy (gentle massage techniques, gentle stretching), Electrotherapeutic modalities (ultrasound, pulse galvanic stimulation, interferential current, laser), Therapeutic exercises (e.g. core stability, hip girdle stability, progressive resistance exercises for adductors, proprioception exercises), education (re: home exercises, cross training options, use of core/compression shorts, graduated return to activity). Thermal modalities (ice, heat).	Manual therapy: promote circulation (remove swelling), prevent scar tissue (adhesions). Electrotherapeutic modalities: promote circulation (remove swelling) and tissue repair. Therapeutic exercises: to promote strong repair of injured soft tissue, to prevent excessive scarring, to restore normal movement patterns and proprioception. Thermal modalities: ice in acute stage of injury to reduce inflammation, heat in later stages of healing (repair, remodelling) to promote blood flow and tissue extensibility.	Athletic therapist (if physiotherapist unavailable), massage therapist, acupuncture?
Chiropractor	Unlikely, unless the athlete presents with a lumbopelvic malalignment that requires adjustment.			
Athletic Therapist	Yes	Manual therapy (gentle massage techniques, gentle stretching), Electrotherapeutic modalities (ultrasound, pulse galvanic stimulation, interferential current, laser), Therapeutic exercises (e.g. core stability, hip girdle stability, progressive resistance exercises for adductors, proprioception exercises), education (re: home exercises, cross training options, use of core/compression shorts, graduated return to activity). Thermal modalities (ice, heat).	Manual therapy: promote circulation (remove swelling), prevent scar tissue (adhesions). Electrotherapeutic modalities: promote circulation (remove swelling) and tissue repair. Therapeutic exercises: to promote strong repair of injured soft tissue, to prevent excessive scarring, to restore normal movement patterns and proprioception. Thermal modalities: ice in acute stage of injury to reduce inflammation, heat in later stages of healing (repair, remodelling) to promote blood flow and tissue extensibility.	Physiotherapy if Athletic Therapist not available, Massage Therapy, Acupuncture
Acupuncturist	Yes	Acupuncture	To promote Qi (energy) flow. To reduce pain, reduce swelling, and promote tissue healing.	Physiotherapy or Athletic Therapy, Massage Therapy

Follow up Questions

- After completing the chart below, identify the 3 most important practitioners in the rehabilitation of your athlete's injury.
- Given the combination of practitioners you have recommended, do you think you will be able to rehabilitate your athlete to compete at the Vancouver 2010 Olympic Winter Games? **Yes** Why or why not? **Most muscle strains generally recover well within a 6 week time frame. May require compression/core shorts and ongoing treatment during the games.**
- Based on the case description, would you recommend that a sport psychologist be involved in the treatment plan? Why or why not? If so, how? **Yes, may require encouragement during the rehabilitation process.**

Case Analysis: Medical Team Selection

Case #4 Scenario: Freestyle Skiing (Shoulder dislocation) Systems affected by this injury: neuromuscular

Practitioner	Can this practitioner affect the case of your athlete? (Yes or No)	Recommended type of treatment utilized to treat injury	What is your rationale for this form of treatment?	Which other practitioners complement this form of medical practice well?
Medical Doctor	Yes. The physician will oversee the management of the athlete.	May prescribe medications (e.g. anti-inflammatories). May order further diagnostic imaging to determine the extent of injury and prognosis (e.g. MRI, Ultrasound, etc). May prescribe bracing or supports (e.g. shoulder brace). Team Physician will refer athlete to appropriate health care professionals.	Depends on medication prescribed (e.g. reduce pain, swelling, muscle spasm, etc).	All others
Massage Therapist	Unlikely, unless the athlete reports developing muscle tightness related to the injury (guarding muscle spasm) or from reduced training volume.			
Physiotherapist	Yes	Manual therapy (gentle massage techniques, gentle stretching), Electrotherapeutic modalities (ultrasound, pulse galvanic stimulation, interferential current), Therapeutic exercises (e.g. shoulder girdle stability exercises and proprioception exercises), education (re: home exercises, cross training options, use of shoulder brace and/or taping, graduated return to activity). Thermal modalities (ice, heat).	Manual therapy: promote circulation (remove swelling), prevent scar tissue (adhesions). Electrotherapeutic modalities: promote circulation (remove swelling) and tissue repair. Therapeutic exercises: to promote strong repair of injured soft tissue, to prevent excessive scarring, to restore normal movement patterns and proprioception. Thermal modalities: ice in acute stage of injury to reduce inflammation, heat in later stages of healing (repair, remodelling) to promote blood flow and tissue extensibility.	Massage Therapy, Athletic therapist (if Physiotherapy unavailable), Medical doctor, Acupuncture
Chiropractor	Unlikely			
Athletic Therapist	Yes	Manual therapy (gentle massage techniques, gentle stretching), Electrotherapeutic modalities (ultrasound, pulse galvanic stimulation, interferential current), Therapeutic exercises (e.g. shoulder girdle stability exercises and proprioception exercises), education (re: home exercises, cross training options, use of shoulder brace and/or taping, graduated return to activity). Thermal modalities (ice, heat).	Manual therapy: promote circulation (remove swelling), prevent scar tissue (adhesions). Electrotherapeutic modalities: promote circulation (remove swelling). Therapeutic exercises: to promote strong repair of injured soft tissue, to prevent excessive scarring, to restore normal movement patterns and proprioception. Thermal modalities: ice in acute stage of injury to reduce inflammation, heat in later stages of healing (repair, remodelling) to promote blood flow and tissue extensibility.	Physiotherapy if Athletic Therapy unavailable, Acupuncture
Acupuncturist	Yes	Acupuncture	To promote Qi (energy) flow. To reduce pain, reduce swelling, and promote tissue healing.	Athletic Therapy or Physiotherapy

Follow up Questions

- After completing the chart below, identify the 3 most important practitioners in the rehabilitation of your athlete's injury.
- Given the combination of practitioners you have recommended, do you think you will be able to rehabilitate your athlete to compete at the Vancouver 2010 Olympic Winter Games? Why or why not? **Difficult to determine. Complications such as an axillary nerve injury or fracture may prevent athlete from training and competing. If adequate stabilization can be achieved via bracing and/or taping the athlete may be able to return to sport. If surgery is deemed necessary prior to competition, the athlete will not have enough time to recovery prior to competition (post-op rehab often takes 4-6 months).**
- Based on the case description, would you recommend that a sport psychologist be involved in the treatment plan? Why or why not? If so, how? **Yes, this is a difficult injury to recover from (often requires surgery) and that athlete may have to deal with not being able to compete.**

ROAD TO RECOVERY

Premier National Partner
Grand partenaire national

Case Analysis: Medical Team Selection

Case #5 Scenario: Bobsleigh (ankle sprain) Systems affected by this injury: neuromuscular

Practitioner	Can this practitioner affect the case of your athlete? (Yes or No)	Recommended type of treatment utilized to treat injury	What is your rationale for this form of treatment?	Which other practitioners complement this form of medical practice well?
Medical Doctor	Yes. The physician will oversee the management of the athlete.	May prescribe medications (e.g. anti-inflammatories). May order further diagnostic imaging to determine the extent of injury and prognosis (e.g. MRI, Ultrasound, etc). May prescribe bracing or supports (e.g. ankle brace). Team Physician will refer athlete to appropriate health care professionals.	Depends on medication prescribed (e.g. reduce pain, swelling, muscle spasm, etc).	All others
Massage Therapist	Unlikely, unless the athlete reports developing muscle tightness related to the injury (guarding muscle spasm), develops significant swelling (edema) or generalized muscle tightness from reduced training volume.			
Physiotherapist	Yes	Manual therapy (gentle massage techniques, gentle stretching, transverse friction massage), Electrotherapeutic modalities (ultrasound, pulse galvanic stimulation, interferential current, laser), Therapeutic exercises (e.g. range of motion exercises, progressive strength exercises, proprioception exercises), education (re: home exercises, cross training options, use of ankle brace and/or taping, graduated return to activity). Thermal modalities (ice, heat, contrast baths).	Manual therapy: promote circulation (remove swelling), prevent scar tissue (adhesions). Electrotherapeutic modalities: promote circulation (remove swelling) and tissue repair. Therapeutic exercises: to promote strong repair of injured soft tissue, to prevent excessive scarring, to restore normal movement patterns and proprioception. Thermal modalities: ice in acute stage of injury to reduce inflammation, heat or contrast baths in later stages of healing (repair, remodelling) to promote blood flow and tissue extensibility.	Massage therapist, Acupuncture, Athletic Therapist (if physiotherapist unavailable)
Chiropractor	Unlikely			
Athletic Therapist	Yes	Manual therapy (gentle massage techniques, gentle stretching, transverse friction massage), Electrotherapeutic modalities (ultrasound, pulse galvanic stimulation, interferential current, laser), Therapeutic exercises (e.g. range of motion exercises, progressive strength exercises, proprioception exercises), education (re: home exercises, cross training options, use of ankle brace and/or taping, graduated return to activity). Thermal modalities (ice, heat, contrast baths).	Manual therapy: promote circulation (remove swelling), prevent scar tissue (adhesions). Electrotherapeutic modalities: promote circulation (remove swelling) and tissue repair. Therapeutic exercises: to promote strong repair of injured soft tissue, to prevent excessive scarring, to restore normal movement patterns and proprioception. Thermal modalities: ice in acute stage of injury to reduce inflammation, heat or contrast baths in later stages of healing (repair, remodelling) to promote blood flow and tissue extensibility.	Acupuncture, Physiotherapy if Athletic Therapy unavailable
Acupuncturist	Yes	Acupuncture	To promote Qi (energy) flow. To reduce pain, reduce swelling, and promote tissue healing.	Athletic Therapy or Physiotherapy

Follow up Questions

- After completing the chart below, identify the 3 most important practitioners in the rehabilitation of your athlete's injury.
- Given the combination of practitioners you have recommended, do you think you will be able to rehabilitate your athlete to compete at the Vancouver 2010 Olympic Winter Games? **Yes** Why or why not? **Two weeks is a very short time frame for recovery of a second degree sprain. If adequate stabilization can be achieved with bracing and/or taping and her swelling resolves quickly, she may be able to return to training and competition.**
- Based on the case description, would you recommend that a sport psychologist be involved in the treatment plan? Why or why not? If so, how? **Not unless that athlete starts showing signs of anxiety, depression, etc.**

ROAD TO RECOVERY

Case Analysis: Medical Team Selection

Case #6 Scenario: Speed Skating (Patellar tendinopathy) Systems affected by this injury: neuromuscular

Practitioner	Can this practitioner affect the case of your athlete? (Yes or No)	Recommended type of treatment utilized to treat injury	What is your rationale for this form of treatment?	Which other practitioners complement this form of medical practice well?
Medical Doctor	Yes. The physician will oversee the management of the athlete.	May prescribe medications (e.g. anti-inflammatories). May order further diagnostic imaging to determine the extent of injury and prognosis (e.g. MRI, Ultrasound, etc). May prescribe bracing or supports (e.g. patellar tendon strap). Team Physician will refer athlete to appropriate health care professionals.	Depends on medication prescribed (e.g. reduce pain, swelling, muscle spasm, etc).	All others
Massage Therapist	Unlikely, unless the athlete reports developing muscle tightness related to the injury (guarding muscle spasm) or generalized muscle tightness from reduced training volume.			
Physiotherapist	Yes	Manual therapy (deep transverse friction massage), Electrotherapeutic modalities (ultrasound, laser), Therapeutic exercises (e.g. eccentric quads strength exercises – drop squats, core stability and hip girdle stability exercises, stretching exercises), education (re: home exercises, cross training options, use of patellar tendon strap or taping, graduated return to activity). Thermal modalities (ice, heat).	Manual therapy: promote tendon blood flow and breakdown of adhesions. Electrotherapeutic modalities: promote tissue repair. Therapeutic exercises: to promote strong repair of injured soft tissue, to prevent excessive scarring, to restore normal movement patterns and proprioception. Thermal modalities: ice in acute stage of injury to reduce inflammation, heat in later stages of healing (repair, remodelling) to promote blood flow and tissue extensibility.	Massage Therapist, Athletic therapist (if Physiotherapist not available), Acupuncture
Chiropractor	Unlikely			
Athletic Therapist	Yes	Manual therapy (deep transverse friction massage), Electrotherapeutic modalities (ultrasound, laser), Therapeutic exercises (e.g. eccentric quads strength exercises – drop squats, core stability and hip girdle stability exercises, stretching exercises), education (re: home exercises, cross training options, use of patellar tendon strap or taping, graduated return to activity). Thermal modalities (ice, heat).	Manual therapy: promote tendon blood flow and breakdown of adhesions. Electrotherapeutic modalities: promote tissue repair. Therapeutic exercises: to promote strong repair of injured soft tissue, to prevent excessive scarring, to restore normal movement patterns and proprioception. Thermal modalities: ice in acute stage of injury to reduce inflammation, heat in later stages of healing (repair, remodelling) to promote blood flow and tissue extensibility.	Massage Therapist, Physiotherapy (if Athletic Therapy not available), Acupuncture
Acupuncturist	Yes	Acupuncture	To promote Qi (energy) flow. To reduce pain, reduce swelling, and promote tissue healing.	Athletic Therapy or Physiotherapy

Follow up Questions

- After completing the chart below, identify the 3 most important practitioners in the rehabilitation of your athlete's injury.
- Given the combination of practitioners you have recommended, do you think you will be able to rehabilitate your athlete to compete at the Vancouver 2010 Olympic Winter Games? **Yes** Why or why not? **Patellar tendinopathy often takes 6-12 months to heal. The tendon will not be 100% at games time, but with appropriate medical management he might be able to return to training and competition.**
- Based on the case description, would you recommend that a sport psychologist be involved in the treatment plan? Why or why not? If so, how? **Not unless athlete displays any signs of anxiety, depression, etc.**

ROAD TO RECOVERY

Learning Outcomes Biology and Senior Phys Ed.

BRITISH COLUMBIA

Grade 11 Phys Ed

- Demonstrate an understanding of how the cardiovascular, muscular, and skeletal systems relate to human motor performance
- demonstrate an understanding of the attributes required to pursue careers related to physical activity

Grade 12 Phys Ed

- Demonstrate an understanding of physiology and performance modifiers

Biology 12

- Analyse the functional inter-relationships of the vessels of the circulatory system
- Describe the inter-relationships of the structures of the lymphatic system
- Analyse the functional inter-relationships of the structures of the respiratory system
- Analyse the transmission of nerve impulses
- Analyse the functional inter-relationships of the divisions of the nervous system

ALBERTA

Biology 20

- Explain the role of the circulatory and defence systems in maintaining an internal equilibrium.
- Explain the role of the motor system in the function of other body systems.
- analyze the effects of exercise on muscle fibre
- describe the relationship between fitness and efficiency of muscle action

Biology 30

- Explain how the nervous system controls physiological processes
- Explain how the endocrine system contributes to homeostasis.

SASKATCHEWAN

Biology 30

- Describe the blood circulation pattern and vessels in the mammalian systems.
- Discuss respiration by relating the activity to the physical structure like the lungs and blood and the cells fed by the blood.
- Contrast the functions of the central nervous system and the peripheral nervous system in humans.
- Describe the influence of the pituitary gland on body processes and on other glands.

MANITOBA

Senior 3 Biology 30

- Explain the principle of negative feedback and identify how the body stabilizes systems against excessive change.
- Identify the materials transported between cells and capillaries. Include: carbon dioxide, oxygen, hormones, nutrients, nitrogenous wastes.
- Explain how transport systems help to maintain homeostasis in the body.
- Identify ways in which the body protects itself from accident or injury.
- Explain the role of the lymphatic system in protecting the human body.
- Describe the major organization and function of the nervous system.
- Investigate and describe conditions/disorders that affect protection and/or control in the human body.
- Analyze examples of how different body systems work together to maintain homeostasis under various conditions.

Physical Education

Senior 2

- Analyze factors (e.g.,food and fluid intake, rest, supplements, ergogenicaids...) affecting optimal Performance

ONTARIO

Exercise Science, Grade 12, PSE4U

- Describe the structure and function of the body and of physiological principles relating to human performance

- Describe the various parts of the skeletal and muscular systems, and the ways in which they relate to human performance

Biology, Grade 11, SBI3U

- Groups of organs with specific structures and functions work together as systems, which interact with other systems in the body.
- The development and uses of technology to maintain human health are based, in part, on the changing needs of society.

QUEBEC

Première Année Du Cycle
Systèmes Circulatoire Et Respiratoire

- Système respiratoire (fosses nasales, pharynx, trachée, bronches, poumons)
- Fonctions des constituants du sang (plasma, éléments figurés)
- Compatibilité des groupes sanguins
- Système circulatoire (voies de circulation, types de vaisseaux)
- Système lymphatique (lymphe, anticorps)

Fonction De Relation
Systèmes Nerveux Et Musculosquelettique

- Système nerveux central (encéphale, moelle épinière)
- Système nerveux périphérique (nerfs)
- Système musculosquelettique (os, articulations, muscles)
    - Fonctions des os, des articulations et des muscles
    - Types de mouvements articulaires

NEW BRUNSWICK

Biology 11

- Explain the function of the human circulatory and respiratory systems and how they interact.

Biology 12

- Explain the basic structure and function of the central nervous system.
- Describe the basic functions of a peripheral nervous system.
- Describe disorders linked to the nervous system and their effect on the homeostasis of the system and the organism as a whole.

Leadership Through Physical Education and Recreation

Section V Sport Medicine

NOVA SCOTIA

Biology 11

- Compare and contrast mechanism used by organisms to maintain homeostasis.

ATLANTIC CANADA SCIENCE CURRICULUM

Biology 11 (521)

- Describing the structure and function of the human respiratory system
- Explaining the need for circulatory systems in large animals
- Describing functions of the lymphatic system

Biology 12 (621)

- Describing an example of neural and endocrine control systems acting together in animals; e.g., stress and the adrenal gland, biorhythms, acupuncture.

SCHOOL PROGRAM
PROGRAMME SCOLAIRE

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