

- and self-talk,
3. electrodermal for emotional involvement, heart rate and respiration for c-v responses, and
 4. Skin temperature for blood flow.

Finding their tendencies to respond under stress has proved to be invaluable for athletes who have difficulty in competition and a confidence booster even for those who have excellent control and recovery.

Knowledge of the Situation

Another issue is understanding that practicing in practice is not the same as practicing for competition. Research again shows that the psychophysiological state of the athlete is different when in important competition, especially their brain state. Thus, it is necessary for coaches to 'practice' competing. While for some athletes, imaging the upcoming competitive event is sufficient for creating a 'competitive environment', for many the skills have to be practiced in an actual competition. This means that the coach needs to select an important 'practice' competition but one sufficiently shielded so the athlete can focus on skills and not results. Again, as athletes in several professional sports attest to, it is helpful to have instrumentation to be able to specifically identify what systems are not appropriately responding.

Specialized Knowledge and Equipment

Knowledge Application

I believe we have failed to assist coaches in either learning or seeking out information to train the brain of athletes. This is true even when there is significant documentation with athletes that demonstrates its value. For performance enhancement, we have good information that supports the use of:

1. goal setting
2. imagery
3. self-talk
4. arousal control, and
5. attention control

However, it is not sufficient to merely present the skills. To know that they are

working, they must be done:

- for a specific purpose
- at the right time
- in the right manner, and
- with sufficient feedback

My preference is to have the coach learn how to properly apply the techniques, but if they chose to have an 'expert' provide the services, they need to be very explicit in what is needed for the event and the person. The brain training skills should be incorporated:

- within the strength and conditioning program,
- in the learning and in actual practice of technique,
- not isolated as a 'special skill'.

Ultimately, the maximum benefit comes when the coach reinforces the skill in practice and competition

Knowledge is available. Seminars exist where a coach could learn the most effective ways to teach breathing for:

1. increasing or decreasing arousal
2. the meditative states (slowing down self-talk), and
3. regeneration

Texts such as Williams (2000) provide synthesized information on how to do the skills such as creating scripts for imagery. I feel that if a coach incorporates one skill each year into the actual daily practices the improvements would be magnified.

Not all brain training needs to have highly specialized skill or knowledge. An example that is used throughout the world to help control arousal, which in turn helps control attention and anxiety, is breathing. While some events or individuals need a thorough training of breathing (e.g. rate, ratio, location, rhythm), a coach can easily and effectively teach a breathing technique to lower arousal and muscle tension in the shoulders for most athletes. Two simplified techniques are:

1. Roller-coaster Breathing

To slow down breathing, which is

often needed in high stress situations, not practice, the concept of a roller coaster or a wave washing up on a beach is effective.

- The athlete brings the air in (active, abdominal region does most of the work and will be moving away from their backbone) as they ride up the roller coaster or wave;
- they let the air out (passive, abdominal region sinks towards backbone) as they ride down the wave.

The critical factor is that they continue to breathe, versus holding their breath, and that the amount of time for the air coming out should be longer than the amount of time they take to get the air in. Natural pauses may occur at the top and bottom of the roller coaster, but holding the breath is not encouraged.

2. Ahhhaasome

For releasing muscle tension as well as slowing breathing, we add in a facial and shoulder release of the muscles. Experience and research has shown the athlete must do the release twice to eliminate residual tension in the shoulders.

- "Take an easy deep breath from the abdominal region, as you slowly exhale, let go of the muscle tension in your jaw, shoulders, elbows and hands.
- As you take a second deep easy breath, again release the muscles in the jaw, shoulders, elbows and hands and let the blood flow freely down to your arms and legs."

Biofeedback and Neurotherapy

As previously noted, all the equipment used to assess the psychophysiological state of the athlete can be used to train required states prior to and during performance. This has been done around the world for decades.

What is new, with the advent of less expensive and computerized electroencephalography and subsequent research, is the capacity to specifically assess and train the brain states, called Neurotherapy. Currently, mainly professional athletes or those