

Sports Medicine

(a) Explain the sports medicine principles influencing the policies and procedures that regulate when an athlete returns to play after injury.

Sports medicine is the branch of medicine concerned with injuries sustained in athletes, including their prevention, diagnosis and treatment.¹ Sport injuries are common amongst athletes ranging from the elite to everyday sports person. Injuries can either be acute, such as sprains, fractures or tears, or chronic such as tendonitis or due to an overuse. In any of these cases where an athlete is consequently unable to play for a certain period of time depending on the degree of their injury, there are certain principles of sports medicine that influence the policies and procedures that regulate when an athlete is able to return to play after injury. These policies include rehabilitation procedures such as progressive mobilisation, graduated exercise and training; also procedures including indicators of readiness for return to play and monitoring progress, psychological readiness and specific warm-up procedures and ethical considerations. All of these policies and procedures play an important role in the regulation of when an athlete can return to play after injury.

The rehabilitation policies aim is for the athlete to return to play as soon and safely as possible to avoid any further damage/injury if returning too soon. Depending on the extent and seriousness of the injury will determine this, for example if a knee replacement is needed and undertaken there will be a longer period of time for recovery compared to someone with a mild sprained ankle. Also, all athletes as individuals recover from injuries at different rates and ways and this is what enables them to return to play, it is not determined by the amount of days/ weeks that have passed. It is a requirement for the athlete to have the injured site moving as soon as possible to prevent it from stiffening up, but this has to be done without pain and under professional supervision. The commencement of rehabilitation with gentle range of motion as well as graduated exercise including heat and massage followed by light stretches will help to speed up the recovery process dramatically, physical and mental considerations have to be also considered.

Total body fitness programs to maintain fitness levels should also be continued to a certain degree that there is no pain or the risk of causing extra damage to injured areas. For example in the recovery of an ankle injury riding an exercise bike promotes cardiovascular endurance throughout the recovery process as this will prevent the athlete from decreasing their levels of strength, endurance and sporting abilities. A varied well-structured training program should be commenced whether it may be as an individual or in a team, it is needed to maintain and slowly build-up of pre-injury levels. In any situation these sessions should always be supervised under a trained professional. The use of treadmills, cycles and other light training machinery are great ways to get back into the use of the injured site. Being able to effectively complete a training session without pain, swelling and confidence as well as the all clear from the supervising professional is a main indicator of being able to return to play.

By following specific guidelines before an athlete can return to play are procedures that indicate readiness for return to play. An athlete with a Grade 2 torn ankle ligament should have minimal discomfort and swelling before and after play, as they may be feeling well, they are probably only 70%-75% recovered which initially invites re-injury.² The ankle should be pain-free and with full range of motion available, flexible with minimal discomfort and the return of strength should be equal to the opposite side as well as being able to perform specific motions. In consideration with all the physical indicators the athlete themselves has to have the right mind-set, confidence, motivation and positive encouragement to return to play with their injury. Before, throughout and after all

¹ The Free Dictionary. 2010.

² American Academy of Orthopaedic Surgery. August 2007

training session progress should be monitored, with a severe ankle injury, a test will initially involve measuring the range of movement at the joint, its mobility and strength without pain. This furthermore shows a sign of readiness to return to play for the athlete.

In the time being that the athlete is away from their sport and training session due to injury a loss of confidence can occur in enabling them to return to pre-injury state. The world of psychologist helps as a progressive program identifying specific aspects that the athlete has lost confidence in. Performance stimulations, strength and durability assessments, readiness of the athlete will help restore an athlete's confidence and identify areas that will need further attention provided to. Trainers, coaches and health professionals work collectively together to set up specific programs to minimize further injury or re-injury. Stretches and warm-up techniques are vital to ensure adequate blood flow and increased flexibility even though they might have be out of play for a longer period of time, each step and progress is vital to allowing the athlete to return to play.

From elite athletes to everyday sports people the issue of when is the right time to return to play is placed upon them and the people around them with the pressure of large amounts of money, contracts or major competitions ahead make it hard for the coaches and support system, but most importantly the athlete. With the burden of losing positions on teams, contracts and their reputations, this becomes a hazardous issue for the athlete to consider and has to be thought through thoroughly with many consequences and contemplations placed into context. Consequently athletes turn to unsafe and dangerous methods of using painkillers and other forms of drugs that will enhance or quicken recovery time. Not only is the hassle from the competitive world unhealthy for the injured athlete returning to play, but there close social network of friends and family are known to apply undue pressure upon the athlete when they aren't fully recovered and well enough to return to play. In some cases regardless of the ethical issues there are procedures that are required to be taken out to be documented before returning to play. For example when a concussion has occurred, the Sports Concussion Assessment Tool (SCAT) should be used in assessing the player, it includes a cognitive, neurologic and memory screening test. A head injury is one of the most serious injuries that an athlete can encounter. Therefore with athletes entire support system focusing on the athlete recovering rather than on just returning to play as soon as possible is that biggest priority in ensuring the athlete stays safe and aware that the support they need during this difficult time of their life is there for them.

In conclusion the sports medicine principles play a large role in influencing policies and procedures that regulate when an athlete returns to play after injury. It is evident that it just not the physical aspects of recovering that the athlete needs to endure such as training sessions, physiotherapy and stretches. But it is also the support system that the athlete has around them. From coaches to parents, every word of encouragement and every reassurance that things can only get better, allows the injured athlete to gain a right mind-set, confidence and most importantly motivation to want to return to pre-injury state and back to their passion and acknowledgement of their sport after an injury has occurred.

(b) Discuss the role of sports medicine in addressing the demands of children and young adults.

Only six out of ten children between the ages of five and 14 participate in sport outside of school which is unfortunate as the benefits of sport and physical activity for children include reduced risk of obesity, increased cardiovascular fitness, improved balance and coordination skills, development of social skills and better sleep. Also, active children are more likely to mature into physically active adults and most of all it is fun.³ The role of sports medicine in addressing the demands of children and young adults plays a large role in the involvement of children and sport. Certain safety issues, coaching techniques and medical conditions highly affect the participation levels and performance of children and young adults. The first priority for children involved in sporting activities is health and safety as these are factors that have both short and long term consequences if not applied appropriately. Furthermore, coaching staff, trainers and sports officials should be cautious and aware of any children's present medical conditions that may require treatment and management of the conditions, as well as ways of prevention from them occurring altogether, to allow them to have an enjoyable participation and experience in the sport.

Asthma, diabetes and epilepsy are the most common medical conditions that children and young athletes have to manage.⁴ Within Australia over two million people are sufferers of the respiratory disease asthma. Those with asthma have sensitive airways and when their airways are exposed to certain triggers airways become constricted and making it difficult to breathe. There are three main factors that cause the airways to become narrow, these are; the muscles around the airways tightens and causes 'bronchoconstriction', the production of extra mucus in the airways or when the inside lining of airways become inflamed. An asthma attack can be easily triggered by physical activity, however physical activity for children with asthma should not be avoided or limited, and it should be encouraged. Therefore, sports coaches must have a treatment management plan and be aware of the respiratory disease signs and symptoms in children, and ways to prevent and also the management to control asthma. To reduce the risk of an asthma attack it is advised to ensure an adequate warm-up is taken place, preventable medication is taken, the avoidance of potential triggers such as colds, flus and environmental factors and the child is monitored constantly throughout participation and rest breaks are taken when needed. Ways to identify a child is suffering of asthma is the difficulty in breathing that will cause wheezing, shortness of breath, coughing, a tightness in their chest, blue around the lips and pale and sweaty. In order to manage the condition is to reassure the sufferer, placing them in an upright position whilst assisting them to administer 4 puffs of the prescribed asthma medication. Also, encourage the child to relax and concentrate on their breathing, if breathing isn't improving repeat medication and if symptoms persist seek medical advice immediately.

Epilepsy is a medical disorder involving episodes of irregular electrical discharge in the brain. In a young person the sudden burst of this electrochemical activity disrupts the normal function of their brain and the messages sent to the body from the brains are disturbed.⁵ These interferences vary from a slight loss of consciousness to muscular spasms. From the first moment a seizure occurs immediate attention needs to be brought to protecting the sufferer from harming themselves against other objects or structures. Sport and exercise is a much needed attribute in a child's life, when it comes to a child with epilepsy however, parents will turn to disregard this which isn't advised as sports are safe for children with epilepsy if they are closely supervised. Strategies for coaches and parents to reduce the risk of an epilepsy episode is to be aware of triggers, the degree of the child's seizures, type and their limitations of the condition. Contact sports are not advised and always ensure medication is administered when required and always closely supervise the sport or activity the child is involved in. There are two major signs in identifying an attack, there is petit mal, where it may go unnoticed as the sufferer may stare, have temporary memory loss or an odd moment. The

³ The University of Melbourne, March 2009

⁴ The Asthma Foundation, July 2009

⁵ Epilepsy Action Australia, 2008

other is grand mal, which occurs when the sufferer suddenly cries out and falls to the ground; their body is rigid and with jerking movements. To ensure the sufferers safety the management of the condition includes clearing any objects that could cause potential harm and danger to the sufferer, but never restrain them or place anything in their mouth. Also, by reassuring them with comfort after the seizure has passed to calm things down and the application of DRABCD if the sufferer becomes unconscious. In all cases medical attention needs to be taken into action immediately.

Diabetes or diabetes mellitus, is a chronic disorder of glucose (sugar) metabolism caused by inadequate production or use of insulin, a hormone produced in specialized cells in the pancreas that allows the body to use and store glucose.⁶ Glucose then circulates the body which cells use to produce energy to function like our heart muscle to beat, without the insulin the glucose cannot enter the body's cell. Children's immediate benefits from regular physical activity and exercise are induced psychosocial wellbeing, improved cardiovascular fitness and reduced fat storage. Those children with diabetes however have the additional benefits from such activity may also include blood glucose control and enhanced insulin sensitivity. For these children when engaging in vigorous sports and activities it must be modified to have control in insulin therapy and the intake of nutrition so that the risks are outweighed by the advantages.

There are two type of diabetes, both are critical, but can be maintained for children whilst participating in sport. The first is hypoglycaemia (low blood glucose) where there is not enough insulin entering the cells of the body to produce energy. Symptoms for coaches to monitor are the physical signs, such as shaking, dizziness, fast heart rate, tired, weak, and sweating and a headache. If these symptoms are not treated the sufferer will follow onto becoming confused, slurred speech and drowsiness which may lead to unconsciousness. The management of the child includes quickly giving them a sugary substance such as a few jelly beans, teaspoons of sugar and afterwards allowing them to consume carbohydrates like a piece of fruit or a sandwich. In any case, if unconsciousness occurs apply DRABCD and call 000 immediately.

The second type of diabetes is hyperglycaemia (high blood glucose) where there is too much insulin produced and gradually builds up and passes out into the urine, therefore, causes constant urination and thirst from dehydration. Coaches would be able to look out for signs of this type of diabetes in children whilst during physical activity through the shown symptoms of the child feeling constantly thirsty, passing large amounts of urine frequently, an acetone smell in their breath, tired, dizzy or faint and a rapid pulse. If these symptoms are not treated the child may encounter blurred vision, suffer from drowsiness which could consequently lead to unconsciousness. In order to manage this condition of the child with hyperglycaemia DRABCD needs to be applied and the sufferer is to not be given anything to eat or drink and to seek medical attention.

As a whole, dealing with a diabetic child in sporting situations a coach would need to be aware of these things to reduce the risk. They would need to pay attention to specific dietary needs, monitor glucose levels, limitations of the child, ensure medication is taken appropriately, close supervision at all times and ensure all glucose supplements are readily available just in case.

Another sport medicine issue that addresses the needs of children and young athletes is thermoregulation. Thermoregulation is the maintenance of a steady body temperature regardless of changes in the environment. Children and young athletes however are more susceptible to climate-related illnesses as their ability to adapt to the change in body temperature during exercise is poor. They are unable to release heat easily as they have a much lower capacity to sweat, leaving the heat to build up within their bodies making them more prone to heat related illnesses compared to adults. This also impacts on the child's ability to respond to environmental heat and acclimatise to cold or hot conditions. It is advised for parents, coaches or teachers to not allow events to be played in 34 degrees or higher heat, provide a sufficient amount of shade to minimise the amount of heat

⁶ Kids Health. Tuesday 18th May 2010.

exposure, have children wear appropriate clothing that will cater for the hot or cold conditions, keep hydration levels high in the hotter conditions therefore allowing regular drink breaks and avoid any unneeded vigorous activities in extreme heat or cold conditions.

Participation in any sport, whether it may be a Roo-Ball game or recreational bike riding teaches children to stretch their limits and learn discipline and sportsmanship, however any sport also carries the potential for injury for children.⁷ Overuse injuries is a common injury amongst children in whatever sport they may play, due to the different growing rates of bone and soft tissue. It occurs when there is a repetitive action that places a fair amount of stress on the muscles and bones. The physical growth and development of children is the where children become the most susceptible to sports injuries. Due to growth spurts in a child their performance may go backwards, as there is a loss of flexibility and strength. Both parents and children should keep aware of ongoing aches and pains and let their coaches know so that training modifications can be accommodated to ensure that the athlete is not injured and to be aware of any potential overuse injuries.

Bones, muscles, ligaments and tendons are still growing until adulthood is reached, therefore, making children more prone to injury. As a result of growth plates (where the areas of developing cartilage where bone growth occurs in growing children) are not as strong to the nearby ligaments and tendons, children are more likely to bruise and sprain parts of their body. Overuse injuries and stress fractures may be caused by initial increased activity in a child who is unfit or the repetition of activity in an elite athlete. It is important that coaches and parents become suspicious of an overuse injury in a child that they are checked out immediately by a healthcare professional. Children who are involved in competitive sports who have training sessions increased such as gymnasts who suffer from repetitive loading of the wrists can injure distal radial growth plate; these are examples of those who are at the most risk. The work of physiotherapist who are trained in assessing these types of injuries are well equipped to provide information, treatment and advice to allow the child to continue to play sport as well as the prevention of injury to their bodies later on in life.

Other ways that overuse injuries are triggered are due to coaches that do not allow an adequate warm-up to be conducted, the child uses improper technique, participates in the same sport all year round, the use of unsuitable equipment or growth spurts and an imbalance between strength and flexibility. In any of these cases overuse injuries do heal quickly in children but it is important that the child establishes the activity restrictions and strengthening programs to prevent any re-injury occurring.

Every child is different in their physical and mental abilities, prior experience, interest levels and all carry their own individual goals. When designing a resistance training program all these factors need to be considered as it will help improve a child's overall health and sense of psychosocial wellbeing. Specific resistance training programs are aimed to help strengthen muscles to prevent injuries occurring. However all sessions undertaken by children must be supervised by trained professionals and children should only train two to three times a week for no longer than thirty minutes per session. High intensity strength training should be avoided at all costs for children until puberty is reached as long-term skeletal abnormalities can result. Regular exercise is preferred as it doesn't have significant impact on the body other than the reduction of body fat and increase muscle mass and body weight, which is all a child needs to keep healthy and fit. Some children however may be biologically mature enough to perform in higher order programs where as some are not, considering there are no age restrictions, recommendations or guidelines for different training programs, it is solely up to the child's development and the educated decisions made by coaches, trainers, parents and professionals.

In conclusion the role of sports medicine in addressing the demands of children and young adults is an important issue that needs to be considered, thought through and acted upon by the child, parents, trainers and coaches. Whether the demands may be critical or minor each impact greatly

⁷ Joseph A. Congeni, MD. November 2008.

on a child's life with both long and short term consequences that could be potentially dangerous and detrimental to their well-being. Sport, exercise and physical activity is an experience for every child and the risks of damage or further re-injury are not worth overlooking when the child's health is the most important aspect along with fun, enjoyment and a learning experience for life.

Bibliography

- The Free Dictionary. 2010. *Sports Medicine*.
<http://medical-dictionary.thefreedictionary.com/sports+medicine> (accessed 26th May 2010)
- American Academy of Orthopaedic Surgery. August 2007. *Return to Play*.
<http://orthoinfo.aaos.org/topic.cfm?topic=A00365> (accessed 31st May 2010)
- The University of Melbourne. March 2009. *Sport and Children*.
http://www.betterhealth.vic.gov.au/bhcv2/bhcarticles.nsf/pages/Sport_and_children (accessed 8th June 2010)
- The Asthma Foundation. July 2009. *All about Asthma*.
<http://www.asthma.org.au/Default.aspx?tabid=178> (accessed 8th June 2010)
- Epilepsy Action Australia. 2008. *Understanding Epilepsy*.
http://www.epilepsy.org.au/understanding_epilepsy.asp (accessed 8th June 2010)
- Kids Health. Tuesday 18th May 2010. *Diabetes*.
<http://www.cyh.com/HealthTopics/HealthTopicDetailsKids.aspx?p=335&np=285&id=1722>
(accessed 8th June 2010)
- Joseph A. Congeni, MD. November 2008. *Preventing Children's Sports Injuries*.
http://kidshealth.org/parent/nutrition_fit/fitness/sports_safety.html# (accessed 9th June 2010)
- Boyd, A, Eussen, A, Lumley, D, O'Halloran, M and Sculley, L. 2010. *PDHPE in Focus*.
McGraw Hill Australia.