Journal of Capital Development in Behavioural Sciences Vol. 9 Issue 2 (September, 2021)
Faculty of Arts & Education, Lead City University, Ibadan, Nigeria
***ISSN Online:** 2449-0679 **ISSN Print:** 2354-3981*

Relaxation Techniques on Athletes' Performance in Sports: An Overview

Esther M. OLADEJO
Department of Kinesiology, Sports Science and Health Education
Faculty of Arts & Education, Lead City University
Ibadan, Oyo State, Nigeria
Email: mojiski@yahoo.co.uk/+234 8025959694

Abstract

Sport is characterised by both positive and negative emotions, which can harm athlete's performance. Emotions such as stress, anxiety, anger, even excitement can impact their performance. Sometimes athletes get tensed-up such that it prevents them from performing their best at crucial times. Also, success in sports is determined partly by physical conditioning, skill and preparation but it is also influenced by psychological factors such as self-confidence, motivation, concentration and emotional control. When two athletes of equal and often unequal ability compete, the athlete with mental edge most often emerges as the winner. Athletes can achieve this edge with the use of mental skills training. One of these mental skills training is a relaxation technique. Relaxation can be defined as a psychological strategy used by sports performers to help manage or reduce stress-related emotions (for instance anxiety and anger) and physical symptoms (for example physical tension and increased heart rate) during high pressurized situations. There are many types of research indicating that relaxation technique benefits athletes by enhancing self-confidence, concentration, performance, reducing anxiety and stress, blood pressure as well as muscle tense. Relaxation can be done individually or in a group. It is the focus of this paper to examine the influence of relaxation techniques on athlete's performance in sports. Also, different types of relaxation techniques are discussed all of which, can be used to help the athlete relax and perform optimally in their sports.

Keywords: Anxiety, Athletes, Relaxation techniques, Sports performace, Stress.
Word Count: 234

Introduction

The sports environment is highly demanding for athletes. Also, success and failure in competitive sports, especially at high levels can produce extreme anxiety and stress for athletes, even coaches. Hence, the athletes need adequate recovery, without which optimal performance is not attainable.

Sports and exercise psychologists have long studied the causes and effects of stress and anxiety in the competitive athletic environment and other areas of physical activity. Considering how stress-provoking competitions can be for most athletes, there is the need to reduce this anxiety and stress. Relaxation is of great importance to any athlete striving for peak performance. Relaxation skills can help athletes reduce mental (self-doubts, worry, to mention few) and physical anxiety (nausea, shaking, to mention few), while increasing concentration and performance. It can help with both mental and physical anxiety as well as stress. When an athlete experiences worry and negative thoughts (cognitive state anxiety) it causes decision making to become poor and concentration levels to drop, it also increases the number of errors. This can be monitored by the increase in somatic state anxiety responses, which include an increase in heart rate, sweating and blood pressure. Some of these symptoms of anxiety are beneficial to sporting performance but if the athlete perceives them as happening because they are unable to meet the demands of the activity they further increase cognitive state anxiety. Relaxation has been defined as a psychological strategy used by sports performers to help manage or reduce stress-related emotions (for example, anxiety and anger) and physical symptoms (for example, physical tension and increased heart rate) during high pressurized situations. There are many types of research indicating that relaxation technique benefits athletes by enhancing self-confidence, concentration, performance, reducing anxiety and stress, blood pressure as well as muscle tense. This article focuses on anxiety and stress that some athletes encounter before and during the performance. It looks into a general overview of anxiety and stress. Also, various relaxation techniques that can be used to manage stress and anxiety are discussed.

General Overview of Anxiety

Anxiety is an unpleasant emotion, characterised by a feeling of worry, apprehension nervousness or tension associated with physiological activation or arousal (Weinberg and Gould, 2016). It can also be viewed as an unpleasant psychological state in reaction to perceived stress concerning the performance of a task under pressure (Cheng, Hardy and Markland, 2009). According to Raglin & Hanin (2000), anxiety affects perception in sports competitions, where a large majority of athletes consider anxiety to be debilitative towards performance, which may result in decreases in performance. Sports psychologists have long believed that high levels of anxiety during competitions are harmful, worsening performance and even leading to dropouts (Raglin & Hanin, 2000).

Anxiety has both cognitive and somatic components. The cognitive or thought component is the degree to which one worries or has negative thoughts (Weinberg and Gould, 2016). Cognitive anxiety affects the mind of an athlete and consumes his thoughts, thus affecting his ability to perform simple tasks such as serving the ball in tennis. Somatic anxiety, on the other hand, is the physiological component of anxiety, which is the degree of physical activation perceived. It concerns the moment to moment changes in physical activation. Physical symptoms of anxiety may include increased heart rate and breathing, tight muscles, restlessness, excessive perspiration, fatigue and headaches (Smith, 1993). Somatic anxiety is disruptive partly because bodily tension can negatively impact athletes by interrupting smooth movements needed for optimal sports performance (Kauss, 2001).

Athletes who experience worry and negative thoughts (that is, cognitive state anxiety) become poor in decision making and their concentration levels drop and experience an increasing number of errors. This can be monitored by the increase in somatic state anxiety responses, which include an increase in heart rate, sweating and blood pressure. Some of these symptoms of anxiety are beneficial to sporting performance, but if the athlete perceives them as happening because they are unable to meet the demands of the activity they further increase cognitive state anxiety.

Researches on anxiety among athletes indicated that athletes take drugs to combat anxiety, stress and enhance performance (Vincent, Yahaya, Julinamary and Nagoor, 2014). The use of drugs in sport is dated to the time of Greek athletes in the third century B.C. who ingested substances to improve their performance (Anshel, 2010). In the 1970s performance-enhancing drugs were used among medal winners from the Soviet Union and other Eastern European countries, most notably East Germany but it was not until the 1976 Olympic Games held in Montreal that the International Olympic Committee (IOC) started wide-spread drug testing and penalised athletes for testing positive. It is estimated that six out of ten athletes at the games are taking banned drugs to reduce anxiety and enhance performance (Wilson, 2012). Even though drug consumption benefits the athletes by reducing anxiety and enhances performance, still, it is cheating, foul play, unfair, dishonesty and unsportsmanlike action (Vincent, Yahaya, Julinamary and Nagoor, 2014).

Consequently, athletes need psychological skill to combat anxiety and cope with stress to enhance their performance without using drugs, such skill that can be introduced is a relaxation technique. Relaxation is a useful technique because it teaches athletes strategies that enable them to reduce stress, anxiety and avoid taking drugs. According to Porter (2003) relaxation reduces the mental and physical intensity of hard training. In addition, it can bring a high level of control to an athlete's life and help in achieving peak performance. The more relaxed and at ease an athlete is, the more he feels the balance and better his performance. An athlete cannot perform at his best when he is tensed, stressed and tired. Relaxation assists the athlete in preparing for visualisation, without being relaxed an athlete cannot form an image in his mind. An athlete can take visualisation in more deeply if he is relaxed and it will become part of him (Porter, 2003). Also, relaxation techniques can reduce the number of athletes taking drugs to reduce anxiety and enhance performance (Vincent, Yahaya, Julinamary and Nagoor, 2014). Athletes who practise relaxation technique have the opportunity to obtain and learn to apply effective coping methods to deal with

sport and life stressors, which will ultimately lead to optimal performance and enjoyment in their sports. Thus, athletes need to practice relaxation to decrease somatic anxiety. Both coaches and athletes can benefit from this technique and the skills they learn can be applied not only to sport but also to life in general.

Stress and Stress Process

Stress is defined as "a substantial imbalance between demand (physical and/or psychological) and response capability, under conditions where failure to meet that demand has important consequences." Stress is manifested in emotional (for example, mood changes), physiological (for example, changes in blood pressure or heart rate), psychological (for example, anxiety, depression) and behavioural (for example, restlessness, rate of speech, decreased task performance) responses (Shaw, Gorely and Corban, 2005). It is a process or a sequence of events that will lead to a particular end. According to a simple model that McGrath (1970) proposed, stress consists of four interrelated stages. These are environmental demand, perception of demand, stress response and behavioural consequences.

Stage 1: Environmental Demand: In the first stage of the stress process, some types of demand is placed on an individual. The demand might be physical, such as when a physical education student has to execute a newly learned skill in front of the teammates or psychological, such as when parents are pressuring a young athlete to win a competition.

Stage 2: Perception of Demand: This could be viewed as the amount of threat the individual perceives. Not all people will see the same demand with the same degree of threat.

Stage 3: Stress Response: If an individual perceives the demand to outweigh their resources to cope then they are likely to experience increases in arousal, state anxiety, muscle tension and negative changes in attention. Perceived coping resources are therefore integral to the stress response.

Stage 4: Behavioural Consequences: This stage refers to the actual behaviour the individual exhibits in response to the environmental demand. It may be that an increase in state anxiety causes a decrement in performance, or the individual may have skills for managing the increase in state anxiety and therefore performance remains unchanged or improves. The process is cyclical with the behavioural outcome feeding back into the situation and the situation appraisal. Likewise, if a similar experience in the past.

General Overview of Relaxation

To relax is to decrease unwanted muscular tension, reduce excessive activation of the sympathetic nervous system (associated with adrenaline and elevated heart rate) and calm the mind by keeping it productively occupied (Burton and Raedeke, 2008). When the sympathetic nervous system is activated, athletes experience the fight-or-flight response (that is, they feel anxious and experience physical symptoms of stress, such as increased heart rate, goose bumps, butterflies in the stomach, and perspiration. It is a psycho-physiological process that is located on an individually different reference point on a continuum between activation (for example, intense excitement) and deactivation (that is, deep sleep) (Petermann and Vaitl, 2014). Many relaxation techniques have been adapted for use in sports to elicit the "relaxation response" that relaxes tense muscles, lowers unwanted arousal and calms the mind. Relaxation techniques are utilized as therapeutic support in the treatment of psychological and physiological disorders. More specifically, these disorders include, for example, anxiety disorders, aggressive behaviour, attention deficit hyperactivity disorder, stress-related disorders, adaption disorders (psychologically based disorders) (Broadbent, Kahokehr, Booth, Thomas, Windsor, Buchanan and Hill, 2012; Crawford, Wallerstedt, Khorsan, Clausen, Jonas and Walter, 2013) or sleep disorders, hypertonia, coronary heart diseases, asthma bronchial or gastrointestinal disorders (physiologically based disorders) (Petermann and Vaitl, 2014). In creating the relaxation response, the mind and body function as an integrated system.

Relaxation and Sports Performance

There is a great need for intervention that help athletes enhance sports performance by teaching them arousal regulation and coping methods (Gould and Udry, 1994). At times, athletes are tensed that it prevented them from performing their best at key times, such as attempting a game-winning free throw, penalty kick, among others. Also, some athletes fail to push through the fatigue barrier during long, gruelling training sessions. Any athlete would benefit from developing the mental training tool of relaxation. Relaxation is the process of decreasing unwanted muscular tension, reducing excessive activation of the sympathetic nervous system (associated with adrenaline and elevated heart rate) and calming the body by keeping it productively occupied (Burton and Raedeke, 2008). When the sympathetic nervous system is activated, athletes experience a fight or flight response; they feel anxious and experience physical symptoms of stress, such as increased heart rate, goose bumps, butterflies in the stomach and perspiration.

A significant amount of research has been conducted on the effects of competitive anxiety on sports performance. Research has shown that most successful athletes used relaxation techniques compared to less successful athletes. The study of (Vincent, Yahaya, Julinamary and Nagoor, 2014) showed that relaxation techniques tend to enhance performance by reducing stress and anxiety and enhance sports performance. In the study of Brent (2004) where athletes learn to use imagery, relaxation and positive self-talk, some athletes preferred the relaxation techniques, one athlete commented that the deep breathing helped her significantly ease her asthma problem and others reported using the cue word "calm" to help them relax.

The study of LaGrange and Ortiz (2006) on female recreational golfers using progressive relaxation technique over some time found that performers improved significantly. In a qualitative study (Giacobbi, Foore and Weinberg, 2004), semi-structured interviews were conducted with 11 golfers in which the golfers were asked to identify the most common sources of stress they encountered when playing golf. They were then asked to describe their coping

responses. Their various coping strategies included cognitive strategies, relaxation techniques, off-course, efforts, golf course strategies, avoidance coping and emotion-focused coping. Out of the 11 players, 6 players used some form of relaxation, usually as part of their pre-shot routine. The golfers found relaxation techniques effective both on and off the golf course. Furthermore, Nicholls, Holt and Polman (2005) interviewed many golfers to determine what types of coping strategies they employed when they were in the midst of competition. "The most effective strategies included rationalizing, reappraising, blocking, positive self-talk, following a routine, breathing exercises, physical relaxation and seeking on-course social support."

Relaxation Techniques

Two types of relaxation techniques will be discussed in this paper, namely: Muscle-to-mind techniques, which focus on the training of one sensitivity to muscle tension and mind-to-muscle techniques, which focus on the cognitive processes involved in relaxation. According to (Burton and Raedeke, 2008) muscle-to-mind techniques such as diaphragmic breathing and progressive muscle relaxation (PMR) are designed primarily to relax the body, which in turn calms the mind. In contrast, mind-to-muscle techniques such as imagery and meditation focus on calming the mind to relax the body. Both approaches can be useful to athletes. Athletes should select a quiet and comfortable setting with minimal distractions; take a passive attitude that focuses on breathing and letting go of worries and concerns; choose a comfortable but serious practice environment and find a comfortable position, preferably sitting in a comfortable chair with arms supported, feet uncrossed and eyes closed. Furthermore, Pelka, Kölling, Ferrauti, Meyer, Pfeiffer & Kellmann (2017) stated that techniques with predominant autonomic components (for example, hypnosis)tend to produce greater effects on the autonomic nervous system (for examples, decreases in heart rate and blood pressure and increases in finger pulse volume).

Muscle-to-mind Techniques (Breathing Exercises)

i) **Diaphragmic Breathing**: Everyone breathes, but not everyone uses breathing to his or her advantage, especially in athletics. More importantly, not everyone uses breathing to relax and renew energy before, during and after the competition (Porter, 2003). Correct breathing is one of the most valuable techniques an athlete can learn for focusing, calming and energising. Diaphragmatic or belly breathing is the easiest form of breathing to learn. As you free your breath through diaphragmatic breathing, you relax your emotions and let go of your body tensions. Your belly rises and falls as your lungs are fully inflated and the diaphragm stays loose and flexible. Breathing is rhythmic and deep. Because most people are thoracic (chest) breathers, it may take some practice for you to learn to fill your belly area with each breath, easily inhaling and exhaling without forcing your abdominal muscles to expand and contract.

According to (Burton and Raedeke, 2008) diaphragmatic breathing was developed to facilitate hatch yoga and involves filling the lungs by expanding the diaphragm (the thin muscle that separates the lungs from the abdominal cavity). The process of diaphragmic breathing was explained thus by Burton and Raedeke (2008): Inhaling through the nose causes the diaphragm to move down slowly, pushing the abdomen out and creating a vacuum that allows the lung to be filled from the bottom up in three distinct phases. First, as the diaphragm expands and the abdomen is pushed outwards you can feel the area under your belly button enlarge as the lower lungs are filled. Next, the middle part of the lungs is filled by allowing the rib cage to expand. Finally, the chest and shoulders are raised slightly and the upper third of the lungs are filled. The inhalation should be followed by a healthy pause, then a slow and complete exhalation through the mouth. The inhalation should be slow and deliberate, taking about as long as the exhalation.

ii) **Progressive Muscle Relaxation (PMR) Technique**

Progressive muscle relaxation (Jacobson, 1938) is an elaborate relaxation strategy that is most effective for athletes with limited

body awareness (Burton and Raedeke, 2008). Over time PMR has been modified extensively to better diagnose minute muscular tension levels and teach performer how to let go of this tension. It involves tensing and relaxing, in succession, sixteen different muscle groups of the body. The idea is to tense each muscle group hard (not so hard that you strain, however) for about 10 seconds and then to let go of it suddenly. You then give yourself 15-20 seconds to relax, noticing how the muscle group feels when relaxed in contrast to how it felt when tensed, before going on to the next group of muscles.

One might also say to himself "I am relaxing," "Letting go," "Let the tension flow away" or any other relaxing phrase during each relaxation period between successive muscle groups. Throughout the exercise, maintain your focus on your muscles. When your attention wanders, bring it back to the particular muscle group you're working on: The guidelines below describe progressive muscle relaxation in detail:

- Make sure you are in a setting that is quiet and comfortable. Observe the guidelines for practising relaxation that was previously described.
- When you tense a particular muscle group, do so vigorously without straining, for 7-10 seconds. You may want to count "one, two," and so on, as a way of marking off seconds.
- Concentrate on what is happening. Feel the buildup of tension in each particular muscle group. It is often helpful to visualize the particular muscle group being tensed.
- When you release the muscles, do so abruptly and then relax, enjoying the sudden feeling of limpness. Allow the relaxation to develop for at least 15-20 seconds before going on to the next group of muscles.
- Allow all the other muscles in your body to remain relaxed, as far as possible, while working on a particular muscle group.
- Tense and relax each muscle group once. But if a particular area feels especially fight, you can tense and relax it two or three times, waiting about 20 seconds between each cycle.

Once you are comfortably supported in a quiet place, follow the detailed instructions below:

1. To begin, take three deep abdominal breaths, exhaling slowly each time. As you exhale, imagine that tension throughout your body begins to flow away.
2. Clench your fists. Hold for 7-10 seconds and then release for 15-20 seconds. Use these same time intervals for all other muscle groups.
3. Tighten your biceps by drawing your forearms up toward your shoulders and "making a muscle" with both arms. Hold and then relax.
4. Tighten your triceps (the muscles on the undersides of your upper arms by extending your arms out straight and locking your elbows). Hold and then relax.
5. Tense the muscles in your forehead by raising your eyebrows as far as you can. Hold and then relax. Imagine your forehead muscles becoming smooth and limp as they relax.
6. Tense the muscles around your eyes by clenching your eyelids tightly shut. Hold and then relax. Imagine sensations of deep relaxation spreading all around them.
7. Tighten your jaws by opening your mouth so widely that you stretch the muscles around the hinges of your jaw. Hold and then relax. Let your lips part and allow your jaw to hang loose.
8. Tighten the muscles in the back of your neck by pulling your head way back; as if you were going to touch your head to your back (be gentle with this muscle group to avoid injury). Focus only on tensing the muscles in your neck. Hold and then relax. Since this area is often especially tight, it's good to do the tense-relax cycle twice.
9. Take a few deep breaths and tune in to the weight of your head sinking into whatever surface.

Mind-to-muscle Techniques

i) **Imagery Relaxation**: Imagery relaxation is based on the idea that if you cannot change the environment prompting your stress, you can still change the environment in your mind. This ability is one of the magnificent qualities of the human mind (Burton and

Raedeke, 2008). In imagery relaxation, the athlete imagines a place where he already finds deeply relaxing. He can think of his relaxation place, the spot where they always feel comfortable and safe, to trigger deep relaxation. An athlete should picture himself in his special place as vividly as possible (hear the sounds, smell the air, feel the sand, use all his senses to envision the place). The more he can feel himself to be in this special place, the more relaxing it will be. He should regularly practice imaging this place until he can create it in his mind's eye quickly and feel associated relaxation.

ii) **Meditating Quietly**: According to Williams (2010), regular practice of meditation helps one to achieve a state of deep relaxation and facilitates concentration by disciplined the mind. A quiet environment, a comfortable position, a mental device and a passive attitude are four basic components of meditation (Williams, 2010). A mental device such as a mantra or fixed gazing at an object helps to quiet the mind by providing a focus of attention on something that is non-arousing and non-stimulating. A mantra is a non-stimulating, meaningless rhythmic sound of one or two syllables that a person regularly repeats while meditating. An athlete needs not worry about how well he is performing the technique because this disrupts effective meditation.

Distracting thoughts may occur; simply redirect attention to the mental device, focusing on the cue and letting other thoughts move through consciousness with a passive attitude not attempt to attend to them. To carry out meditation according to Porter (2003) find a quiet time and place, a place where you are comfortable both physically and mentally and sit or lie in a relaxed posture that supports your body. Benson relaxation response (1975) is an excellent meditative technique (Williams, 2010). The direction for Benson relaxation response is as follows:

1. Sit in a comfortable position in a quiet place.
2. Close your eyes.
3. Deeply relax your muscles, beginning at the top of your head and progressing to your feet (feet to head if you prefer).

4. Concentrate on your breathing as you breathe easily and naturally through your nose. With each breath out, say the word "calm" or some other word silently to yourself.
5. When you finish, sit quietly for several minutes, at first with your eyes closed and later with your eyes open. Do not stand for some minutes.

Do the preceding for 5 minutes initially and with practice, build to 15-20 minutes.

Some of the greatest performances in sports come when the mind is still as a deep lake and the athlete is in a zone of effortless performances. When you feel fully at peace and very physically relaxed, begin to reconnect with your body. Slowly and gently move your head to the right and then to the left and the centre. Meditating before bed relax and prepare for sleep, an athlete may find himself fall asleep easily. This is the purpose of meditation. If the mind wanders, continue to work at keeping a focus on specific sounds or words. With practice, an athlete will learn to stay focused and learn to use this form of relaxation anywhere and anytime he needs to quiet and clear his mind to focus attention (Porter, 2003).

iii) **Relieving Tension**: Massage gives more relief from tension and minor physical soreness or tightness by manipulating your muscles to stimulate circulation and create relaxation of tenseness and soreness. If an athlete is seriously active every day, he will benefit from having a massage at least once a week. The body will have more energy, ready and balanced and performs at a higher level if he stops carrying around areas of tightness and stress in his muscles. A consistent massage program will also help to remain injury-free by loosening, warming and relaxing all muscles and reducing tension level (Porter, 2003).

iv) **Performing Yoga**: Yoga teaches focus, concentration, deep stretching and relaxation of the mind and body. It is an excellent practice for athletes because it helps them stretch consistently in a program that is easy to follow. With yoga, an athlete can achieve excellent results concerning flexibility, strength and relaxation.

Some of the more popular types of yoga are Hatha, Kundalini, Vinyasa and Ashtanga. Each type has a different quality of exertion and different exercises. Yoga emphasizes breathing, mind and body relaxation and letting go of extraneous thoughts, resulting in peace and harmony (Porter, 2003). An athlete should sample the different types of yoga until he finds the one that his body likes best.

v) **Listening to Music**: Music is both a good relaxer and energy provider, depending on the music selected (William, 2010). Most athletes already make use of music to help them relax. Whether or not they listen to the lyrics, the rhythm and tempo of the music work at the subconscious level to promote relaxation. An athlete can think of a beat or rhythm that has this effect and use it to trigger relaxation at critical times during a contest or specific points during a race (Burton and Raedeke, 2008). An example is a runner who uses the beat of his favourite song to keep his tempo consistent. With the availability of iPods and the like, athletes can readily select and listen to music that works best for them.

vi) **Floating Away**: Though sensory deprivation tanks have been used since the 1930s, only recently have they been widely available to the general public. Today, they are called floatation tanks. Present-day tanks look something like a plastic egg. A floatation tank is approximately 6 feet by 9 feet and is filled with about 12 inches of water and more than 100 pounds of Epsom salts, making it impossible for the body to sink. Once you are in the tank, relax! Rest your body and your mind for a few minutes. You can close your eyes or leave them open. Open your thoughts to anything that comes. Let go and relax as you float effortlessly and weightlessly. There are no sounds, no feelings, and no smells-only darkness. Let yourself become a container, empty and unused. Slowly become aware of any stimuli such as sports images or colours before your eyes or a sense of turning or lightness. Notice these things, enjoy them, let them go and remain empty and at peace.

If an athlete is training for a specific competition, floating is the perfect time to say affirmations or begin visualizations and mental rehearsals. Because he is so totally relaxed, the affirmations and visualizations will move further than usual into the subconscious. The mind is more receptive and his subconscious more vulnerable to what you want it to learn. When he leaves the tank and go on with the day's activities, he will notice a renewed energy along with a feeling of total relaxation. Afloat twice a month is recommended to maintain balance and to centre oneself. This will help him to be more deeply relaxed and create a deeper level of visualization (Porter, 2003).

Benefits of Relaxation to Athletes

Numerous relaxation strategies have been used to enhance sports performance. The following are some benefits of relaxation:

a. *Alleviates chronic stress*: Estimates suggest that 20% to 30% of athletes suffer from chronic stress that, if not managed properly reduces their capabilities. Also, all athletes experience periods of stress caused by major life crises such as breaking up with a longtime boyfriend or girlfriend, battling for playing time with a close friend or experiencing academic problems. Stress can also result from an accumulation of smaller stressors that are difficult to resolve. In any of these cases, practising total relaxation daily can help reduce stress to manageable levels.
b. *Promotes recovery from workouts and injuries*: Half of the training is recovery. Each tough workout takes a toll on the body due to minor tissue damage and accumulation of lactic acid in the muscles. Active regeneration techniques such as relaxation and massage promote recovery by stimulating dilation of blood vessels to supply more oxygen to fatigued or injured muscles, enhancing disposal of waste products and speeding up the repair process.
c. *Improves sleep*: Sleep is deeper and more restful when a person is relaxed. Athletes who sleep poorly often suffer from tension or excessive arousal problems that are magnified when travelling or on the night before the competition. Sleep problems before the game can stem from positive excitement

or negative nervousness, as well as extensive cognitive concerns about doing well. Taking time to relax promotes better sleep by lowering tension, reducing excessive activation and calming the mind.

d. *Reduces muscular tension*: Rapid relaxation reduces tension in antagonistic muscles, giving athletes a greater range of motion and better rhythm timing and feel. A classic example of excessive tension in antagonistic muscles occurs when a basketball player air-balls a crucial free throw. Since muscles can only contract because they are arranged in pairs; the first muscle contracts to initiate a movement, then its antagonistic muscle contracts to return the joint to its original position. When muscle contracts at the same time as its antagonistic partner, the two muscles fight each other, hindering rhythm, timing feel and range of motion. In the tense free-throw shooter's arm, muscles are fighting each other and she fails to go through a full range of motion, thus leaving the shot well short.
e. *Controls arousal*: Athletes who fail to control their arousal level can experience excessive activation of the fight-or-flight response which causes physical and mental symptoms of stress. Over aroused performers can use relaxation to lower activation levels and reduce physical anxiety, thus enabling them to attain the optimal arousal level needed for top performance.
f. *Breaks the stress spiral*: Acute (short-term) stress is a problem for many athletes especially in terms of handling pressure and letting go of mistakes. Under stress athletes, minds begin to race, they lost awareness of what is going on around them and they often panic and feel overwhelmed. Relaxation can help athletes lower their arousal to a more effective level, slow down, let go of excess tension and think more constructively. Relaxation also reduces feelings of pressure and promotes expectations of success. Although, mistakes can take athletes out of their game by causing them to focus on negative thoughts, relaxation promotes feelings of control that help athletes let go of mistakes.

g. *Promotes an unconscious trusting attitude*: When athletes experience flow, they operate at an unconscious level where they completely trust their bodies to execute skills. Relaxation can provide an important bridge between conscious preparation (e.g. selecting what play to call or identifying how you want to play the next point) and unconscious performance. Athletes use rapid relaxation in conjunction with imagery to trigger automated performance rather than trying too hard. For example, a volleyball player serving a critical point uses relaxation to let go of her fears of serving poorly so she can trust her body to execute automatically with the match on the line.
h. *Conserves energy*: Relaxation can play an important role in endurance-based performance. Demanding endurance events such as marathons require runners to develop relaxation skills that enhance mechanical efficiency to maximize energy reserves and maintain a faster pace. Multiday events such as wrestling tournaments can also become endurance tests and performers need the ability to conserve energy and maximize recovery time so they can continue to perform aggressively during the later stages of the competition.
i. *Increase enjoyment*: Performing while one is tight or stressed is no fun. Relaxation can make an athlete dramatically increase his enjoyment of the sport by reducing muscular tension and excessive activation symptoms (for example, butterflies).

Conclusion

Considering the proposed benefits of physical and mental relaxation techniques to athletes, such as helping them reduce or control their cognitive and/or physical state. However, as with any strategy, the effectiveness of the use of the strategy during competition depends on the extent to which the strategies have been practised. Once learned, these strategies can be used by athletes to function better within competition and everyday life and to allow other strategies to be learnt more effectively. This paper has described the techniques for achieving various types of relaxation. Such techniques rid the muscles of disruptive tension

that interferes with performance and help quiet the rest of the body and the mind. Regular practice of relaxation techniques can reduce the number of athletes taking drugs to enhance their performance, as well as reduce stress and anxiety.

Recommendations

1. Coaches and sports psychologists should continuously teach their athletes various techniques, while athletes identify and practice those that work best for them to enhance their high level of performance in sports.
2. Also, materials (such as audio and video CDs, DVDs) that can assist athletes in practising relaxation techniques should be made available to athletes by the authorities concerned.

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