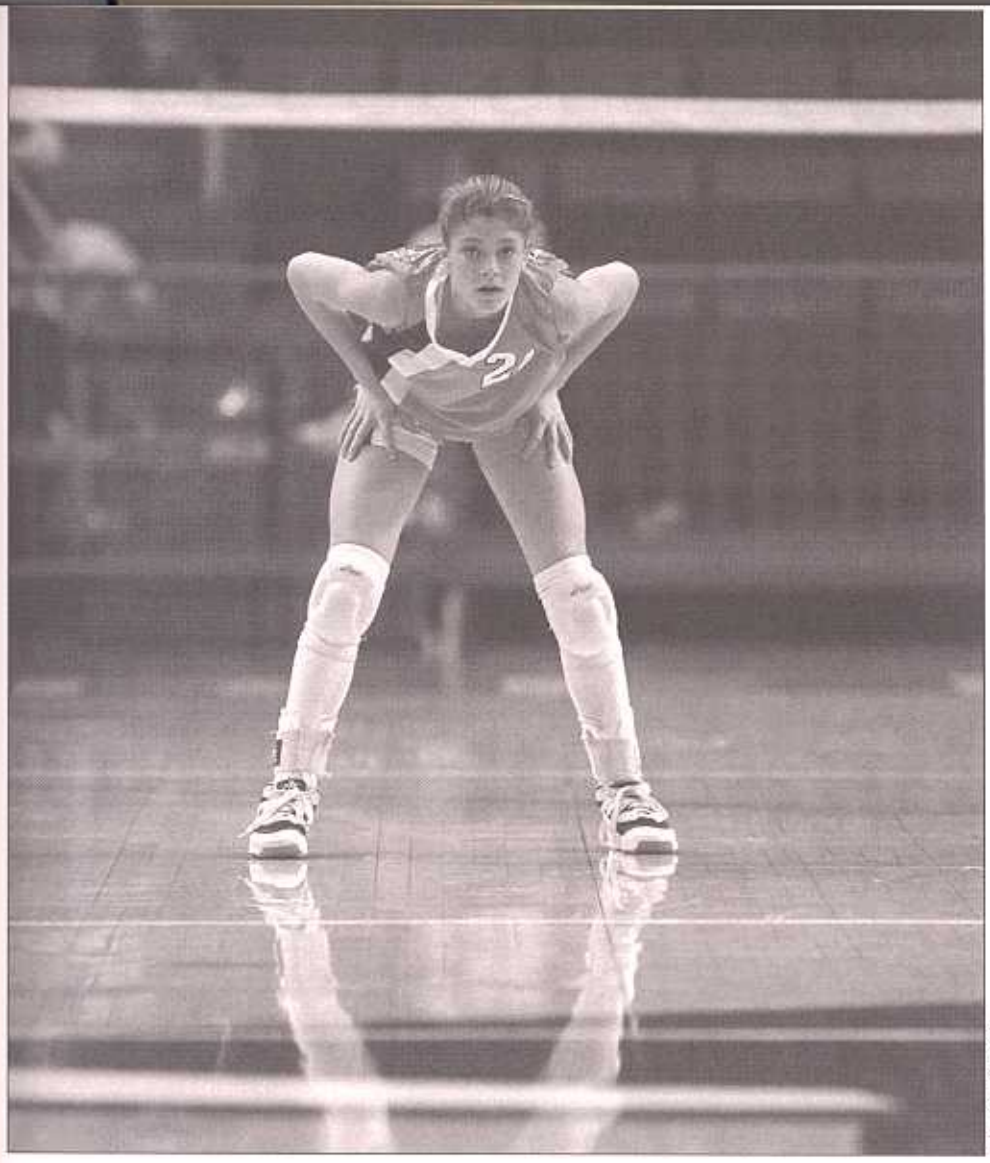
Chapter 12



Arousal Regulation

After reading this chapter you should be able to

1. understand how to increase self-awareness of arousal states;
2. use somatic, cognitive, and multimodal anxiety-reduction techniques;
3. identify coping strategies to deal with competitive stress;
4. describe on-site relaxation tips to reduce anxiety;
5. understand the matching hypothesis; and
6. identify techniques to raise arousal for competition.

We live in a world where stress has become almost part of our daily lives. Certainly the pressure to perform at high levels in competitive sport has increased in recent years with all the media attention and money available through sports. In essence, our society values winning and success, and coaches and athletes feel pressure to be successful. People who don't cope effectively with the pressure of competitive sport, however, may experience not only decreases in performance but also mental distress and even physical illness. Continued pressure sometimes causes burnout in sport and exercise (see chapter 21), and it can lead to ulcers, migraine headaches, and hypertension.

Depending on the person and the situation, however, there are various ways of coping with the pressure of competitive sports. The following quotes show how a few athletes have approached the pressure of competition.

The thing that always worked best for me whenever I felt I was getting too tense to play good tennis was to simply remind myself that the worst thing—the very worst thing that could happen to me—was that I'd lose a bloody tennis match. That's all!

Rod Laver, former top professional tennis player

I love the pressure. I just look forward to it.

Daly Thompson, Olympic decathlon gold medalist

The relaxation technique that I have adopted over the past year is a type of mantra. I count down from three to zero, and when I get to zero I can produce a calmer approach. I use this if I have to stand there and wait around for the judges and I feel a rush of nervousness that's too much.

James May, Commonwealth Games gymnastics gold medalist

Not only do athletes respond differently to pressure, the type of sport or task they perform also becomes a critical factor in how they react. For example, a golfer preparing to knock in a 20-foot putt would control arousal differently than would a wrestler taking the mat. Similarly, one specific relaxation procedure might work better for controlling cognitive anxiety, whereas another might be more effective for coping with somatic anxiety. The relation between arousal and performance can be complicated (see chapter 4), and athletes in competitive sport need to learn to control their arousal. They should be able to increase it—to psych up—when they're feeling lethargic and decrease it when the pressure to win causes them anxiety and nervousness. The key is for individuals to find their optimal levels of arousal—to psych up without psyching out and to relax without losing intensity and focus.

In this chapter we will discuss in detail a variety of arousal-regulation techniques that should help individuals in sport and exercise settings reach their optimal levels of arousal. The first step in this process is to learn how to recognize or become aware of anxiety and arousal states.

Self-Awareness of Arousal

The first step toward controlling arousal levels is to be more aware of them during practices and competitions. This typically involves self-monitoring and recognizing how emotional states affect performance. As an athlete you can probably identify certain feelings associated with top performances and other feelings associated with poor performances. To increase awareness of your arousal states, we recommend the following process.

First, think back to your best performance—some athletes refer to this special state as "playing in the zone." Try to visualize the actual competition as clearly as possible, focusing on what you felt and thought at that time. Don't rush: Take at least 5 minutes to relive the experience. Now complete the items on p. 247. Because you are reconstructing your best performance, for "played extremely well," you would circle the number 1. For the second item, if you felt moderately anxious, you might circle number 4. There are no right or wrong answers; the goal is to simply become more aware of the relation between your psychological states and performances. After completing the checklist for your best performance, repeat the process for your worst performance.

Now compare how you responded in this exercise to the two performances you brought to mind. Most people find that their thoughts and feelings are distinctly different when comparing playing well and playing poorly. This is the beginning of awareness training. If you want to better understand the rela-

You must increase your awareness of your psychological states before you can control your thoughts and feelings. How individuals cope with anxiety is more important than how much anxiety they experience.

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Checklist of Performance States

Played extremely well	1	2	3	4	5	6	Played extremely poorly
Felt extremely relaxed	1	2	3	4	5	6	Felt extremely anxious
Felt extremely confident	1	2	3	4	5	6	Felt extremely unconfident
Felt in complete control	1	2	3	4	5	6	Had no control at all
Muscles were relaxed	1	2	3	4	5	6	Muscles were tense
Felt extremely energetic	1	2	3	4	5	6	Felt extremely fatigued
Self-talk was positive	1	2	3	4	5	6	Self-talk was negative
Felt extremely focused	1	2	3	4	5	6	Felt extremely unfocused
Felt effortless	1	2	3	4	5	6	Felt great effort
Had high energy	1	2	3	4	5	6	Had low energy

tion between your thoughts, feelings, and performance, monitor yourself by completing the checklist immediately after each practice or competitive session over the next few weeks. Of course, your psychological state will vary during a given session. If you feel one way during the first half of a basketball game, for example, and another way during the second half, simply complete two checklists. You are only estimating your feeling states—absolute precision is virtually impossible. If you are diligent with this procedure, however, you will quickly enhance your awareness, which is a giant step toward reaching your optimal level of arousal consistently. Remember that the most important thing is to

understand the relation between how you feel on the inside and how you perform on the outside.

Anxiety-Reduction Techniques

Excess anxiety can produce inappropriate muscle tension, which in turn can diminish performance. When the muscles become too tense, your movements appear awkward, jerky, rigid, and uncoordinated. And it is all too easy to develop excess muscle tension. The common thinking is "The harder you try, the better you will perform." This reasoning is incorrect.

As a quick, practical exercise, rest your dominant forearm and hand palm down on a desktop or table. Tense all the muscles in your hand and wrist and then try to tap your index and middle fingers quickly back and forth. Do this for about 30 seconds. Now try to relax the muscles in your hands and fingers and repeat the exercise. You will probably discover that muscular tension slows your movements and makes them less coordinated, as compared with muscles that are relaxed.

Besides sometimes producing inappropriate muscle tension, excess anxiety can also produce inappropriate thoughts and cognitions. Have you ever felt really anxious before or during an important sport performance, becoming distracted and thinking negative thoughts, such as "I hope I don't blow this shot" or "I hope I don't fail in front of all these people"? As noted in chapter 4, anxiety can affect us both physically (somatic anxiety) and mentally (cognitive anxiety).

We'll now present some relaxation procedures commonly used in sport and physical activity settings. Some of these techniques focus on reducing cognitive anxiety, some on somatic anxiety. Still others are multimodal in nature, using a variety of techniques to cope with both somatic and cognitive anxiety. It is interesting to note that virtually all these techniques were designed to help people cope with stressful events they encounter in everyday life—only recently have they been applied to sport and exercise situations.

Somatic Anxiety-Reduction Techniques

The first group of techniques work primarily to reduce physiological arousal associated with increased somatic anxiety.

Progressive Relaxation

Edmund Jacobson's **progressive relaxation** technique (1938) forms the cornerstone for many modern relaxation procedures. This technique involves tensing and relaxing specific muscles. Jacobson named the technique *progressive relaxation* because the tensing and relaxing progresses from one major muscle group to the next, until all muscle groups are completely relaxed. Progressive relaxation rests on a few assumptions: (a) It is possible to learn the difference between tension and relaxation; (b) tension

RESEARCH

Trying Harder Isn't Always Better

A college track coach would ask his runners to run 400 meters all out (i.e., give 110%). A few days later, the same runners were asked to run at 95% of their capacity. Interestingly enough, the runners ran faster at 95% than at 110%. Why this happened involves the effect that muscle tension can have on skilled performance. Specifically, when running at 110% runners were using all their energies and muscular capacities. However, running—like most other sport activities—is performed most effectively when some muscles are contracting while others are relaxing. Thus, by using all of their muscles, agonists and antagonists, the runners were using muscles that prevented them from running as fast as they could. Running at 95%, they expended a great deal of muscular effort but relaxed the antagonist muscles that hinder maximum performance.

Consider a baseball pitcher who is overthrowing his fast ball, that is, trying too hard to throw the ball fast. Not only does the pitch not go as fast, it is also less accurate. Trying to throw the ball as fast as he can, the pitcher uses all the muscles in his arm. However, for accuracy, as well as speed, some of the muscles in the arm (particularly the flexor muscles like the biceps) need to relax as the extensor muscles (such as the triceps) do most of the work.

and relaxation are mutually exclusive—it is not possible to be relaxed and tense at the same time; and (c) relaxation of the body through decreased muscle tension will, in turn, decrease mental tension. Jacobson's technique has been modified considerably over the years, but its purpose remains to help people learn to feel tension in their muscles and then be able to let go of this tension.

The tension-relaxation cycles develop an athlete's awareness of the difference between tension and lack of tension. Each cycle involves maximally contracting one specific muscle group and then attempting to fully relax that same muscle group, all the while focusing on the different sensations of tension and relaxation. With skill, an athlete can detect tension in a specific muscle or area of the body, like the neck, and then relax that muscle. Some people even learn to use the technique during breaks in an activity, such as a time-out. The first few sessions of progressive relaxation take an athlete up to 30 minutes. With practice, less time is necessary, the goal being the ability to relax on-site during competition.

Ost (1988) developed an applied variant of relaxation technique that he based on progressive relaxation to teach an individual to relax even within 20 to 30 seconds. The first phase of training involves a 15-minute progressive relaxation session practiced twice a day, in which muscle groups are tensed and relaxed. The individual then moves on to a release-only phase that takes 5 to 7 minutes to complete. The time is next reduced to a 2-to-3 minute version with the use of a self-instructional cue, "relax." This time is further reduced until only a few seconds are required, and then the technique is practiced in specific situations (noted as "application training" in Figure 12.1). For example, a golfer who becomes tight and anxious when faced with important putts could use this technique in between shots to prepare for these difficult putts.

Breath Control

Proper breathing is often considered key to achieving relaxation, and **breath control** is another physically oriented relaxation technique. Breath control, in fact, is one of the easiest, most effective ways to control anxiety and muscle tension. When you are calm, confident, and in control, your breathing is likely to be smooth, deep, and rhythmical. When you're under pressure and tense, your breathing is more likely to be short, shallow, and irregular.

Unfortunately, many athletes have not learned proper breathing. Performing under pressure they often fail to coordinate their breathing with the performance of the skill. Similarly, in athletic rehabilitation settings, rhythmic breathing is important to maximize the effectiveness of stretching and lifting movements. Research has demonstrated that breathing in and holding your breath increases muscle tension, whereas breathing out decreases muscle tension. For example, most discus throwers, shot-putters, and baseball pitchers learn to breathe out during release. Some athletes are even known as "grunters" because they exhale audibly each time they perform. As pressure builds in a competition, the natural

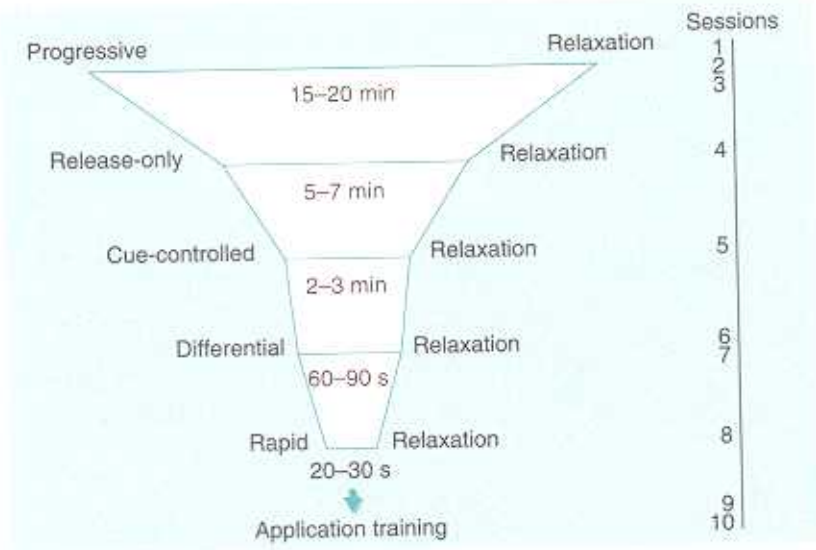


Figure 12.1 *Different components of applied relaxation.*
Reprinted from Hardy, Jones, and Gould, 1996.

APPLICATION

Instructions for Progressive Relaxation

In each step you'll first tense a muscle group and then relax it. Pay close attention to how it feels to be relaxed as opposed to tense. Each phase should take about 5 to 7 seconds. For each muscle group, perform each exercise twice before progressing to the next group. As you gain skill, you can omit the tension phase and focus just on relaxation. It is usually a good idea to record the following instructions on tape; you might even invest a few dollars in buying a progressive relaxation recording.

1. Find a quiet place, dim the lights, and lie down in a comfortable position with your legs uncrossed. Loosen tight clothing. Take a deep breath, let it out slowly, and relax.

2. Raise your arms, extend them in front of you, and make a tight fist with each hand. Notice the uncomfortable tension in your hands and fingers. Hold that tension for 5 seconds, then let go halfway and hold for an additional 5 seconds. Let your hands relax completely. Notice how the tension and discomfort drain from your hands, replaced by comfort and relaxation. Focus on the contrast between the tension you felt and the relaxation you now feel. Concentrate on relaxing your hands completely for 10 to 15 seconds.

3. Tense your upper arms tightly for 5 seconds and focus on the tension. Let the tension out halfway and hold for an additional 5 seconds, again focusing on the tension. Now relax your upper arms completely for 10 to 15 seconds and focus on the developing relaxation. Let your arms rest limply at your sides.

4. Curl your toes as tight as you can. After 5 seconds relax the toes halfway and hold for an additional 5 seconds. Now relax your toes completely and focus on the spreading relaxation. Continue relaxing your toes for 10 to 15 seconds.

5. Point your toes away from you and tense your feet and calves. Hold the tension hard for 5 seconds, then let it out halfway for another 5 seconds. Relax your feet and calves completely for 10 to 15 seconds.

6. Extend your legs, raising them about 6 inches off the floor, and tense your thigh muscles. Hold the tension for 5 seconds, let it out halfway and hold for another 5 seconds before relaxing your thighs completely. Concentrate on your feet, calves, and thighs for 30 seconds.

7. Tense your stomach muscles as tight as you can for 5 seconds, concentrating on the tension. Let the tension out halfway and hold for an additional 5 seconds before relaxing your stomach muscles completely. Focus on the spreading relaxation until your stomach muscles are completely relaxed.

8. To tighten your chest and shoulder muscles, press the palms of your hands together and push. Hold for 5 seconds, then let go halfway and hold for another 5 seconds. Now relax the muscles and concentrate on the relaxation until your muscles are completely loose and relaxed. Concentrate also on the muscle groups that have been previously relaxed.

9. Push your back to the floor as hard as you can and tense your back muscles. Let the tension out halfway after 5 seconds, hold the reduced tension and focus on it for another 5 seconds. Relax your back and shoulder muscles completely, focusing on the relaxation spreading over the area.

10. Keeping your torso, arms, and legs relaxed, tense your neck muscles by bringing your head forward until your chin digs into your chest. Hold for 5 seconds, release the tension halfway and hold for another 5 seconds, and then relax your neck completely. Allow your head to hang comfortably while you focus on the relaxation developing in your neck muscles.

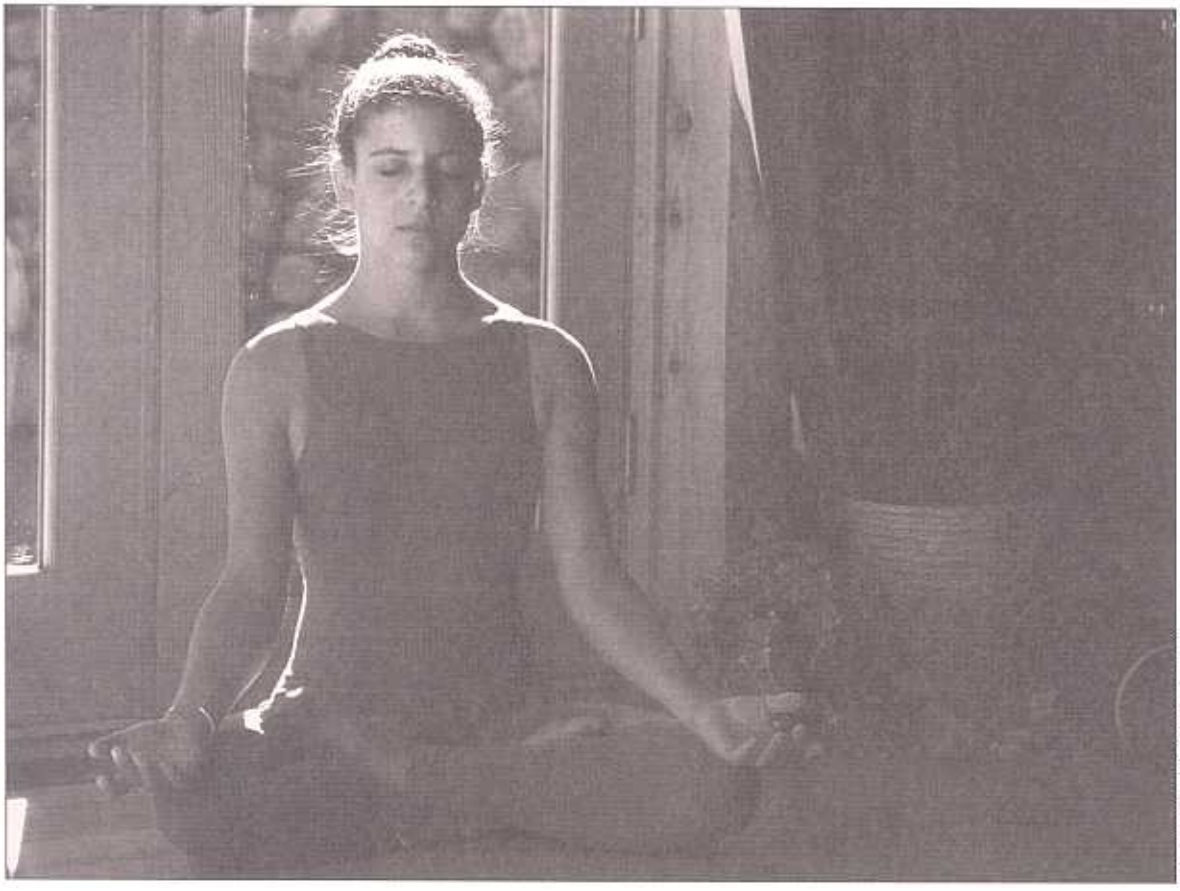
continued

Instructions for Progressive Relaxation
(continued)

11. Clench your teeth and feel the tension in the muscles of your jaw. After 5 seconds, let the tension out halfway and hold for 5 seconds before relaxing. Let your mouth and facial muscles relax completely, with your lips slightly parted. Concentrate on totally relaxing these muscles for 10 to 15 seconds.

12. Wrinkle your forehead and scalp as tight as you can, hold for 5 seconds, and then release halfway and hold for another 5 seconds. Relax your scalp and forehead completely, focusing on the feeling of relaxation and contrasting it with the earlier tension. Concentrate for about a minute on relaxing all of the muscles of your body.

13. Cue-controlled relaxation is the final goal of progressive relaxation. Breathing can serve as the impetus and cue for effective relaxation. Take a series of short inhalations, about one per second, until your chest is filled. Hold for 5 seconds, then exhale slowly for 10 seconds while thinking to yourself the word relax or calm. Repeat the process at least five times, each time striving to deepen the state of relaxation that you're experiencing.



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tendency is to hold one's breath, which increases muscle tension and interferes with the coordinated movement necessary for maximum performance. With practice, however, breathing is one physiological system that is simple to control. Learning to take a deep, slow, complete breath will usually trigger a relaxation response.

As with any skill, breath control takes practice to develop. It involves breathing from the diaphragm instead of the chest. To practice a deep, complete breath, imagine that the lungs are divided into three levels. Focus on filling the lower level of the lungs with air, first by pushing the diaphragm

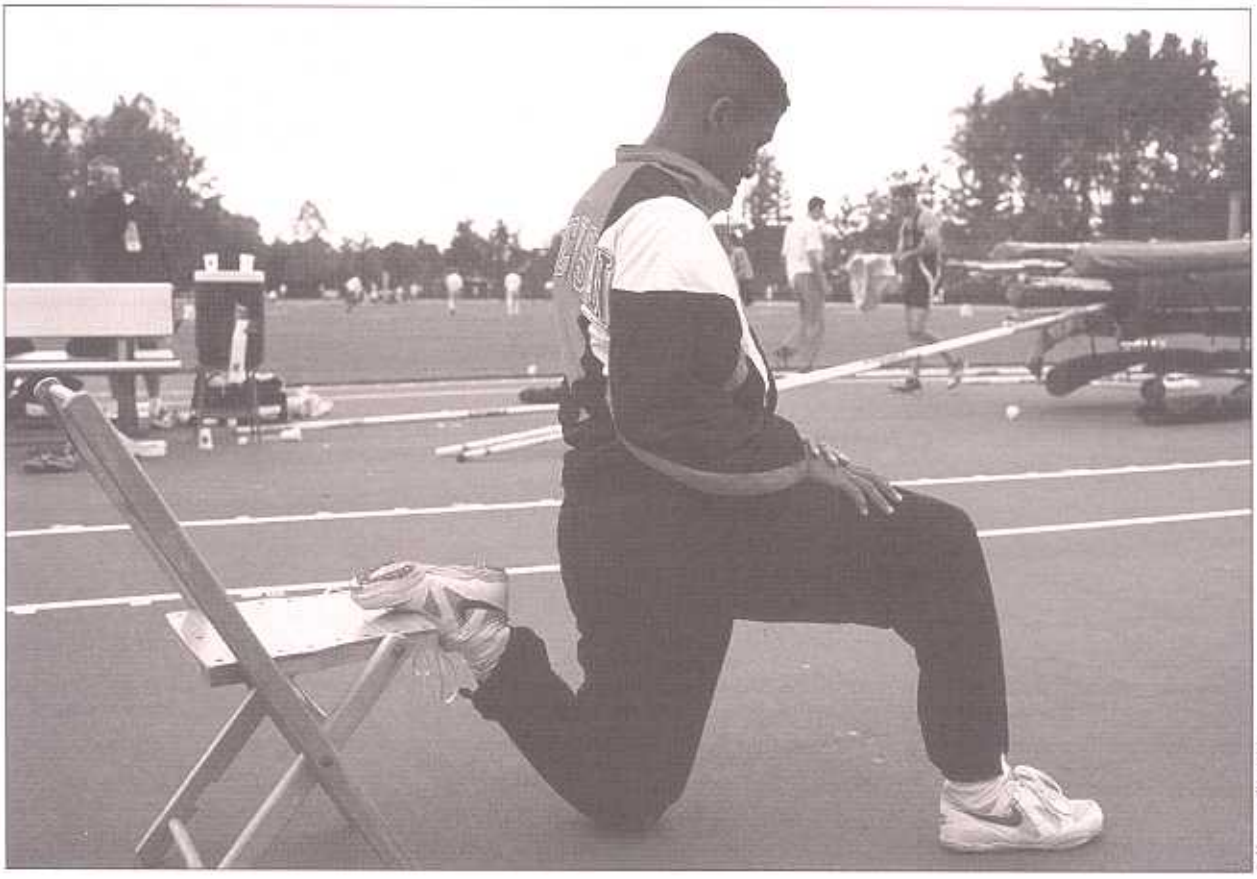
down and forcing the abdomen out. Then fill the middle portion of the lungs by expanding the chest cavity and raising the rib cage. Finally, fill the upper level of the lungs by raising the chest and shoulders slightly. This breath should be held for several seconds and then exhaled slowly by pulling the abdomen in and lowering the shoulders and chest. By focusing on the lowering (inhalation) and raising (exhalation) of the diaphragm, you'll experience a greater sense of stability, centeredness, and relaxation. To help enhance the importance and awareness of the exhalation phase, individuals can learn to inhale to a count of four and exhale to a count of eight. This 1:2 ratio of inhalation to exhalation helps slow breathing and deepens the relaxation by focusing on the exhalation phase (Williams & Harris, 1998).

The best time to use breath control during competition is when there is a time out or break in the action (e.g., before serving in tennis, just prior to putting a golf ball, preparing for a free throw in basketball). The slow and deliberate inhalation-exhalation sequence will help you maintain composure and control over your anxiety during particularly stressful times. By focusing on your breathing, you are less likely to be bothered by irrelevant cues or distractions, such as spectator or opponent antics. Deep breathing also helps relax shoulder and neck muscles; it allows you to feel strong, centered, and ready for action. Finally, deep breathing provides a short mental break from the pressure of competition and can renew your energy.

Biofeedback

In most relaxation procedures one of the goals is to become aware of muscular tension and reactions in other autonomic nervous systems, such as the heart or respiration rate. **Biofeedback** is a physically oriented technique specifically designed to teach people to control physiological or autonomic responses. It ordinarily involves an electronic monitoring device that can detect and amplify internal responses not ordinarily known to us. These electronic instruments provide visual or auditory feedback of physiological responses such as muscle activity, skin temperature, or heart rate, although most studies have used muscle activity as measured by electromyography (Zaichkowsky & Takenaka, 1993).

For example, a tennis player might feel muscle tension in her neck and shoulders before serving on important points in a match. Electrodes could be at-



Biofeedback training can help people become more aware of their autonomic nervous system and subsequently to control their reactions.

tached to specific muscles in her neck and shoulder region, and she would be asked to relax these specific muscles. Excess tension in the muscles would then cause the biofeedback instrument to make a loud and constant clicking noise. The tennis player's goal would be to quiet the machine by attempting to relax her shoulder and neck muscles. Relaxation could be accomplished through any relaxation technique, such as visualizing a positive scene or using positive self-talk. The key point is that the lower the noise level, the more relaxed the muscles are. Such feedback attunes the player to her tension levels and whether they are decreasing or increasing.

Once the tennis player learns to recognize and reduce muscle tension in her shoulders and neck, she then needs to be able to transfer this knowledge to the tennis court. This can be done by interspersing sessions of nonfeedback (time away from the biofeedback device) within the training regimen. Gradually, the duration of these nonfeedback sessions is increased, and the tennis player depends less on the biofeedback signal while maintaining an awareness of physiological changes. With sufficient practice and experience, the tennis player can learn to identify the onset of muscle tension and control it so that her serve remains effective in clutch situations.

Research has indicated that rifle shooters can improve their performance by training themselves, using biofeedback, to fire between heartbeats (Daniels & Landers, 1981; Wilkinson, Landers, & Daniels, 1981). In addition, biofeedback has been effective for improving performance among recreation, collegiate, and professional athletes in a variety of sports (Crews, 1993; Zaichkowsky & Fuchs, 1988; 1989). Although it should be noted that not all studies of biofeedback have demonstrated enhanced performance, the technique has been shown to consistently reduce anxiety and muscle tension. Biofeedback appears to be effective in increasing awareness of tension levels, and it provides a useful mechanism for coping with precompetitive anxiety.

Cognitive Anxiety-Reduction Techniques

Some relaxation procedures focus more directly on relaxing the mind than progressive relaxation and deep breathing do. It is argued that relaxing the mind will in turn relax the body. Both physical and mental techniques can produce a relaxed state although they work through different paths. We'll now discuss some of the techniques for relaxing the mind.

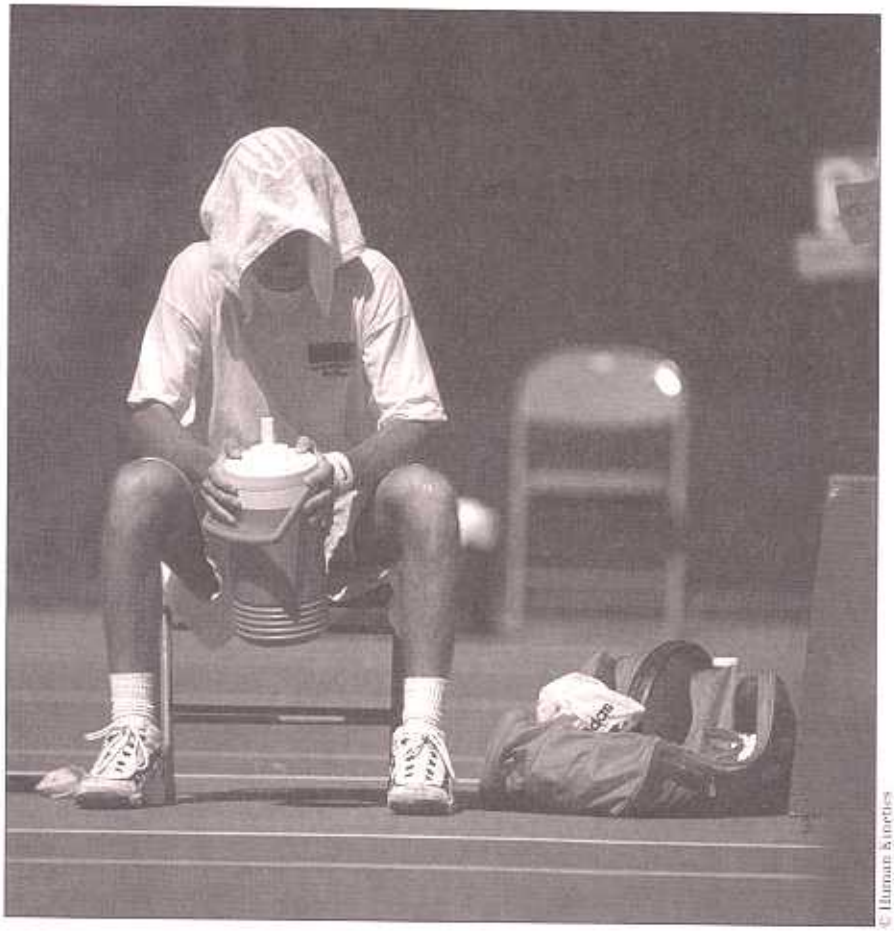
Relaxation Response

Herbert Benson, a physician at the Harvard Medical School, popularized a scientifically sound way of relaxing that he called the **relaxation response** (Benson & Proctor, 1984). Benson's method applies the basic elements of meditation but eliminates any spiritual or religious significance. Many athletes have used meditation to mentally prepare for competition, asserting that it improves their ability to relax, concentrate, and become energized. However, to date few controlled studies have investigated the effectiveness of the relaxation response in enhancing performance. The state of mind produced by meditation is characterized by keen awareness, effortlessness, relaxation, spontaneity, and focused attention—many of the same elements that describe peak performance.

The relaxation response requires four elements:

1. A quiet place, which assures that distractions and external stimulation are minimized.
2. A comfortable position that can be maintained for a while. Sit in a comfortable chair, for example, but do not lie down in bed—you do not want to fall asleep.
3. A mental device, which is the critical element in the relaxation response. It involves focusing your attention on a single thought or word and repeating it over and over. Select a word, such as relax, calm, or easy, that does not stimulate your thoughts and repeat the word while breathing out. Every time you exhale, repeat your word.
4. A passive attitude, which is important but can be difficult to achieve. You have to learn to let it happen, allowing the thoughts and images that enter your mind to move through as they will, making no attempt to attend to them. If something comes to mind, let it go and refocus on your word. Don't worry about how many times your mind wanders; continue to refocus your attention on your word.

The relaxation response teaches you to quiet the mind, concentrate, and reduce muscle tension.



Learning the relaxation response takes time. You should practice it about 20 minutes a day. You will discover how difficult it is to control your mind and focus on one thought or object. But staying focused on the task at hand is important to many sports. The relaxation response teaches you to quiet the mind, which will help you to concentrate and reduce muscle tension. However, it is not an appropriate technique to use right before an event or competition.

Autogenic Training

Autogenic training consists of a series of exercises designed to produce sensations, specifically of warmth and heaviness. Used extensively in Europe but less in North America, the training was developed in Germany in the early 1930s by Johannes Schultz and later refined by Schultz and Luthe (1969). Basically, it is a technique of self-hypnosis, thus a mental technique. Attention is focused on the sensations you are trying to produce. As in the relaxation response, it is important to let the feeling happen without interference. The autogenic training program is based on six hierarchical stages, which should be learned in order:

1. Heaviness in the extremities
2. Warmth in the extremities
3. Regulation of cardiac activity
4. Regulation of breathing
5. Abdominal warmth
6. Cooling of the forehead

Phrases such as "My right arm is heavy," "My right arm is warm and relaxed," "My heartbeat is regular and calm," "My breathing rate is slow, calm, and relaxed," and "My forehead is cool" are all examples of commonly used verbal stimuli in autogenic training. One reason that autogenic technique has not caught on in North America is that it takes a long time. It usually takes several months of regular practice, 10 to 40 minutes a day, to become proficient, to experience heaviness and warmth in the limbs, and to produce the sensation of a relaxed, calm heartbeat and respiratory rate accompanied by warmth in the abdomen and coolness in the forehead.

CASE STUDY

Relaxation Training

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An elite racquet sport player (who had won numerous international championships) sought out a sport psychologist to help her cope with her propensity to "panic under pressure"—that is, when the score is close at the end of a match. The following is an overview of the relaxation training that sport psychologist (Jones, 1993) provided her. Note that this relaxation training method is similar to one that Ost (1988) presented, except that the relaxation response, rather than progressive relaxation, serves as the starting point.

- **Phase 1.** This initial phase involves about 20 minutes of taped instructions in which the athlete generally learns the relaxation response. This includes (a) concentrating on breathing, (b) introduction of a mental device (repeating the word "one" or some other single-syllable word such as "ease") on each exhalation, (c) relaxing music, (d) counting down from 10 to 1 on each exhalation, (e) counting up from 1 to 7 on each inhalation. After two sessions of this form of relaxation in the presence of the sport psychologist, the athlete practices using the tape at least once daily for the next two weeks finally being able to achieve a deep state of relaxation.
- **Phase 2.** In this phase the period of relaxation was reduced to approximately 5 minutes. In this version, the athlete continued to listen to the taped instructions but the music was excluded and the mental device of "one" was changed to "relax." In addition, the counting procedure was changed to counting down from 5 to 1 and then up from 1 to 3. This was practiced every day for two weeks with the 20 minute tape used twice a week. During the second week, the athlete also practiced the 5-minute relaxation without the aid of the tape. By the end of the tape the athlete was proficient at reaching the desired level of relaxation without the tape.
- **Phase 3.** This phase involved having the athlete concentrate on each inhalation and silently saying to herself "relax" on each exhalation. The sport psychologist put the athlete in different physically taxing, uncomfortable situations (e.g., shuttle runs to exhaustion) in which she was asked to "relax" as best as possible. While doing this, the relaxation technique was reduced to approximately 5–20 seconds, requiring four or five breaths. The athlete was now practicing three versions of the original relaxation technique: (a) the 20-minute version used for deep relaxation, but not to be used on match days, (b) the 5-minute version which was used for gaining composure and could be used on competition days, and (c) the "quick" version which required only a few seconds and could be used on court to maintain composure.
- **Phase 4.** The athlete practiced the quick relaxation technique as much as possible during practice situations and practice matches. The athlete used a cue to trigger her quick relaxation which was simply to focus on the trademark on her racquet and to relax as she walked across court to either serve or receive serve. She then used this technique in competitive matches when she played a poor shot, or just before she played a critical point.

Multimodal Anxiety-Reduction Packages

The anxiety-reduction techniques just presented focus on either the cognitive or the somatic aspects of anxiety. Multimodal stress-management packages, however, can alleviate both cognitive and somatic anxiety while providing systematic strategies for the rehearsal of coping procedures under simulated stressful conditions. The two most popular ones are cognitive-affective stress-management training (SMT), developed by Ronald Smith (1980), and stress-inoculation training (SIT), developed by Donald Meichenbaum (1985).

Cognitive-Affective Stress-Management Training

Cognitive-affective stress-management training (SMT) is one of the most comprehensive stress-management approaches. SMT is a skills program designed to teach a person a specific integrated coping response using relaxation and cognitive components to control emotional arousal. Bankers, business executives, social workers, and college administrators have all applied SMT, and athletes have also found this technique to be effective (Crocker, Alderman, Murray, & Smith, 1988). Athletes have proved to be an ideal target population: They acquire the coping skills (e.g., muscular relaxation) somewhat more quickly than other groups, face stressful athletic situations frequently enough to permit careful monitoring of their progress, and perform in ways that can be readily assessed.

The theoretical model of stress underlying SMT (see Figure 12.3) includes both cognitively based and physiologically based intervention strategies (derived from the work of Ellis, 1962; Lazarus, 1966; and Schachter, 1966). This model accounts for the situation, the person's mental appraisal of the situation, the physiological response, and the actual behavior. The program offers specific intervention strategies, such as relaxation skills, cognitive restructuring, and self-instructional training, to help deal with the physical and mental reactions to stress. Combining mental and physical coping strategies eventually leads to an integrated coping response.

Smith's cognitive-affective SMT program has four separate phases:

1. Pretreatment assessment. During this phase the consultant conducts personal interviews to assess what kinds of circumstances produce stress, the player's responses to stress, and how stress affects performance and other behaviors. The consultant also assesses the player's cognitive and behavioral skills and deficits and administers written questionnaires to supplement the interview. This information is used to tailor a program to the player.

2. Treatment rationale. During the treatment rationale, or educational phase, the focus is on helping the player understand his or her stress response by analyzing personal stress reactions and experiences. It is important to emphasize that the program is educational, not psychotherapeutic, in design. Participants should understand that the program is designed to increase their self-control and that the level of coping ability they achieve depends on their efforts.

3. Skill acquisition. The major objective of the SMT program is to develop an integrated coping response (see Figure 12.2) by acquiring both relaxation and cognitive intervention skills. In the skill acquisition phase participants receive training in muscular relaxation, cognitive restructuring, and self-instruction. The muscular relaxation comes from progressive relaxation. Cognitive restructuring is the attempt to identify irrational or stress-inducing self-statements, which are typically related to the fear of failure and disapproval (e.g., "I know I'll mess up," "I couldn't stand to let my teammates and coaches down," or "If I'm not successful, I won't be worth anything"). These statements are then restructured into more positive thoughts (e.g., "I'll still be a good person whether I win or lose," "Don't worry about losing—just play one point at a time"). (Changing negative self-statements into positive self-statements is discussed in more detail in chapter 16.) Self-instructional training teaches people to provide themselves with specific instructions to improve concentration and problem solving. This training teaches specific, useful self-commands, especially helpful for stressful situations. Examples of such commands might be "Don't think about fear, just think about what you have to do," "Take a deep breath and relax," and "Take things one step at a time, just like in practice."

4. Skill rehearsal. To facilitate the rehearsal process, the consultant intentionally induces different levels of stress (typically by using films, imaginary rehearsals of stressful events, and other physical and psychological stressors), even high levels of emotional arousal that exceed actual competitions (Smith, 1980). These arousal responses are then reduced through the use of coping skills the participant has acquired. The procedure of induced affect can produce high levels of arousal, so only trained clinicians should employ this component of the technique.

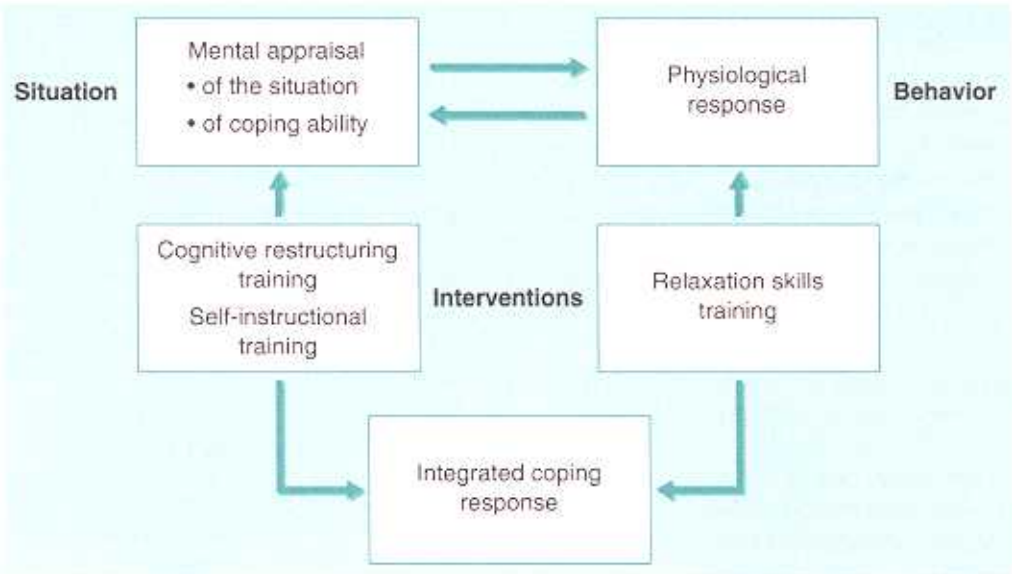

Figure 12.2 *Mediational model of stress underlying the cognitive-affective stress-management program, together with the major intervention strategies used in developing the integrated coping response.*
Adapted from Smith, 1980.

Stress-Inoculation Training

One of the most popular multifaceted stress management techniques used both inside and outside the sport environment is stress-inoculation training (Meichenbaum, 1985). The approach for SIT has a number of similarities to SMT, so only a brief outline of SIT will be provided. However, it should be noted that recent research has found SIT to be effective in reducing anxiety and enhancing performance in sport settings (Kerr & Leith, 1993), as well as in helping athletes cope with the stress of injury (Kerr & Goss, 1996).

Stress-inoculation training gets its name because the individual is exposed to and learns to cope with stress in increasing amounts, thereby enhancing his or her immunity to stress. SIT teaches skills for coping with psychological stressors and for enhancing performance by developing productive thoughts, mental images, and self-statements. Individuals using SIT are taken through the following three stages: (a) the *conceptualization stage*, in which awareness of the effects of positive and negative thoughts, self-talk, and imagery is developed (e.g., individuals are taught how negative self-statements such as "You stink tonight" can undermine self-confidence); (b) the *rehearsal stage*, in which participants learn the use of such coping skills as imagery and positive self-statements (e.g., individuals learn to image positive outcomes to stressful events); and (c) the *application stage*, in which people practice their coping skills in low-stress situations, gradually progressing to moderate- and high-stress situations. The use of a stage approach and the strategies of self-talk, cognitive restructuring, and relaxation make both SIT and SMT effective multimodal approaches for anxiety reduction.

Matching Hypothesis

You now have learned about a variety of relaxation techniques, and it is logical to ask when these techniques should be used to achieve maximum effectiveness. In attempting to answer this question researchers have explored what is known as the **matching hypothesis.** This hypothesis states that an anxiety-management technique should be matched to a particular anxiety problem. That is, cognitive anxiety should be treated with mental relaxation, and somatic anxiety should be treated with physical relaxation. This individualized approach is similar to the stress model developed by McGrath (see chapter 4). A series of recent studies (Maynard & Cotton, 1993; Maynard, Hemmings, & Warwick-Evans, 1995; Maynard, Smith, & Warwick-Evans, 1995) have provided support for the matching hypothesis.

These studies by Maynard and his colleagues have shown a somatic relaxation technique (progressive relaxation) to be more effective than a cognitive one (positive thought control) in reducing somatic anxiety. Conversely, the cognitive relaxation technique was more effective than the somatic one in reducing cognitive anxiety. The reductions in somatic and cognitive anxiety were associated with some subsequent (not quite consistent) increases in performance.

However, "crossover" effects (where somatic anxiety relaxation techniques produce decreases in cognitive anxiety and where cognitive anxiety relaxation techniques produce decreases in somatic anxiety) also occurred in these studies. In one study using a cognitive relaxation technique, the intensity of cognitive anxiety decreased by 30%, whereas the intensity of somatic anxiety also decreased, though by 15%. Similarly, when a somatic relaxation procedure was used, the intensity of somatic anxiety decreased by 31%, and the intensity of cognitive anxiety decreased as well, though by 16%. In other words, somatic relaxation techniques had some positive benefits for reducing cognitive anxiety and cognitive relaxation techniques had some positive benefits for reducing somatic anxiety. These "crossover" effects have led some researchers to argue that SMT and SIT are the more appropriate programs to employ, inasmuch as these multimodal anxiety-reduction techniques can work on both cognitive and somatic anxiety.

Based on the current state of knowledge, we recommend that if an individual suffers primarily from cognitive anxiety, a cognitive relaxation technique should be used. If somatic anxiety is the primary concern, focus on somatic relaxation techniques. Finally, if you are not sure what type of anxiety is most problematic, then use a multimodal technique.

Coping With Adversity

Athletes should learn a broad spectrum of coping strategies to use in different situations, and for different sources of stress (Hardy, Jones, & Gould, 1996). Successful athletes vary in their coping strategies, but all have skills that work when they need them most. Consider the strategies of two athletes:

> *[My strategy is] having tunnel vision. . . . I eliminate anything that's going to interfere with me. I don't have any side doors, I guess, for anyone to come into. I make sure that nothing interferes with me.*
>
> ***Olympic wrestler (cited in Gould, Eklund, & Jackson, 1993, p. 88)***

> *I did a lot of visualization. A lot of that. . . . It's a coping strategy. It felt like you did more run-throughs. You went through the program perfectly [many] times. So, it gave you a sense of security and understanding about what was to take place and how it was supposed to go. It just gives you a calmer, more serene way.*
>
> ***U.S. national champion figure skater (cited in Gould, Finch, & Jackson, 1993, p. 458)***

Although the relaxation techniques we have discussed have helped individuals reduce anxiety in sport and exercise settings, this wrestler and figure skater demonstrate how athletes also use more specific coping strategies to help deal with potential adversity and stress in competitions. The stressors particular to competitions include the fear of injury, performance slumps, the expectations of others, crowd noises, external distractions, and critical points within the competition. Let's first take a look at how coping is defined before discussing specific coping strategies employed in sport.

Definition of Coping

Although many definitions of coping have been put forth in the psychological literature, the most popular definition views **coping** "as a process of constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands or conflicts appraised as taxing or exceeding one's resources" (Lazarus & Folkman, 1984, p. 141). This view has the advantage of considering coping as a dynamic process involving both cognitive and behavioral efforts to manage stress, a definition that is consistent with McGrath's (1970) model of stress (presented in chapter 4). In addition, it emphasizes an interactional perspective, with both personal and situational factors combining to influence the coping responses. In fact, although individuals appear to exhibit similar coping styles across situations, the particular coping strategies they use depend on both personal and situational factors (Bouffard & Crocker, 1992).

Categories of Coping

The two most widely accepted coping categories are **problem-focused coping** and **emotion-focused coping**. Problem-focused coping involves efforts to alter or manage the problem that is causing the stress for the individual involved. It includes such specific behaviors as information gathering, goal setting, employing time-management skills, problem solving, and adhering to an injury-rehabilitation program. Emotion-focused coping involves regulating the emotional responses to the problem that causes stress for the individual. It includes such specific behaviors as meditation, relaxation, and cognitive efforts to change the meaning (but not the actual problem or environment) of the situation. Lazarus and Folkman (1984) suggest that problem-focused coping is employed more often when situations are amenable to change, and emotion-focused coping is

utilized more often when situations are not amenable to change.

Coping in Sport

Compared with the general psychology literature, there is a paucity of research in sport psychology on coping, although such studies have been on the increase in the 1990s (e.g., Anshel, Brown, & Brown, 1993; Anshel & Weinberg, 1995a; Crocker, 1992; Madden, 1995). In a series of in-depth qualitative interviews, Gould, Eklund, & Jackson (1992a; 1992b) assessed the coping strategies that elite athletes use. Despite a wide variety, at least 40% of the athletes reported using the following strategies:

- Thought control (blocking distractions, using coping thoughts such as "I can do it")
- Task focus (narrow focus, concentrating on goals)
- Rational thinking and self-talk (taking a rational approach to oneself and the situation)
- Positive focus and orientation (belief in one's ability, changing negative assessments of the situation to positive ones)
- Social support (encouragement from coach, family, and friends)
- Precompetitive mental preparation and anxiety management (mental practice, precompetition routines, narrow focus, relaxation strategies)
- Time management (making time for personal growth and daily goals)
- Training hard and smart (work ethic, taking responsibility for one's training)

Hardy, Jones, and Gould (1996) have listed the following findings as a summary of the research on coping in sport:

- Athletes use a wide variety of coping strategies, often in combination.
- Athletes use both emotion- and problem-solving strategies for coping, as well as adaptive and nonadaptive ones. Although many athletes cope successfully with the pressure of competition, others (even elite athletes) have difficulty with stress and use inappropriate or maladaptive coping techniques.

On-Site Relaxation Tips

In addition to the well-developed and carefully structured techniques we've discussed so far, other on-site procedures can also help you cope with competitive stress. These techniques are not backed with scientific, empirical research but come from applied experience with athletes (Kirschenbaum, 1998; Weinberg, 1988). You should choose the strategies that best work for your situation.

Smile When You Feel Tension Coming On

A simple and effective cue is to smile in the face of tension. It is difficult if not impossible to be mad or upset when you are smiling. By smiling you take the edge off an anxiety-producing situation. It keeps things in perspective so you can forget about the pressure and enjoy the competition.

Have Fun—Enjoy the Situation

Athletes highly skilled in their sport convey a sense of enjoyment and fun. Most of them look forward to and even relish pressure situations. For example, Al Oerter, four-time Olympic gold medalist in the decathlon, says, "I love competing in the Olympics. That's what training is all about." Similarly, former tennis great Billie Jean King says, "I like the pressure, the challenge—it's exciting; I choose to be here!" Enjoying the game also helps keep young players from burning out. Try to keep winning and losing in perspective and focus on enjoying the experience without undue concern for the outcome.

Set Up Stressful Situations in Practice

Practicing under simulated pressure can be good preparation for actual pressure situations. As you become more accustomed to playing under pressure, you will not be as negatively affected by it. You can create pressure in many ways during practice. Some college basketball coaches invite other students to practices, asking them to scream and boo so that the players feel how it is to play on an opponent's home floor with the crowd against them. Football coaches will set the stage for a 2-minute drill by telling the team there are 2 minutes left in the game, they are down by 2 points on their own 20-yard line, and there are 2 time-outs left: The offense must then move the ball into field goal range.

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Slow Down, Take Your Time

Many athletes report that when they are feeling frustrated and mad, they start to perform too quickly. It is as if the easiest way to cope with all the anger and pressure is to hurry up and finish. For example, tennis players and golfers tend to rush their shots when they get anxious. Conversely, some athletes take too much time between shots, and their thinking disrupts performance. You can find the middle ground if you develop highly consistent preshot routines and perform them regularly before each golf shot or tennis serve, regardless of the situation and pressure (see chapter 16).

Stay Focused on the Present

Thinking about what just happened or what might happen usually only increases anxiety. You can be sure that worrying about a fly ball you just dropped will not help you catch the next one that comes your way. In fact, worry makes you more anxious and increases your chances of missing. Similarly, thinking about what might happen on the next point or shot only increases pressure and anxiety (see chapter 16 for methods of focusing on the present).

Come Prepared With a Good Game Plan

Indecisiveness produces anxiety. Making decisions can be stressful, and in competition athletes and coaches have to make literally hundreds of decisions during the course of a game or match. Think of the decisions that point guards in basketball, football quarterbacks, golfers, baseball pitchers, tennis players, or soccer players have to make. But if they come prepared with a specific game plan or strategy, decision making is easier. For example, deciding what pitch to throw from behind in the count often causes baseball pitchers stress. Some pregame scouting, however, can give pitchers a good idea of the best pitches to use if they fall behind to certain batters.

Arousal-Inducing Techniques

So far we have focused on anxiety-management techniques to reduce excess levels of anxiety. There are times, however, when you need to pump yourself up

because you are feeling lethargic and underenergized. Perhaps you have taken an opponent too lightly and she has surprised you. Or you're feeling tired in the fourth quarter. Or you're lethargic about your rehabilitation exercises. Be aware that certain behaviors, feelings, and attitudes signal that you are underactivated:

- Moving slowly; not getting set
- Mind wandering; becoming easily distracted
- Lack of concern about how well you perform
- Lack of anticipation or enthusiasm
- Heavy feeling in the legs; no bounce

You don't have to experience all these signs to be underactivated. The more you notice, however, the more likely you need to increase arousal. Although these feelings can appear at any time, they usually indicate you are not physically or mentally ready to play. Maybe you didn't get enough rest, played too much (i.e., overtrained), or are playing against a significantly weaker opponent. The more quickly you can detect these feelings, the quicker you can start to get yourself back on track. Here are suggestions for generating more energy and activating your system.

Increase Breathing Rate

Breath control and focus can produce energy and reduce tension. Short, deep breaths tend to activate and speed up the nervous system. Along with the accelerated breathing rate, you may want to say "energy in" with each inhalation and "fatigue out" with each exhalation.

Act Energized

At times when you feel lethargic and slow, acting energetically can help recapture your energy level.

To take the steps to increase or decrease your arousal level, first become aware of how activated or aroused you feel.

For example, football players often bang against each other's shoulder pads in the locker room before games to get themselves pumped up. Many athletes like to jump rope or take a little jog just before starting a competition to "get the butterflies out."

Use Mood Words and Positive Statements

The mind can certainly affect the body. For example, saying or thinking mood words (e.g., strong, forward, tough, aggressive, move, quick, fast, hard) can be energizing and activating. Positive self-statements can also energize you. Some examples include "Hang in there," "I can do it," "Get going," and "Get tough."

Listen to Music

Energetic music can be a source of energy just before a competition, and many athletes use cassettes with headphones before a game. And listening to upbeat music while exercising can generate enthusiasm and emotion.

Use Energizing Imagery

Imagery is another way to generate positive feelings and energy (see chapter 13). Imagery involves visualizing something that is energizing to you. A sprinter, for example, might imagine a cheetah running swiftly over the plains. A swimmer might imagine moving through the water like a shark.

Complete a Precompetitive Workout

A precompetitive workout typically occurs 4 to 10 hours before the athletic performance. When feeling a little lethargic, it's not uncommon for athletes to come out to practice and stretch several hours earlier to help activate them for a performance later in the day.

SUMMARY

1 *Understand how to increase self-awareness of arousal states.*

The first step toward controlling arousal levels is to become aware of the situations in competitive sport that cause you anxiety and how you respond to these events. To do this athletes can be asked to think back to their best and worst performances and then recall their feelings at these times. In addition, it is also helpful to use a checklist to monitor your feelings during practices and competitions.

2 *Use somatic, cognitive, and multimodal anxiety-reduction techniques.*

A number of techniques have been developed to reduce anxiety in sport and exercise settings. The ones used most often to cope with somatic anxiety are progressive relaxation, breath control, and biofeedback. The most prevalent cognitive anxiety-reduction techniques include the relaxation response and autogenic training. Two multimodal anxiety management packages that use a variety of techniques are (a) cognitive-affective stress management and (b) stress-inoculation training.

3 *Identify coping strategies to deal with competitive stress.*

The two major categories of coping are known as problem-focused coping and emotion-focused coping. Problem-focused coping involves efforts to alter or manage the problem that is causing stress, such as goal setting or time management. Emotion-focused coping involves regulating the emotional responses to the problem causing the stress. Having an array of coping strategies allows athletes to effectively cope with unforeseen events in a competition.

4 *Describe on-site relaxation tips to reduce anxiety.*

In addition to several well-developed and carefully structured techniques, on-site techniques have been identified to help sport and exercise participants cope with feelings of anxiety. These on-site tips usually involve having participants remember that they are out there to have fun and enjoy the experience.

5 *Understand the matching hypothesis.*

The matching hypothesis states that anxiety-management techniques should be matched to the particular anxiety problem. That is, cognitive anxiety should be treated with mental relaxation, and somatic anxiety should be treated with physical relaxation.

6 *Identify techniques to raise arousal for competition.*

Sometimes energy levels need to be raised. Increased breathing, imagery, music, positive self-statements, and simply acting energized can all help increase arousal. The ability to regulate your arousal level is indeed a skill. To perfect that skill you need to systematically practice arousal-regulation techniques, integrating them into your regular physical practice sessions whenever possible.

KEY TERMS

progressive relaxation
breath control
biofeedback
relaxation response
autogenic training
cognitive-affective stress-management training (SMT)
stress-inoculation training (SIT)
matching hypothesis
coping
problem-focused coping
emotion-focused coping

REVIEW QUESTIONS

1. Discuss two ways to help athletes increase awareness of their psychological states.
2. Discuss the four basic tenets of progressive relaxation and give some general instructions for using this technique.
3. Describe the four elements of the relaxation response and how to use it.
4. Describe the approach taken, skills included, and phases of Meichenbaum's stress-inoculation training.
5. How does biofeedback work? Provide an example of its use in working with athletes.
6. Describe the theoretical model of stress underlying the development of the cognitive-affective stress-management technique.
7. Discuss the four phases of cognitive-affective stress-management, comparing and contrasting cognitive structuring and self-instructional training.
8. Define coping as suggested by Lazarus and Folkman. What are the advantages of defining coping in this way?
9. Describe and give contrasting examples of emotion-focused and of problem-focused coping. Under what circumstances is each type of coping used in general?
10. Describe five different coping strategies that elite athletes used in Gould et al.'s studies.
11. Discuss three strategies for on-site reductions in anxiety and tension.
12. An athlete is having trouble getting psyched up for competition. How would you help her get energized?

CRITICAL THINKING QUESTIONS

1. You are getting ready to play the championship game to end your volleyball season in two weeks. You know that some of your players will be tense and anxious, especially as it's the first time your team has reached the final game. But you have a few players who are always slow starters and seem lethargic at the start of competitions. What kinds of techniques and strategies would you employ to get your players ready for this championship game?
2. Think back to a time that you were really anxious before a competition and when your anxiety had a negative effect on your performance. Now you know all about relaxation and stress-management techniques as well as several specific coping strategies. If you had this same situation again, what would you do (and why) to prepare yourself to cope more effectively with your excess anxiety?