

STROKEARCS

The Newsletter of the Association of Rowing Coaches, South Africa

No 52 July 2010

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PHYSIOLOGY

SOME FEATURES OF THE ANATOMY AND EXERCISE PHYSIOLOGY OF CHILDREN, RELATING TO TRAINING

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Although children between 11 and 16 are the fittest section of the community their activity patterns are continuously falling. One important cause of this is that, at least in Great Britain, school sport is declining. With this background of falling activity the health of the future adults will depend increasingly on coaches to instill an enthusiasm for lifelong adherence to health-related activity patterns.

As children show considerable and important differences in their bodily responses to exercise, compared to adults, it is important that coaches are aware of the more important differences to avoid imposing undue physical stress on their young charges.

Against this background the author discusses some anatomical and physiological aspects which must be considered when coaching children and adolescents. He arrives at the conclusion that the safest course for the coach is to plan shorter periods of activity than would be the case in an equivalent adult squad.

In coaching situations there should be frequent short rests, with exercise periods of about 15 to 20 minutes. Especially pubescent girls who may be new to menstruation should receive sympathetic treatment in the sports / exercise situation.

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Children from 11-16 are relatively fit; indeed they are the fittest section of the community. The worry is not children's fitness, with its high genetic component, but their low activity patterns - because much evidence suggests that it is these patterns of childhood activity which, to a considerable extent, determine their future activity patterns as adults. Inactivity now ranks as one of the major items most amenable to positive change among those implicated in the causation of coronary heart disease (CHD), along with smoking, diet, high blood pressure and being overweight (sedentary lifestyle increases the CHD risk by a factor equivalent to smoking 20 cigarettes per day). Thus, quite apart from the pleasure of sporting success and the sheer enjoyment of sport - it would seem especially important to tackle the inactivity habit at source, namely in childhood.

As children show considerable and important differences in their bodily responses to exercise, compared to adults, it is important that coaches are aware of the more important differences to avoid imposing undue and unwitting physical stress on their young charges, possibly giving them negative feelings about sport - and hence exercise. I will discuss the anatomical side first, followed by physiological aspects.

Anatomy

Growth spurt

Children do not grow at an even rate, but in a series of fits and starts, by far the greatest of which is the 'adolescent growth spurt' which occurs around puberty, in which children may grow up to 15cm over its two-year duration. This in itself may well upset techniques in the high body-skill athletics disciplines such as high jump, pole vault, and long and triple jump. The growth increase commonly starts at any age between 10 and 12 in girls, and between 12 and 14 in boys, although in both it may start even later, or occasionally earlier. This brings two sports problems. Those who enter the growth spurt early often do very well in age-group athletics, so become used to success without training very hard. In their later teens however, when their slower-growing peers catch up, they are unused to being beaten, and often drop out of the sport. Equally, many of the later candidates for the growth spurt may feel hopelessly overpowered from the start, and believe simply that they are 'no good at sport'. Thus both ends of this normal distribution should be spotted, and counseled accordingly.

Skeleton

Before the growth spurt, both sexes are much the same in terms of their skeleton, but afterward the girls end up with broader hips and the boys with broader shoulders, on average. The boys also tend to have relatively longer and straighter arms. Their broader hips, with resulting more steeply angled femurs, may cause some girls to throw out their heels when running, so attention needs to be paid to running technique. Also, more sharply angled thighs with most of the muscle on the lateral aspect leads to greater lateral forces at the knee, as the quads exert a 'bowstring' force at the patella, tending to push it outward. This can be a factor in the condition of chondromalacia patellae, one cause of 'runner's knee'.

One preventive measure, which can be started soon after puberty in the broader hipped girl, is for her to strengthen the vastus medialis muscle, which is the only one of the quadriceps group to exert force medially on the patella, i.e. it works to counteract the bowstring effect just described. A good medialis exercise consists of five to ten reps of slowly straightening the leg under a moderate load (about 60 per cent of maximum), on the quads station of a multigym for example, and holding it straight for about five seconds before relaxing. Even daily straight-leg 10 second isometric contractions, under a desk, or in a bus or car for example, are beneficial.

Nine-year-old boys and girls have virtually the same bi-acromial breadth across the shoulders, but by the age of 19, males are about 4 cm broader. The longer arms and greater shoulder breadth and associated muscle mass of the boys explains the greater relative difference in upper body strength compared to the lower body, between the sexes. It is illustrated by the difficulty many older girls have in doing press-ups, although they may have very respectable vertical jump scores. For the same reason, females more closely approach male performance in running events, compared to the throws.

This widening of girls' hips causes a fall in their centre of mass, hence they tend to become more stable. In contrast, the boys' rising centre of mass renders them less stable, which may be reflected in the balance beam being a gymnastic discipline for females but not for males. This same factor disadvantages older girls in the high jump.

Some girls develop a pubertal valgus or 'carrying angle' in their arms, shown when they hold their arms by their sides, palm facing forward, when the forearm is seen to bend laterally to a varying degree. Many girls who have been active in sports involving the arms since well before puberty, e.g. artistic gymnastics or swimming, have two relatively straight arms, or in tennis, one straight arm (the racket arm). A girl with a marked valgus angle who wishes to take up javelin throwing for example, might encounter elbow problems, and may be better going for the shot or discus.

Bone damage

The long bones of the limbs grow from the epiphyseal plates, which may be damaged by severe and excessively repetitive overload-stress before full growth is attained. However, correct programming allied to good techniques in weight training does not seem to bring about bone problems in young athletes. Anabolic steroids given before the completion of growth (as exemplified by recent reports on 14-year-old girls in South Africa) may stunt growth by calcifying the epiphyseal plates and stopping further lengthening of the limb bones.



In the arm, relatively little growth occurs at the distal end of the humerus, or at the proximal end of the radius and ulna, but in the leg, most of the growth of the femur, tibia and fibula occurs at the knee, so children's fractures around the knee must be rehabilitated with particular care.

Complete fusion of tendons to their respective apophyseal locations on bone occurs at different ages between 12 and 20 for different sites, potentially leading to a number of 'traction' injuries, e.g. Osgood-Schlatter's disease at the tibial tuberosity (12 to 16) in young runners and jumpers, or Sever's disease at the calcaneum of the heel (10 to 13) again in young runners and jumpers. The iliac crest, at the top of the hip bone, is especially vulnerable to 'apophysitis' between 14 and 17, especially in events involving twisting the trunk, such as in the throwing events and in hurdling. Similar apophysites may occur in the shoulder and arm in young throwers. Such traction stresses, associated with 'crescendo pain', occur particularly through high repetition training.

Body fat

During early childhood, boys and girls have much the same amount of body fat, at approximately 16-18 per cent. Through puberty, girls are programmed by their increasing hormones to lay down more fat, specifically in the

breasts, hips, thighs and triceps, while boys correspondingly reduce their fat. Thus by 18, the girls' body composition may include 24-28 per cent fat, but with only 12-16 per cent in boys. In girls these fat changes lead to a relative lowering both of aerobic power and of muscle strength and power, so coaches should be on the look-out for this.

Some adolescent girls are particularly sensitive to body-shape changes in terms of their perceived body image, and if coaches and others over-encourage leanness, they may lapse into anorexia nervosa. A significant proportion of older girls, already with a tendency to anorexia, come into sport because it seems to legitimize leanness! Again, the coach should be on the look-out for this, from around 14 years onward. This subject is worth taking very seriously, as the eating disorders carry a mortality rate of up to 15 per cent. The problem does also occur in males, although more rarely.

It is worth noting that many obese children are not necessarily greedy. Part of their fat build-up is due to fairly normal levels of eating, but with very low levels of exercise. Even when playing sport, whether swimming, hockey, football, rugby etc. - they often do far less physical work than their non-obese peers. So again it is worthwhile for the coach to look out for this, and to try gently to increase the workrate of the plumper children in recreational athletics, who may often be directed toward the more static throws, rather than the more calorific runs (in football and hockey they are often put in goal; and in swimming they stay warmer; so have less incentive to keep active!).

Physiology Menarche

Menstruation normally starts during the other reproductive changes of puberty, namely mammary development, pubic hair, and shape changes. There is some evidence that menarche and indeed puberty itself may be delayed in youngsters who have been intensely involved in very physical sports from a very young age.

As a rule of thumb, it has been suggested that every year of hard training undertaken before menarche, delays it by five months. The thin runner of 15 may partly be a result of the sport itself. In addition, very intense exercise, especially sustained aerobic exercise such as distance running, may, through the hypothalamic-pituitary-ovarian axis, stop menstruation from occurring at all - or stop it once it has occurred. About 70 per cent of women runners training over 70 miles per week will expect to have partial or complete amenorrhoea. Amenorrhoea implies low oestrogen levels, which in turn may lead to calcium loss, giving a degree of osteoporosis. This may lead to susceptibility to stress fractures - and it may very well lead to skeletal problems in later life by lowering the post-menopausal fracture threshold. So coaches should keep a watchful eye on keen young female runners who have gone through puberty, but who show oligomenorrhoea (irregular periods) or amenorrhoea. Lowering the training volume (ideally so that the athlete has about four periods per year), increasing the food intake and increasing the (skimmed) milk intake, (and even introducing the contraceptive 'pill' - with its oestrogen component), may all help. Medical advice should of course be sought.

Aerobic

The aerobic side of exercise involves heart, lungs, blood and the muscle fuels used. Heart rates in children may reach 220 or even 225 before puberty, but tend to fall to around 200 in their late teens, so the coach should not worry on finding such high rates in exercising youngsters. Also, children tend to breathe faster than adults, reaching 60 breaths/minute compared to 40/minute in adults doing equivalent exercise. Compared to adults, children need to breathe more air to get the same amount of oxygen, i.e. their 'ventilatory equivalent for oxygen' (the number of liters of air to gain one liter of oxygen) is higher. This is wasteful of energy and body water (in the breath).

Occasionally it may lead to 'hypocapnic tetany', whereby very high respiratory rates may lead to an excess blow-off of carbon dioxide, which increases the blood pH or alkalinity, affecting blood calcium and nerve function, and leading to a degree of spasm in feet and hands, and numbness around the mouth.

Such hypocapnia may occur in the heat, as in training and competition in summer, but increasing numbers of cases are being reported outdoors in winter — for example from junior rugby matches. The condition is not at all serious but the young victim may panic, and alarm onlookers. A simple cure is to get the child to re-breathe his or her own air for a few minutes, (e.g. from a paper bag) so raising the carbon dioxide and normalizing the pH levels.

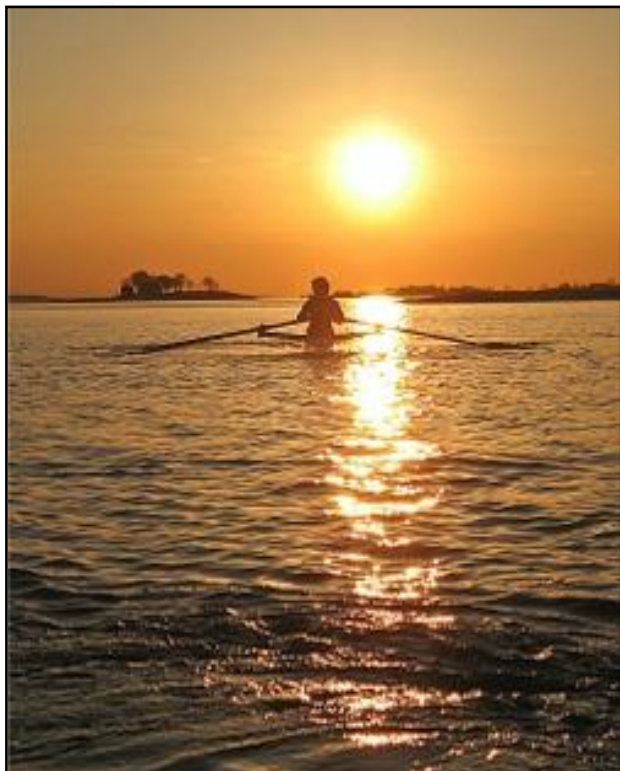
Children's muscle tends to use more fat as fuel than glycogen or glucose. However, for the same amount of energy, approximately 10 per cent more oxygen is needed, if fat is the substrate compared to glucose/glycogen, so it is a less efficient fuel. Children also tend to utilize glycogen or glucose more slowly the younger they are.

Thus the younger the child, the less efficient aerobically, they are made worse by relative biomechanical inefficiencies, in that the lengths of younger children's limbs are not completely in 'kinetic balance' with their

muscles. They also have proportionately less body mass in muscle - some 28 per cent in young children, compared to 35-40 per cent or more in the late teens.

So in walking or running, the younger the child, the harder they have to work, relatively, to keep up with even a slow adult on a moorland or hill walk, or on a training run. Interestingly, riding a bicycle evens-out much of the difference between younger and older children, and children and adults, partly through its gearing, and partly because body weight is supported, thus compensating for the lower proportion of muscle (the smaller engine) in the young child's body.

Nevertheless, young children incur less of an oxygen deficit at the beginning of exercise - i.e. they get their 'second wind' quicker. As their deficit is less, so they also recover quicker. They also have higher 'anaerobic thresholds' than adults, and in this, oddly enough, they resemble trained adult endurance runners.



Anaerobic

On the anaerobic side, the younger the children, from about 8 to 16, the lower the proportion of anaerobic energy they can generate, and the lower the levels of lactic acid in blood. Thus, the younger the child, the less they have a built-in fatigue mechanism. An important physiological function of fatigue is to prevent muscle damage through excessive effort. Young children, without the same early-warning fatigue system as their elders, can easily be pushed in team or individual coaching sessions to the point where they are overheated, dehydrated and distressed.

Heat regulation

Children produce more heat per kilogramme body weight than adults, but their thermoregulatory system is not as good. This is partly because they sweat less. For example, a 12-year-old boy may sweat 400ml per square meter of skin per hour, compared to an adult man's 800ml. Girls and women sweat proportionately the same, although less in absolute quantity terms. Children also tend to have higher skin temperatures, which hinder the flow of heat from body core to the periphery. However,

children have a proportionately greater skin surface area the smaller they are. A young adult weighing 64kg will have a surface area of about 1.80 square meters; An eight year- old weighing 25kg will have a skin area of 0.95 square meters, i.e. 36 per cent more surface area per unit of weight. This helps to correct thermal imbalances, but can be a disadvantage when running in direct sun (or swimming in cold water) - with the possibility of a faster rate of overheating (or of overcooling).

Perception of exertion

Thus it can be seen that the younger the child, the less are the built-in protective mechanisms evident in the late teenager or the adult. This is all made worse by the fact that young children's perception of the severity of exercise is less the younger they are. Adults, or late teenagers, working maximally on a treadmill (or a rowing, canoe or cycle ergometer) will indicate 'maximum' on the Borg scale of perceived exertion. But young children, also working at or near their maximum will often indicate just above mid-way on the scale. Their perception of severity is less. Adults sensibly stop when exercise is too hard; children tend to press on. In sports and training situations, this can lead to their overdoing it, and becoming genuinely exhausted, over-heated and possibly dehydrated.

In summary

The safest course is for the parent, coach or teacher to plan shorter periods of activity, where feasible, than would be the case in an equivalent adult squad. In coaching situations, there should be frequent short rests, with exercise periods of about 15-20 mins, and the children should drink, even 75-100ml of water or squash, in the breaks. Any who look over-heated should be checked. As an overall policy, the large, the small, the fat and the very thin should all warrant extra observation - they all may have their own problems.

Pubescent girls who may be new to menstruation should receive sympathetic treatment in the sports/exercise situation, as should children of both sexes who may have problems with 'constipation-with-overflow', and those with 'crescendo limb pain'. Not all reluctant sports-children are wimps! Even those who are, need quiet encouragement and sensitive handling to help them gain or regain their confidence.

PSYCHOLOGY

EMOTIONAL PREPARATION FOR THE OLYMPIC GAMES

By Cal Botterill, Ph.D., who is a professor at the University of Winnipeg where he teaches sport psychology, growth and development, issues in sport, and psychological skills in sport and life. He has worked with seven world championship teams and athletes as well as numerous Olympians.

Is it possible to emotionally prepare for the Olympic Games? My initial reaction is that it is not easy, and although there are important things an athlete can do, it is probably impossible to totally prepare emotionally for such an experience. There is no denying how special the Olympic Games have become. The fact that they only occur every four years means that even top athletes often only get one shot at them in their prime; for many others, the cycle of "peaking" in their careers just doesn't work out for an Olympic opportunity.

The history of the Olympic Games going back to early civilizations, the gallant ideals of the Olympic Movement, and the public and media interest in the agony and ecstasy of Olympic striving have created an almost irrational and irreverent mystique and aura around the Games.

The heartbreak, the exhilaration, the breakthrough accomplishments, and the team effort, even in relatively unknown sports, have captured the hearts and attention of people around the world in a very personal and emotional way. Most medal ceremonies bring tears to the eyes of those watching and listening, and we feel the emotions involved.

Even vicarious experience of an Olympics can exhilarate and drain us emotionally. If someone we know or love is involved, we are likely to feel the full spectrum of emotions before the experience ends.

For athletes and coaches, the "magnitude" of the Olympic Games is hard to prepare for because there really is no experience exactly like it. World championships and World Cups produce outstanding competition and increasing commercial interest, but there is absolutely nothing like a visit to an Olympic Village where top athletes from every part of the world are attempting to peak in a wide range of sports, coping at the same time with a huge international following.

Over the years, many athletes have gone to the Olympic Games and have later admitted to being "blown away" by the distractions, emotions, and aura of the Games. The commercial aspect of the Games can also be overwhelming, especially for those from less well-known sports. The media attention can be both exhilarating and disruptive. The entertainment options can be mind boggling with star entertainers often performing in the Village itself.

It is hard not to star gaze when interacting with the world's greatest athletes. An unbelievable range of music, language, customs, food, uniforms, costumes, and cultures from around the world floods the senses. The Olympic Games experience is craved by millions and experienced by few, For those who make it, the Olympics is an exhilarating festival and celebration. To be a satisfying experience, however, calls for perspective and focused excellence.

In order to prepare effectively for the Olympic Games, it is important to consider emotional preparation as well as technical, tactical, physical and mental preparation. Emotional preparation is related to and can influence all the other aspects of preparation, but it is probably most closely related to mental preparation.

In my estimation, when mental preparation breaks down or isn't adequate, it is often because emotional preparation and management were not considered or were not accomplished well enough. Our feelings are what make us human, and they are the most difficult part of our total behavior to control and manage. Dr. Bill Glasser (1984) has identified the four key aspects of total behavior:

Clearly, all aspects of behavior and preparation interact and influence one another. Therefore, managing physiology and fitness as effectively as possible can help give an athlete the physical capacities and physiological state to help optimize feelings, focus, and performance.

As well, technical, tactical, and mental preparation can have a lot to do with optimizing times, strategies, thoughts, and behaviors to facilitate performance. Pre-competition plans, competition focus plans, and refocusing strategies can all have an important impact on feelings and focus.

Perhaps it is more than anything the refocusing strategies that begin to sensitize an athlete to the importance of emotional preparation. In order to be able to focus or refocus in distracting emotional conditions, it is critical to have a competition focus plan and a pre-competition routine.

In addition, it is critical to consider the full spectrum of emotions that an athlete might experience at the Games. Dr. Bob VaRerand (1984), who has done an extensive review of emotions and sport, acknowledges that there is a tremendous spectrum of feelings that humans can experience, but suggests that there are seven basic emotions (or categories of emotions) that seem to define being "human." These are fear, anger, guilt/embarrassment, surprise, sadness, happiness and interest.

In addition, there are variations or combinations of these basic emotions including resentment, jealousy, and envy. It would not be surprising to find Olympic athletes who have experienced extremely strong feelings in every category as part of their experience at the Games. For the most part, happiness and interest are a big part of what it is all about. Feeling ecstatic about being involved, grateful to be here, and excited about the opportunities and challenges produce a flood of positive emotions. I remember Jay Triano commenting at the '84 Olympics in Los Angeles that it was more than anything he could have imagined! There were strong feelings of surprise even though Jay was one of the most creative and deeply prepared athletes I have ever met. Along with the positive surprise possibilities, there are also negative surprise possibilities. At one moment Jay would admit he was almost overwhelmed by the positive surprise occurrences - Lionel Richie singing in the Village, Michael Jordan getting ready to play Canada, NBC interviews, expensive new uniforms, and on and on. Emotions, though, are known to swing and the next day, when practicing at a remote high school gym, the media are off covering other sports, local transport is delayed in traffic, or the team loses a game it should have won, the Village can seem remote and lonely. After years of preparing for positive excitement, the effects of negative surprise can be emotionally draining and debilitating.



Jay would admit that the times the Games were less than he ever imagined were every bit as difficult to cope with and maintain focus through as the "highs." Athletes clearly have to be prepared for considerable fluctuation in their emotions as well as the range in their feelings.

Surprise can also come in the form of opponent behavior or performance, officiating, playing conditions, weather conditions, crowd conditions, teammate behavior or emotions, or media scrutiny. Clearly, it is critical to be emotionally prepared for a variety of surprise conditions so the ability to refocus is not delayed or affected by the strength or depth of the feelings.

Fear, anger, and maybe guilt or embarrassment often accompany negative surprise. Because the Olympics are perceived as being so important, it is not at all unusual to be flooded with negative emotions the moment a negative surprise presents itself.

It is important to remember that all these emotions have functional value. Fear, for example, can trigger preparation, prevent complacency, and facilitate focus. On the other hand, if an athlete is not ready for possible and likely fear feelings in this setting, the emotion can be debilitating.

For an athlete, anger can be a call to compete, to fight and perform for what he or she is entitled. Like so many emotions, anger is important to respond to but not overreact to! If and when anger is felt, an athlete needs to be prepared to channel the energy it produces into dynamic, responsive, constructive performance rather than allowing it to lead to discipline or attention problems.

The source of anger can be an opponent, a teammate, an official, a delay, conditions, or the athletes themselves, which leads to another important emotional category: guilt/embarrassment.

Guilt and embarrassment are related and have a lot to do with our ability to respond to mistakes or disappointments and our feelings of obligations towards others. An athlete may feel embarrassed if an unheralded opponent surprises her and she does not initially perform as well as she should against her. If an athlete is not ready for this possibility, it is easy to also start feeling "guilty" about not preparing better and possibly letting teammates down.

The athlete who is emotionally ready for these feelings can quickly channel the energy from them into effort, increased attentiveness, learning, and growth.

Probably the main functions of surprise related emotions are to trigger learning and coping responses. They test our adaptability and ensure that we don't become bored or complacent. These emotions obviously have survival-tested functional significance. The key then is for an athlete to appreciate the value of negative emotions, qualitatively prepare for their occurrence, and use their energy to respond effectively.

All emotional categories have energy with the exception of sadness, which clearly has functional value in grieving and recovery. After grieving (sadness, low energy, reflection, melancholy), we usually end up grateful to be alive (happiness) and refocused on the opportunities/challenges of life (interest). Sadness has been experienced by many Olympic athletes, probably never more deeply than in 1972 over the massacre of Israeli athletes and coaches in Munich.

Sadness can be very sensitizing and it can help an athlete regain perspective and priorities, things that can sometimes get lost in the magnitude of the Games. On the other hand, sadness is low energy so athletes wanting optimal results at an Olympics cannot afford to let themselves dwell on feelings of melancholy, reflectiveness, or self-pity.

It is critical to recognize that these feelings may well occur at an Olympics. It is important to be prepared if they occur and to be able to "let go" and move on to more energizing emotions.

It is also important to remember that an athlete who is not emotionally ready for some of the other emotions or feelings and who does not respond quickly and constructively enough can often end up sad or feeling sorry for himself. If, for example, surprise from an unheralded opponent produces embarrassment followed by feelings of guilt and the athlete does not respond quickly and dynamically enough, the result may be continued impairment of performance as the athlete starts to be flooded by sadness, reflectiveness, self-pity, and so on. Later on, of course, the athlete will be very frustrated with this response.

Similarly, if fear or anger dominates for any length of time without constructive responses, they usually lead to frustration, then exhaustion which is usually correlated with such emotions as sadness and melancholy. It is clear then that athletes should understand and accept the spectrum of emotions we experience as human beings. It seems crazy to prepare technically, tactically, physically, and mentally for thousands of hours to optimize potential on one special occasion in their lives and not carefully consider emotional preparation. Feelings sometimes have every bit as much to do with performance as focus, fitness, skills and tactics. It is important to go over the spectrum of emotions an athlete might experience and rehearse effective responses to these feelings. Rehearsal produces a form of emotional stress inoculation which tests an athlete's response and readiness for those feelings, many of which are inevitable around important competitions.

A review of mental and tactical plans should first identify potential situations where these emotions may be a factor and then develop and rehearse effective responses. With so much at stake, athletes want to be mentally tough and emotionally resilient.

- Review the seven basic emotions that human beings feel.
- Imagine situations at the Games that could trigger each of these emotions.
- Feel the feelings deeply and passionately.
- Let go; accept that strong feelings can be functional and understandable.
- Rehearse effective responses in the midst of or following, these powerful feelings.
- Simulate circumstances and situations that will help you to more fully experience your emotional reaction and response.
- Enjoy the feeling of being emotionally "inoculated" and ready for any feeling, challenge, or change.

Emotional preparation involves emotional management. There are a number of important aspects to work on and maintain going into an Olympics. Each involves "capacities" and a "state." Physical fitness, for example, needs to be refined through a taper [Coaches Report, Vol. 2 No. 31 so that key physical capacities are developed or maintained without draining physical, mental, or emotional reserves through overtraining . Emphasis shifts from quantity to quality training with great hydration, nutrition and rest patterns to help optimize one's physical, mental, and emotional state.

Good fitness management, however, dictates that there is enough quality training and "work" for therapeutic effects, confidence, and concentration. Mental fitness is also a set of capacities and a state. It is important for an athlete to work on and maintain mental skills during the countdown stretch. Visualization, imagery, relaxation, energizing, "parking," focusing, relationship management, and time management can all play a critical role as an

athlete refines these skills as part of pre-competition routines, competition focus plans, and refocusing strategies.

Once again though, it is important to ensure that the athlete not get overloaded with too many cognitive or mental demands as the Games approach. The resulting stress and distraction can mask mental skills the same way physical overload or poor nutrition can mask physical capacities. The result, of course, can be emotional, mental and physical drain.

Being clear minded should be an important objective going into the Games. Once again though, it is critical to feel focused and occupied and to avoid falling into the human tendency to start overanalyzing. It has been suggested that "nothing never happens"; in the absence of a constructive focus our minds sometimes start "over-thinking" or "over-perceiving."

- - Enjoy the emotional spectrum that is part of life.
- - Accept and experience feelings, let them go, and channel the energy into growth and effective responses.
- - Respect the power and positive and negative significance of emotions on your system.
- - Manage relationships and time so that you do not become emotionally drained at key times in your life, especially when working hard physically and mentally.
- - Let go of irrational beliefs and perspectives.
- - Reaffirm your mission, values, and perspective.
- - Live. Never have to say, "I wish I would have ..."

An athlete should be confident in mental skills going into the Games. Responses to stress and boredom should automatically be constructive, and time and relationship skills should be crisp and effective. Creative simulations, quality training sessions, and lead-up competitions can help ensure the rust is off attention and competitive skills during the countdown.

Simulations also play a critical role in developing emotional fitness. By simulation and rehearsing responses to some of the most demanding, distracting, or emotionally disturbing possibilities, an athlete tests emotional skills, capacities, and responses.

It may not always be fun to prepare for the full spectrum of emotional possibilities but with practice, athletes develop an inner confidence in their capacities to maintain focus and respond effectively.

The athlete becomes mentally tough and learns to accept, harness, and respond to the full spectrum of emotions. She begins to see that all emotions are functional and is able to manage them a lot better. She becomes emotionally resilient, knowing that a wide range of emotions for energy and feelings can be called on. It is critical that an athlete not allow himself to become emotionally drained prior to or during the Games. Once again, emotional skills and capacities can be eroded if the emotional state is allowed to deteriorate.

Emotional exhaustion is probably the key component in burnout and overtraining. It is amazing what human beings can do physically and mentally, but it is usually emotional exhaustion that buries them. Therefore, it is critical to make emotional management an important part of fitness and countdown considerations.

There have been stories of phenomenal emotional resilience in sport. Witness Sylvie Frechette's performance at the Olympics after her fiancé's suicide, and her classy response after initially losing the gold medal on a judging system effort! There are phenomenal stories that demonstrate that we can sometimes draw on "emotional reserves" we do not even know we have. On the other hand, athletes going into an Olympics striving for personal best in a very emotional environment should try and be sure their emotional reserves are not depleted. If possible, things like relationships with loved ones, school or career demands, health risks, opponent hostilities, financial pressures, community or environmental concerns, and media pressures should be managed to minimize emotional drain prior to and during the Games.

It is important to have recently "tested" the full range of emotions and rehearsed effective responses. It is equally critical to be emotionally rested and able to call on the full spectrum of feelings and responses to optimize potential in challenging circumstances.

Emotions and perspective

Another important part of emotional management is to periodically check perspective. It is important to be on a "mission" to accomplish a personal best at the Olympics, but in spite of all the hype, aura, and mystique of the Games, maintaining a rational perspective is critical.

Checking to ensure irrational beliefs or perceptions do not develop can prevent a lot of emotional turmoil and pressure. Because the Olympics happen infrequently, it is easy to exaggerate their perceived importance to the point where the athlete starts feeling that self-worth and life are on the line. The Olympics are an exciting opportunity, but they do not determine an athlete's worth as a person. That is determined in so many other ways. Witness Olympian Johann Olav Koss and his life beyond sport, raising support for hospitals and charities, and pursuing meaningful career opportunities.

Similarly, Dan Jansen's accomplishments as an Olympian pale in comparison to his relationships with his family, including handling the loss of his sister to cancer and the love and support of his family through heartbreak in pursuit of excellence.

Feelings of patriotism and responsibility to others can lead an athlete to thinking he or she must perform for others. Narrowing this perception and pressure to wanting to perform for self and teammates is much more rational and emotionally less stressful.

The high standards and ideals of an Olympics can also lead to feelings of needing to be perfect. Perfection by definition and reality is impossible, so it is important for an athlete to rationally remind herself that the Olympics are about the pursuit of excellence. Striving for situational, personal, and team excellence is what it is all about, and if mistakes, setbacks, or challenges occur in the Games, it is important to be ready and enjoy the challenge of responding optimally.

With the stakes so high, we expect that things will and must be fair. Close scrutiny reveals countless Olympic situations that do not appear personally or professionally fair. The judging mishap in Sylvie Frechette's case or runner Mary Decker's fall due to crowding during the 1984 Olympics middle distance event are examples where the world doesn't seem fair!

It is important then to be prepared for the possibility that an athlete may not always have a level playing field and should be prepared to respond to adversity if it occurs. An expectation that everything will always be fair can lead to considerable emotional frustration and fluctuation. On the other hand, someone who has developed a "no excuses" outlook and has prepared for the many challenges and emotions of the Games is lot more likely to accomplish a personal best.

Cliff Wurtak, an elite ringette coach preparing for the Canada Winter Games, suggested that his athletes adopt a simple outlook in preparing and participating - "Never have to say I wish I would have!"

This sentiment suggests clearly that it is important for an athlete to do everything possible to physically, mentally, and emotionally prepare for the Games. It also suggests that the athlete be ready to be assertive, feel license to go for it, and make the most of the opportunities presented. And it suggests that the athlete be ready to fully experience and respond to the emotions and challenges of the Games.

I would say to each of our Olympic athletes: Walk away knowing you gave it your best shot and exulted in the opportunity to test yourself in one of the most prestigious and emotional environments in the world. Accept that you can never totally control your emotions that is part of the challenge of being human. With emotional preparation, practice, and management we can often come closer to our situational potential.

Compete with passion, perspective, and preparation and be all you can be as you pursue your Olympic destiny. I wish you physical prowess, a clear mind, and an unburdened heart. Citius, Altius,, Fortius!

References: Glasser, V 1984. Control Theory, Harper & Row, New York. / Vallerand, R.J. 1984. "Emotion in Sport," Cognitive Sport Psychology, Straub, W., and J. Williams (eds.) Sport Science Associates, Lansing, New York