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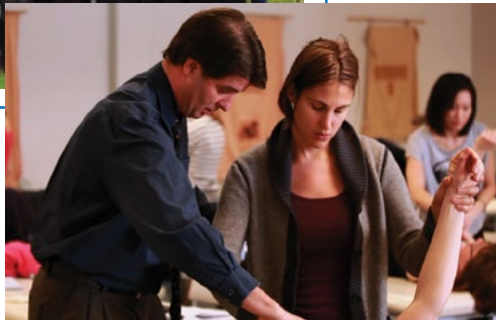

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Message from the Editor

Stay Safe with Winter Fun

It is the time of year when many people engage in winter sports. Although versions can often be played year-round indoors, winter sports are more often enjoyed outdoors, which come with their own unique challenges. Whether an RMT has a lot of experience working with athletes, or none at all, it is important for all RMTs to understand the unique injuries common in winter sports, as well as the strategies to treat them.

The next Winter Olympics is scheduled to be held in South Korea in 2018, and many RMTs are once again likely to volunteer as part of Canada's medical team. We open with an article outlining the experiences Renee Sheldon had as a volunteer with the medical team at the 2010 Winter Olympics in Vancouver, working at the Polyclinic in Whistler. Her article describes the treatment environment, the differences in treating Paralympic athletes, and current research about injuries in the Olympics. Of course, elite athletes are not the only ones who participate in winter sports; people of all ages and abilities participate in activities such as skiing, skating and hockey. Jonathan Maister's article provides an overview of popular winter sports and the injuries that may result.

There are many different things to consider when treating elite athletes versus amateurs. One of the things to consider, as explained in the article by Josh Martin, is the point in the sport's season when the injury occurs—treatments will differ depending on whether the injury occurs in the off-season, during training, or in-season. Also, therapy is not merely about treating injuries as they occur. As the article by Krystin Bokalo explains, RMTs also have an important role to play when it comes to injury prevention, including explaining the importance of stretching and warm-ups.

Some winter sports can be very dangerous and can cause serious injuries, both among amateurs and professionals. We have included an interview with Jonathan Leung, member of the medical team for the Toronto Marlies hockey team, providing a perspective on working with a professional sports team. Concussions are one of the serious injuries, and RMTs who treat athletes will likely encounter some who have suffered such an injury. Richard Lebert's engaging article outlines things for RMTs to consider during post-concussion treatments.

Although this issue goes into detail about the many injuries and treatments that can be associated with winter sports, it is important to remember that these sports are also a lot of fun. Winter sports are one of Canada's many strengths. Winter sports are very popular in Canada. Whether dealing with elite athletes or amateurs, it is important that RMTs help clients stay safe while enjoying activities in the great outdoors.

Laura Fixman,
Member Services Administrator, RMTAO

Reflections on the Vancouver Olympic & Paralympic Games

By Renee Sheldon, BPHE, BA, RMT, SMT(cc), IMTC, CKTP

It is hard to believe that almost five years have gone by since the Olympic and Paralympic Games were held in Vancouver, B.C. I was honoured to be a part of the medical team at the sister location in Whistler, and have been asked to recount my experience at the Games, which enriched my life both personally and professionally. It was an exciting time, especially given that these were the first Games in which massage therapy was accredited to be a part of the host medical services.

The Polyclinic

Dr. Jack Tauton was the chief medical officer for the Games. His vision was to create a medical facility in both Vancouver and Whistler that took the burden off the hospitals and local communities.

The Polyclinic in Whistler was a 10,000-square-foot tent that from the outside could not possibly house the amenities it proclaimed. Once inside, it was a catacomb of partitions and dividers. It was incredible!

The Polyclinic involved many health care professionals and facilities, including:

- family physicians and nurses
- sports medicine doctors
- trauma and orthopaedic surgeons
- anaesthesiologists
- paramedics (air and land)
- helicopter landing pad
- pharmacists/pharmacy
- optometrists
- dentists
- MRI, X-ray and ultrasound
- medical laboratory
- mobile medical unit (MMU)—a fully functional operating room trailer
- The Therapy Centre

Most of the health professionals, like myself, volunteered their time to be a part of these Games. Volunteers had to apply through the Vancouver Olympic/Paralympic website one to two years prior to the Games. Experience and sports massage background was an asset to be considered for a massage therapy position. There was an interview process and then a wait to be chosen.

Volunteers are the driving force for *all* major Games.

The Therapy Centre

The Therapy Centre consisted of registered massage therapists, physiotherapists, athletic therapists, acupuncturists and bracing specialists working in an integrative setting. The area was open concept with the idea of cross-referral among the health care team.

This multidisciplinary approach was followed in order to provide the best overall care for the athletes.

Many RMTs work independently and not in an open-concept environment. I was unaccustomed to this type of setting and it took a while for me to get used to it, but the benefit to the athletes was tremendous.

Confidentiality is always paramount in our

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profession. However, in an open-concept setting where curtained cubicles are the only means of providing some type of privacy, a therapist has to be very careful during their interaction with the athletes. At the Polyclinic, we treated any athlete from any country; therefore, an athlete's competitor could be in the cubicle right next door. Communication was discreet and respectful.

Our busy times were usually the day before an event. On the flip side, there were times when we saw no one for hours; we took this opportunity to exchange treatments and ideas, or get caught up on the latest events.

Language barriers posed a challenge at times, and these Olympics occurred before some of the amazing language apps were available. Our services were used by athletes from many countries where neither English nor French was a first or second language. Interpreters were few and far between, so we used creative means of communication such as hand gestures and actions. At times, we broke the ice with a friendly smile and laugh.

Treatments

Treatments lasted 30 minutes, which included time for assessment, consent, treatment and saying goodbye. Towels were our main source of coverage, as sheets were limited—and we sometimes had to get creative with our draping. Many athletes wanted specific areas worked on and had amazing body awareness.

Most of the treatments I performed were flushing techniques or pre-event massage. The goal was to warm the tissues. Primarily, these treatments involved the large muscle groups and muscles involved in sport-specific actions. Many of the athletes I treated needed the focus on their legs.

Techniques were applied in a short and quick duration and included effleurage, compressions, kneading and jostling/shaking. Stretching was sometimes incorporated in the treatment and was either active or facilitated. Stretching with timed breathing was also an efficient tool to calm the athlete.

To do a 'treatment-oriented massage' on the athletes was contraindicated—unless they had an acute injury or issue that needed immediate attention. Their bodies are 'competition ready,' so to alter their tissue with aggressive/intense techniques could have had detrimental effects on their performance.

2010 Vancouver Olympic Games Research Study on Sports Injuries

At the Games, 82 National Olympic Committee (NOC) physicians and the medical centres (Polyclinics in Vancouver and Whistler) were asked to report injuries of all athletes on a daily basis. This information was documented using standardized forms, and followed in

"Primarily, these treatments involved the large muscle groups and muscles involved in sport-specific actions."

Innovative Polyclinic facility in Whistler at the 2010 Olympic Winter Games.

Paralympic athlete skiing in Whistler.

"The results showed that one in 10 athletes sustained injury. The sports with the highest risk of injury were snowboard cross; bobsled; ice hockey; short track speed skating; and alpine freestyle."

Athlete's Village for the 2010 Whistler Games.

the footsteps of a similar study from the 2008 Summer Games in Beijing.[1] The purpose was to gain valuable statistics with regard to characteristics and frequencies of injuries. The hope was to implement findings to minimize the risk of injury at future Games.

This information was published in The British Journal of Sports Medicine in July 2010.[2]

The results showed that one in 10 athletes sustained injury. The sports with the highest risk of injury were snowboard cross; bobsled; ice hockey; short track speed skating; and alpine freestyle.

Interestingly, 73 per cent of the women's snowboard cross athletes (16 of the 22 competitors) sustained injury. Close contact, pushing and speed played a role in these numbers for this sport. Sports such as snowboard cross, ski cross and freestyle skiing have been included in the Olympics to generate some excitement. However, the potential for injury becomes higher in these sports.

The study also found that in the higher-risk sports such as bobsled, alpine skiing and snowboarding, half of the injuries sustained were from contact with a stationary object. The lowest-risk sports were the Nordic skiing events (biathlon, cross-country, ski jumping, Nordic combined), luge, curling, speed skating and freestyle moguls.

The areas most commonly injured were the head/cervical spine and knee. Muscle strains and ligament damage were the most common types of injury.

The Paralympic Games

In 1988, after the Seoul Olympics, the Greek prefix 'Para' (which means 'beside' or 'alongside') was officially added to the word Olympics. The Paralympic Games are dedicated to disabled athletes.[3]

The 2010 Olympics had all the glitz one would expect from such games, but then the Paralympic athletes arrived. These amazing, inspirational, elite athletes enriched my life beyond words.

Before the 2010 Paralympics began, RMTs were instructed to review lifts and transfers for potential use if the athlete needed assistance on therapy tables. We also had to become

familiar with the hoists that had been installed over the hot and cold therapy tubs. However, to my knowledge, little—if any—assistance was required during the Games in Whistler. This showed me the calibre of athletes we were dealing with!

The first athlete I treated was missing a leg and using crutches. He had his interpreter with him. I asked his interpreter, "What brings him in today?" The interpreter replied, "He wants a leg." I said, "Pardon?" Again, "He wants a leg." From that moment on, my Paralympic journey began.

One by one, athletes from all over the world came in telling stories of land mines, hand grenades and being shot, bringing the reality of war before our eyes. There were so many stories, so many atrocities. Some had overwhelming scars and injuries. As I tried to grasp the magnitude of each athlete's situation, they would talk about how thankful they were to be alive, how proud they were to represent their country, about their amazing support network and how their faith pulled them through. They would then talk about their competition with that fierce drive that separates the elite from recreational athletes.

We learned life lessons every day from these athletes, who unknowingly were changing the lives of everyone they met.

Treatment Considerations for the Disabled Athlete

The following are some of the areas I needed to consider when treating a disabled athlete. There are not a lot of resources for massage and those with disabilities. I found myself having to react, adapt and modify my techniques, positioning, pillowing and whatever else was needed to ensure the best treatment possible for the athlete.

Postural impairments: Many of the athletes I saw had partial or total loss of limbs. Obviously, this would have an effect on posture and stability. The main complaint of these athletes was lumbar/sacral pain. I would try to assess them (this was limited due to time restrictions), and used muscle energy techniques and Swedish massage to gently 'decompress' painful areas.

> “Massage therapy has been involved in many Olympics; however, these were the first Games in which massage therapy was accredited to be a part of the host medical services. Massage definitely made its mark!”

The Winter Olympics include many sports that are helped by massage therapy.

Therapeutic taping was also beneficial. A lot of the athletes had never been taped before to encourage positive functional outcomes.

Compensation: The postural changes and adaption to their sport and injury created some interesting compensation patterns in these athletes. For example, due to prior extreme soft tissue trauma, one athlete had a muscle resected and reattached to ‘act’ like another muscle. In this case, I followed the fibre direction of this ‘new’ muscle and noted the action it performed. This helped me to use appropriate techniques on the area.

Mobility in daily life: Many athletes had crutches, wheelchairs, prosthetics and other aids for daily mobility. Crutches cause increased pressure and tension on the upper body.[4] Forearms and hands take a lot of force, and carpel tunnel or thoracic outlet syndrome could be a long-term result of such use. Prosthetics are used in daily mobility as well as during some of the events, such as downhill skiing. Swelling, stiffness and pain were sometimes noted in the residual limb. We used hydrotherapy to ease swelling and pain, but had to be careful due to hypersensitivity and temperature sensitivity in the residual limb.

Conclusion

Massage therapy has been involved in many Olympics; however, these were the first Games in which massage therapy was accredited to be a part of the host medical services. Massage made its mark!

I will cherish the memories of our Whistler health care team and the beautiful surroundings that I was spoiled with for eight weeks. I was proud to represent our profession. MT

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Massage and Winter Sports: Taking the Chill out of Treatment

By Jonathan Maister, B.Soc.Sci, CAT(C), RMT, SMT(C)

Canada, being in the Northern Hemisphere, has extremes in seasonal weather. This is reflected in the active lifestyles of Canada's population. Our winter activities differ significantly from those in the summer months and, consequently, therapists involved in treating the athletic population must be particularly versatile and aware of these considerations.

Winter sports are either indoor adaptations of their summer equivalents (e.g., indoor soccer) or are simply sports that take place in winter (e.g., ice hockey), often with the clothing and equipment to reflect this. In both instances, there are challenges that would be less familiar to a therapist based closer to the equator. Indoor equivalents tend to require different equipment such as cleats, and a different environment such as fake turf and possibly different air quality. These result in issues such as increased ligament stress due to the stiffer feel of indoor turf, and dehydration due to the dryer indoor air.

Winter sports require appropriate clothing to reflect the extremely cold temperature. If this clothing is not suitably engineered, it can affect the dynamics of body temperature control such as perspiration, evaporation, conduction and convection.[1] Bulkier clothing can also affect movement mechanics. Therapists working with certain winter sports must be familiar with the injuries associated with those sports.

Competitive contact hockey is associated with a myriad of injuries. Contusions, lacerations, concussions, sprains, strains and even fractures are possible,[2,3] as are injuries secondary to the mechanics of the game (i.e., the physical positioning of the player's body while skating). With social or non-contact hockey, periodic spills and collisions occur, although injuries are mainly secondary to the game's mechanics. Players are bent forward when they are on the ice, with their hips thrusting posteriorly and laterally; hence their low back musculature is under stress as they hold their torso in what would otherwise be an abnormal position. This same posture keeps the hip flexors in a shortened position.[4] In addition, the hip flexors and adductors are eccentrically and at speed repeatedly decelerating the posterior-lateral thrusts of the hip joint. Clearly, this movement predisposes players to injury, especially if they are out of shape.

From the massage therapist's standpoint, treatment focus should be on ensuring muscle length and strength. Holding patterns in the erector spinae, adductors and hip flexors must be addressed with soft tissue work, together with stretching protocols and strength work. The gluteals (and to a certain degree the hamstrings) are primary movers for skating and will probably require fascial and other soft tissue work. This is particularly important because stretching the single joint gluteal muscle is very difficult (unlike the hamstrings for example have two joint muscles have more leverage to work with when stretching) and there is greater reliance on the therapist's skill to keep this muscle loose. The therapist must

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> "From the massage therapist's standpoint, treatment focus should be on ensuring muscle length and strength."

also ensure that the athlete does strength work, since effective injury-free exercise requires strength as well as flexibility.

The challenge with groin pulls is their potential complexity. A host of different muscles in an anatomically small area perform similar movements (i.e., adduction, flexion, or a combination thereof). In addition, most groin muscle injuries are mild, which means that reproducing pain may occur only in a very specific range and direction of movement. Locating the exact muscle with resistance tests can be challenging. If the attending therapist suspects a muscle strain of the adductor-flexor complex, in order to get a response from the athlete he or she may have to fine-tune or experiment precisely with various degrees of flexion, adduction or combination thereof, in the inner, mid or outer range; an element of rotation may also be required. Failure to do so will result in a false negative with resistance testing. It is also important to have the patient contract with moderate to minimal force to ensure the subtle angle specificity is obtained. An overly strong contraction may result in compensatory contractions of all muscles in the region, resulting in an inaccurate result.

The nature of hockey also leaves the hip joint susceptible to wear and tear as well as impingement, both of which refer to pain down the thigh, thus mimicking groin strains via the L2 sclerotome.[5]

Cross-country skiing and all skating sports have similar issues. These other activities vary in terms of forward body lean and the lateral movement typical of hockey, and do not involve physical contact with opponents. However, an assessment of body positioning and its effect on the musculature is essential to keep these participants injury free. Since hockey is such a stressful sport on the body, it is a good template from which to work in terms of parallel winter activities.

Downhill skiing causes inordinate stress on the knees, particularly when skiing moguls. The very nature of these sports forces the

knees into a 90-degree crouched position. The tremendous downward momentum of the body is thus cushioned from the uneven skiing surfaces, all the while ensuring that the athlete maintains balance and direction with a particularly secure core. Aside from the valgus and varus stresses on the collateral ligaments and anterior shear of the femur on the tibia and hence the ACL and PCL, the wear and tear on the meniscii and femoral cartilage is extraordinary.[6] Most activity occurs within that approximately 90-degree arc, which means stress is focused exclusively on the cartilage contact in that narrow range. The therapist working in these sports can expect to do soft tissue work for the chronic holding in the quadriceps muscles which maintain that position, as well as alleviate the wear and tear at the joint level. Low-grade joint mobilizations and range-of-movement work will help the body secrete synovial fluid, the lubricant that nourishes cartilage. While skiing athletes will likely stretch their quadriceps regularly, the holding patterns in the soft tissue will require massage and other soft tissue work that stretching can never address. By the same token, the stresses on the quadriceps will likely result in fascial restriction, requiring specialized fascial work. The double role of the hamstrings will entail holding the torso and lower extremity at the ideal angle for skiing, as well as securing the tibia below the femur, hence minimizing anterior tibial shear.[7]

Curling, while being a far more passive sport, has its own challenges. The participant throwing the rock follows up with the dominant front leg in deep flexion as he or she slides behind the rock. Patellofemoral pain is probably the single most common knee complaint. In a sport where prolonged deep knee flexion occurs, participants will be more susceptible.[8] Sweepers experience tremendous stress on their core musculature. The frantic movement of the arms as they sweep the ice depends on a stable core, which indirectly adds to the pressure and momentum exerted by the sweeping movement. In both instances, soft tissue work will be

“Patellofemoral pain is probably the single most common knee complaint.”

> "Any treatment that could change the athlete's positioning or proprioception even slightly must be performed with the skater's consent."

necessary to alleviate holding in the associated tissues (quadriceps, back and abdominals). It is beyond the scope of this article to explore patellofemoral syndrome (PFS) and its treatment in detail, but the therapist will need to be knowledgeable about patellofemoral mechanics and methods of correcting any problems. At its most basic level, patellofemoral pain is corrected by stretching the quadriceps muscles. Further to this, medial mobilizations of the patella (to stretch the lateral retinaculum) may be necessary, as will stimulation of the vastus medialis to facilitate medial tracking of the patella.[9] Some participants may also be predisposed to meniscal damage because of the deep flexed position of the knee.

Figure skating is possibly one of the most challenging sports to treat, for reasons not always realized by the novice therapist. While falls, patellofemoral issues, strains and sprains do occur and are part of the standard treatment repertoire, there is one further consideration that is essential to remember. Skating under these circumstances requires absolute precision; the positioning of the skates on takeoff and landing are perfectly fine-tuned. Treatments of injuries or even simple massage "tune-ups" have the possibility of altering the performer's body mechanics, which could wreak havoc on his or her performance and could cause injuries due to altered skate position. The therapist must be mindful of this at all times and keep treatments as conservative as possible. Any treatment that could change the athlete's positioning or proprioception even slightly must be performed with the skater's consent. The skater, the coach, and when necessary the skater's partner in the event, must realize that adaptations may have to be incorporated into the routine as a result of the therapy.[10] If at all possible, aggressive techniques must be limited to the training cycle, when time and possibly trial and error will allow changes to be integrated seamlessly into the routine.

Canada challenges the therapist in ways that our colleagues in milder climates cannot know. While indoor winter sports, and on rare occasions their outdoor equivalents, do take place in southern latitudes, Canadian therapists by necessity must be able to assist our winter athletes. While the same rules of injury care apply in summer and winter, there are numerous and surprising variables that must be considered in winter. Our versatility by necessity is something we can take great pride in, but on the other hand, it necessitates diligent and ongoing education and practice. MT

References available upon request.

'Tis the Season of Sports

By Josh Martin, RMT, SMT (cc), CKTP, CMAG

Josh Martin, **RMT**, **SMT (cc)**, **CKTP**, **CMAG**, has been a registered massage therapist since 2004; he is a Certified Candidate and past Ontario chapter president with the Canadian Sport Massage Therapist Association. He is the current head trainer and therapist for the Peterborough Lakers Lacrosse Team and the NLL Minnesota Swarm, and has been a massage therapist for Rugby Canada's National Senior Men's 15 team, the National Beach Volleyball Canadian Championships, National Track and Field Championships.

This article will focus on helping RMTs understand and appreciate our athletes, regardless of sport. We are all capable and have the skills needed to be a part of an athlete's circle of care. However, it takes a certain level of understanding, particularly of the different seasons in sports (training, off-season, in-season, etc.), with their different challenges and concerns, to be successful and notable in the sports injury field.

Understanding does not simply end with the basics of the sport itself, but should include careful consideration of all complex details of the positions involved; demands placed on the athlete during a game or event; in-season and off-season training schedules; dietary components; and more. Sports massage therapists must be familiar with each muscle, the muscle groups and how they are affected by specific movements and stresses of each sport.

One of the elite athletes I treat is Josh Gillam, a professional hockey player and a professional lacrosse player for the Minnesota Swarm and Peterborough Lakers, as well as a personal trainer for many professional and elite athletes. He says, "Sports are not just a game anymore, and the business of gaining an edge is at an all-time high. Athletes are required to push themselves to the limit in off-season training to arrive at their respective camps in top form in order to execute at their peak level. However, the sport world has now recognized that in-season training is just as important as—if not more important than—the off-season. Preparing a proper routine and workout plan for athletes in-season is key to maintaining that top form they pushed so hard for in the off-season. Athletes are different in terms of their age, body type, muscle mass, bone and muscle structure, flexibility, injury and playing position within their respective sport. Each of these factors, as well as others, should be taken into consideration when programming a proper in-season workout plan to maximize the performance and maintenance of this top condition." RMTs need to keep these elements in mind when we treat our clients and athletes.

Although further investigation needs to be done on the true effectiveness of massage on sport performance, some studies indicate that there is the potential for it to increase muscle flexibility and decrease an athlete's pain perception post-activity.[1] A more recent study from McMaster University shows an increase in mitochondrial production and therefore a decrease in inflammation following only 10 minutes of post-activity massage.[2] Massage therapy for sport has its definite advantages; however, it is how and when we apply this knowledge to our practice that is of utmost importance. By paying close attention to the specifics of the athlete, a therapist will be able to provide the best possible care at the optimal time. It is also essential to keep open communication and dialogue between all members of the athlete's circle of care. A massage therapist will never be the only member of the elite athlete's team; there will also be physicians, fitness professionals, nutritionists, dietary consultants, psychotherapists, physiotherapists, athletic therapists, chiropractors, naturopaths, agents and coaching staff, to name just a few. Communication, from the receptiveness of direction and criticism, to the assertiveness to

> "It is incredibly important for the RMT to maintain close contact and build strong professional relationships with the other members of the circle of care."

provide constructive disagreement and ultimate resolution, is imperative to the process of working cohesively.

Below are some details aimed to provide a very general idea of some key elements to consider when dealing with an athlete, keeping in mind that our treatment progressions and protocols pre-, post- and during events still apply. Throughout each season listed below, always consider the sport and position of your client.

Off-season training

Training will likely centre around goals set out by the athlete and his or her team of fitness professionals in order to get ready for the upcoming season. Therefore, as previously stated, it is incredibly important for the RMT to maintain close contact and build strong professional relationships with the other members of the circle of care. Usually during this off-season, athletes will be using periodization in their training schedule. This refers to systemic planning that will be tailored to each individual athlete in order to avoid any fitness plateau and to ensure that they are building key components to reach their in-season or training camp goals. A therapist should be aware of the current period the athlete is in (conditioning, strength training, upper or lower body, chest or back, weight loss or gain, etc.). This will help focus the treatment to the areas being trained to help prevent overtraining or injury. Unless the athlete or a member of their health care team has created another treatment plan or the athlete has a specific injury, this should be the focus during this season of training.

Josh Gillam states that the off-season is a time where he pushes to increase his strength and speed. The body, when not in game play and focused solely on training in the off-season, can reach great potential and new heights for personal achievement in the weight room. Yet that potential and newfound output needs to be retained and carried on throughout a long season of the demanding sport.

This season of training is when most repetitive injuries or mechanical issues will arise. As your athlete trains during the off-season, they will likely be plagued with various injuries, due to the inherent insistent nature of most athletes to push themselves further. The importance of proper gait, postural and movement analysis will be highlighted during training to ensure body mechanics and proper form are kept as the drive for results increases. Keeping athletes feeling and performing their best will ensure they will meet and exceed their goals as they move into their next season.

In-season training

Off-season training prepares an athlete for the upcoming season and is inherently more specific, as the training relates to a particular area of focus; in-season training and treatment is just as important. Josh Gillam states that without a properly planned and designed in-season workout regimen, there is no way his body could sustain the athletic potential output that he gained during his off-season training. In other words, our goal is to ensure that

athletes are kept well maintained during their season. It is during this stage of training that a therapist needs to focus attention toward the specific position, body mechanics and muscles used to perform the athlete's desired task throughout competition. This is a very generalized statement, as there is a significant amount of detailed movements and mechanics that need to be observed and interpreted. However, one example might be the differences between an offensive hockey player and a speed skater. First, consider that the mechanics of hockey skating and speed skating are quite different. Hockey skaters typically have a relatively quick stride compared to speed skaters, who have a slow stride that focuses on a full leg extension and recovery back to the skater's centre of gravity. This longer stride and slower, more controlled movement allows them to generate a consistent speed over a long race. Once mechanics have been observed, consider all the anatomy and pay close attention to the major muscle groups being used to generate a speed skater's speed. For example, the quadriceps are crucial for skating as they extend the leg at the knee, and rectus femoris flexes at the hip with the aid of the hip flexor group. Conversely, glutes extend, rotate, abduct and adduct the hip, while the hamstrings extend the hip and flex the knee during the powerful movements to propel the skater forward. Obviously, these are some of the basic major actions that are visible during a skater's movement; however, we cannot neglect the secondary or accessory movements and stability components of the foot, ankle, knee, hips, low back, abdominals, thoracic spine, ribs, shoulders, cervical spine, etc.

My advice to therapists is to pay close attention to your athlete's movement. You could watch a game, or film (with permission) your athlete so that you can review his or her complex movements whether on the field, in the gym, on the slopes, on the ice, etc. With this knowledge, you will be able to provide care that will achieve peak performance throughout an athlete's season and will certainly aid in the reduction of potential injury. I have found great success in my practice when I am able to visually and mentally comprehend and understand the movements, body mechanics, energy output and overall demand placed on the athletes I see when they are on the field. There is a great deal more detail that could be covered with regard to this topic, and it can become extremely intricate. My intent was to help you begin the thought process, to begin to ask the proper questions, and to explore how to observe the details of your athletic clientele to ultimately become a better therapist. The key is in understanding and knowing how to interpret these details, because knowledge and application come from the understanding of sports. MT

"My advice to therapists is to pay close attention to your athlete's movement."

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Injury Prevention over the Winter Season

By Krystin Bokalo, BAHSc, CAT(C), RMT

Krystin Bokalo, **BAHSc**, **CAT(C)**, **RMT**, has been practising massage therapy since graduating from the Ontario College of Health and Technology in 2009. Before this, she obtained her bachelor of applied health sciences in athletic therapy from Sheridan College. She joined the RMTAO in 2009 and has worked at several multidisciplinary clinics in Burlington, Ontario, which complement her interest in sports injuries. She also has a strong background in insurance, particularly MVAs, and works with a company that assesses accident benefits claimants.

Prevention is defined as the act or practice of stopping something bad from happening. With the snow falling and participation in winter activities increasing, it is time to consider taking a proactive approach to injury prevention. The prevention of sport's injuries has been a topic of great significance when it comes to research. According to Schiff et al. in 2010, the standard public health prevention model was translated into the sports injury prevention field, which allowed an evolution from the description of the problem, to the identification of the cause using injury mechanisms and risk factors, to the development and introduction of sports injury prevention strategies[1]. Many researchers have looked at injury prevention models within a specific sport. Of particular interest to researchers are injury prevention models that are centred on football, hockey, skiing and snowboarding. Ultimately, injury prevention research plays an important role in the promotion of safe exercise participation by identifying risk factors for injury and reinjury.[2]

Sports-related injuries are the most common sports-related injuries treated in emergency departments.[3] During the winter months, many individuals experience an increase in strenuous activities outside of their usual day-to-day routines. Whether they are participating in one of the many winter sports, chasing their children up and down a toboggan hill or shovelling snow off their driveway, they have a potential risk of injury from any of these activities. Soft tissue, ligaments, tendons, muscles and nerves are most commonly injured because of sports and recreational activities, overuse and common everyday events.[3] As massage therapists, we can help our patients mitigate that risk through discussion of and instruction on prevention strategies. These can be reviewed within our home care and remedial exercise component of treatment.

Understanding the demands of a patient's activities allows the therapist to analyze the actions and muscles that will be recruited for these actions. There are a few key components to consider when looking at an injury prevention program for a patient:

1. *Warm up before any activity.*

Advise patients to take the time to incorporate stretching or some form of warm-up prior to activity. This will help warm up muscles prior to placing a physical demand on them. Heading outside to play hockey, going skiing or shovelling the driveway with cold muscles can cause a perfect storm when it comes to injuries. Cold muscles are more prone to getting injury. The warm-up or stretching should be customized to the activity. For example, if a patient is going to be playing hockey, focus a warm-up on the quadriceps, hamstrings and adductors as this will help decrease the potential for a lower body injury associated with the push-off and stride in hockey.

2. *Be cognizant of posture and technique.*

Proper form is key in reducing the risk of injury. It is paramount that therapists make sure patients understand the proper form for the specific sport or activity. If a patient will be shovelling snow, it is beneficial to educate them on the importance of limiting the twisting motion when moving snow, and on the need to engage the core musculature to protect their lower back. Whenever possible,

it is ideal to push snow instead of lifting. Limiting the twisting motion with a shovel full of heavy snow, will minimize the potential for a low back injury. With any activity, it is important to make sure that patients take regular breaks. Prolonged shovelling without taking appropriate breaks will lead to improper posture, and will ultimately lead to injury.

3. *Stretch after participating in activities.* Stress to patients the importance of stretching once they have finished participating in their activity. Now that the patient has placed demands on certain muscle groups, stretching will aid in elongating muscles from a contracted state and minimize post-activity muscle soreness. Without stretching after an activity, a patient may experience muscle soreness, which can alter biomechanics and leave them prone to injury. Making sure the patient is prescribed applicable and comprehensive post-activity stretching will go a long way in preventing injury.

In conclusion, athletic involvement presents a multitude of health benefits for individuals; however, athletic injuries can result in negative effects in the future of the individual's health.[3] As RMTs, we are able to help patients understand the importance of injury prevention and the steps they should take in order to properly prepare to engage in any type of winter activity. Whether they are shovelling the driveway or are out on the ski slopes, both activities have an equal injury risk, which can be decreased with a proper and comprehensive pre-activity preparation routine. Injury prevention is key to enjoying all that winter has to offer. MT

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He Shoots, He Scores with an AHL Hockey Team

By Laura Fixman, BAA

Jonathan Leung, RMT, who graduated from Sutherland-Chan, will be the first to admit that he is definitely a hockey fan. Since he was in massage therapy school, he has wanted to work with athletes. As a member of the medical team for the Toronto Marlies, a successful American Hockey League (AHL) team that is affiliated with the Toronto Maple Leafs, he has been able to combine both passions for the past four seasons.

Leung began his journey with the Marlies during a volunteer outreach opportunity with the team while he was still at school. A year later, when the team's head therapist started looking for a fully licensed RMT, Jonathan was recommended for the position. He is in his fourth season with the Marlies, and says he has learned a lot since starting there.

Treating a hockey team

"The biggest surprise is that they have common biomechanical issues like every other person," he says. "On the flip side, however, the players' bodies seem to respond to treatments at a much faster rate. A lot of them are more in tune with their bodies than the average person, and veteran players especially are better at maintaining and keeping their body healthy."

Leung sees a variety of complaints and injuries in his work with the Marlies, but the most common treatment he performs is treating for imbalances of the pelvis, as the unilateral nature of hockey makes players quite susceptible to imbalances that can turn into other issues. He has also found surprising differences here when it comes to treating professional athletes.

"The biggest difference between treating a hockey team and the general public is treatment duration," he says. "Since you are working with a team, there can be multiple people waiting for a treatment within a short span of time. I have treated players anywhere from five minutes to one hour, depending on time availability."

The biggest asset

"The work is different from any other working environment", he says. "The hours are a lot more variable, depending on if you are at practices, at home games or on the road. Home games are often a longer day because you will be doing treatments before and after the game. Days can range from three hours to 16 hours, and you need to be physically fit to maintain that."

One of the biggest assets in treating professional athletes, according to Leung, is the ability to assess and treat a player's complaint with speed and efficacy. It is also important to recognize that an athlete's body will likely have adaptations to their sport, and pointing out these adaptations close to game time will likely be detrimental for a player's confidence.

Working so closely with other practitioners on the Toronto Marlies medical team—including athletic therapists, the team doctor and

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> "One of the biggest assets in treating professional athletes, according to Leung, is the ability to assess and treat a player's complaint with speed and efficacy."

the team dentist—is one of Leung's favourite aspects of the job, and he says he plans to stay with the Marlies as long as they will have him.

Leung has some advice for RMTs looking to pursue similar career paths. "Be confident, and have the skills and knowledge to back it up. It is also important, however, to know your limitations. You can't know everything, and that is where collaborating with other health professionals is the most important," he says. "I'm a hockey fan for sure, but it's important to not act like a fan when you're treating the athletes." MT

Sports Concussions: A Massage Therapist's Perspective

By Richard Lebert, RMT

Over the past decade, there has been rapid development in concussion awareness, advocacy and research. This has led to the development of new protocols and treatment interventions, but there is still no "silver bullet" that exists for concussion rehabilitation. As health care practitioners, it is important to clear up myths that remain in this area. The goal of this article is to give massage therapists a background in current terms and best practices as they relate to concussions. Winter sports—including but not limited to skiing, snowboarding, bobsledding, figure skating and hockey—all carry the risk of concussions. In this article, I will focus on hockey because of my familiarity with the sport as an athlete, spectator and therapist.

This summer, the University of Western Ontario hosted the Second Annual See The Line Symposium, and I had the good fortune to sit in on a presentation by Dr. Robert Cantu on the latest research and advocacy projects revolving around sports concussions. Dr. Cantu is the leading expert on athletic brain trauma, and a pioneer in the study of the link between concussions and progressive brain disease. His book *Concussions and Our Kids* is a great resource for anyone interested in learning more about sport-related concussions. NHL alumnus Eric Lindros and Ron McLean of Coach's Corner fame were also notable speakers at this symposium. Fans of the NHL know of Sidney Crosby and his past concussions, but he is not the only professional hockey player to experience concussions. Some of hockey's greatest players—including Eric Lindros, Paul Kariya, Keith Primeau and Marc Savard—all sat out for lengthy periods of time due to concussion-related injuries.

Dr. Cantu spoke about a team of physicians who belong to the Hockey Concussion Education Project (HCEP). This group concluded, in the December 2012 edition of the Journal of Neurosurgery, that there is a "significant underreporting" of concussions in men's and women's hockey. This is a concern given the long-term side effects of an undiagnosed concussion.

Richard Lebert, RMT, works at The Fowler Kennedy Sport Medicine Clinic at Western University in London, Ontario. He integrates contemporary acupuncture and manual therapy techniques as a treatment approach for sports injuries and concussion. He is also a continuing education instructor for massage therapists, chiropractors and physiotherapists. Twitter @AdaptiveTherapy.

What is a concussion?

A concussion is a mild traumatic brain injury that changes how the cells in the brain work. It is caused by a blow to the head or body that causes the brain to move rapidly inside the skull. Even a "mild" blow to the head can be serious. Concussions can also result when players fall, or if they collide with each other or with obstacles such as a goalpost. Rapid growth in the diagnosis of concussion over the past decade can be attributed to the education of professionals and the public about the severity of this injury.

The symptoms of concussions fall into four major categories:

1. **Somatic:** Headaches, nausea, vomiting, balance and/or visual problems, dizzy spells, and issues such as sensitivity to light and noise.
2. **Emotional:** Sadness to the point of depression (even suicide), nervousness and

irritability.

3. **Sleep disturbance:** Sleeping less or more than usual and having trouble falling asleep.
4. **Cognitive:** Difficulty concentrating, troubles with memory, feeling mentally slow or as if in a fog that will not lift.

Post-concussion syndrome

Post-concussion syndrome refers to the lingering symptoms following a concussion. It is typically diagnosed when a person who has recently suffered a head injury continues to feel at least three of the main symptoms listed above following a concussion. Post-concussion syndrome can begin to occur within days of the head injury, although it can sometimes take weeks for the symptoms to appear.

Second impact syndrome (SIS)

SIS occurs when the brain swells rapidly, and catastrophically, after a person suffers a second concussion before symptoms from an earlier one have subsided. This second blow may occur minutes, days or weeks after an initial concussion.

Chronic traumatic encephalopathy (CTE)

CTE is post-traumatic degeneration of the brain after repeated concussions. Prominent clinical features include dementia, personality change, emotional disorders (especially depression) and movement disorders. The latent period after concussion is usually decades, but shorter latent periods have occurred in some cases. Although CTE shares several neuropathological features with Alzheimer's disease, it appears to be a distinct entity. It was first described in boxers, but has since been identified in other athletes with repeated concussions, including football, hockey and soccer players. Post-mortem autopsies of Derek Boogaard and Bob Probert have found that these NHL enforcers were afflicted with CTE. When Derek Boogaard died at the age of 28 from an accidental drug and alcohol overdose while recovering from a concussion, a posthumous examination of his brain performed by the Sports Legacy Institute found he had suffered from very advanced CTE.

How are concussions diagnosed?

The diagnosis of concussion is based on mechanism of injury, onset of symptoms, neurologic evaluation, and balance and cognitive assessments. It is outside the scope of practice of a massage therapist to diagnose someone with a concussion. If you suspect someone has suffered from a concussion that has not yet been diagnosed, ask them to seek out a physician who specializes in concussions. If an athlete is suspected of receiving a concussion during a game or event, he or she should be immediately removed from the field of play. Under no circumstances should a person suspected of having a concussion be allowed to return to play on the same day.

Baseline testing

When it comes to baseline testing, the current standard is called SCAT3, which stands for Standardized Concussion Assessment Tool. This is a tool for evaluating injured athletes for concussion; it can be used in athletes from the age of 13 years and older. Encourage athletes to get baseline testing at the beginning of the year. Without a baseline testing, concussions can often be overlooked due to their varying symptoms.

What role can massage therapists play in concussion management?

Physicians may recommend massage therapy as part of the concussion management treatment plan. When physicians see patients, they are not concerned solely about how to identify and treat concussions; they also want to prevent the long-term consequences of suffering multiple concussions, which can lead to post-concussion syndrome.[1] Most concussions, if identified and treated properly, will clear up within seven to 10 days, according to studies cited by the Canadian Concussion Collaborative (CCC).[2]

For massage therapists interested in providing care for this patient demographic, it is important to develop confidence in your

> "Rapid growth in the diagnosis of concussion over the past decade can be attributed to the education of professionals and the public about the severity of this injury."

> "If you suspect someone has suffered from a concussion that has not yet been diagnosed, ask them to seek out a physician who specializes in concussions."

approach. When athletes have suffered a concussion and come for treatment, they are in a vulnerable state. Take time to set up your room so there are options available for patients who are experiencing photosensitivity (light sensitivity) or phonosensitivity (sound sensitivity). When working with an athlete who has suffered a concussion, here are some questions you can ask:

- Was this your first concussion?
- Have you been assessed by a physician yet?
- What symptoms are you currently experiencing?
- What is your goal with massage therapy?
- What special precautions do you need? (e.g., different positioning, alternate lighting and little to no noise)

Become a resource for patients

Massage therapists can be a valuable resource for patients who have suffered a concussion for the first time. I recommend having a referral list including physicians, physiotherapists and chiropractors who specialize in concussion management.

Treating cervicogenic headaches

Patients often present with cervicogenic headaches resulting from undiagnosed whiplash suffered at the time of the concussion.[3] Early therapeutic intervention will reduce the risk of cervicogenic headaches developing into chronic post-concussion headaches. Left untreated, myofascial pain can produce a sensitization phenomenon in the central nervous system, resulting in chronic pain. A massage therapy treatment plan should be implemented based on patient-specific assessment findings and patient tolerance.

Manual therapy techniques applied to muscles, surrounding connective tissue, peripheral nerves and soft tissue interface can yield good therapeutic results. Muscles to keep in mind while assessing and treating athletes who have suffered a concussion include, but are not limited to, suboccipitals, upper trapezius, splenius cervicis, splenius capitis, levator scapulae, rhomboids, temporalis, occipitofrontalis, corrugator supercilii, masseter, sternocleidomastoid (SCM) and scalene muscle group.

Key points

- Major changes in the definition and management of concussions have occurred over the past decade.
- Concussions are classified as mild traumatic brain injuries and should be treated as such.
- Concussions, especially repeated concussions, are now recognized as an important public health risk.
- Baseline testing aids physicians in diagnosing a concussion and will lead to improved concussion management.
- Concussions and whiplash are often concomitant injuries, and treating whiplash symptoms can often improve outcomes in patients who suffer from post-concussion syndrome. MT

Resources for massage therapists

- Cantu R, Hyman M (2012) Concussions and Our Kids: America's leading expert on how to protect young athletes and keep sports safe. New York: Houghton Mifflin Harcourt.
- ThinkFirst Canada (www.thinkfirst.ca): Information sheets on concussion for physicians and others, and a full description of the six-step return-to-play protocol.
- Sports Concussion Assessment Tool, third edition (SCAT3), for youth 13 years and older and adults (http://links.lww.com/JSM/A30); and the new ChildSCAT3, for children 5–12 years old (http://links.lww.com/JSM/A31)
- Canadian Medical Association policy statement on head injury and sport (http://policybase.cma.ca/dbtw-wpd/Policypdf/PD11-10.pdf)
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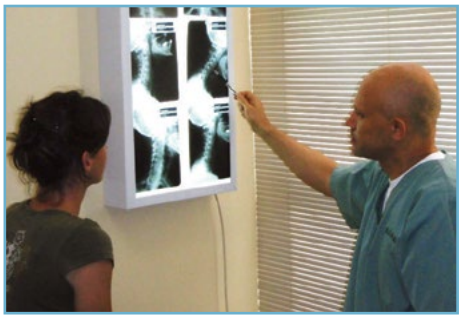

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