



CENTER FOR COGNITIVE ENHANCEMENT

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Sports Enhancement and the Use of Audio-Visual Entrainment (AVE)

Introduction

In sports, training and physical “readiness” are important, but attitude can be everything. A positive, healthy mind state can give a competitive athlete the edge needed for an outstanding performance. Thoughts of doubt, stress and concerns about failure during competition in an athlete’s mind can have a devastating effect on performance. It is because of these thoughts that athletes perform well during training and practices but buckle under the pressure of competition. Why do athletes experience this performance anxiety? Why don’t years of training instill the confidence and control needed to achieve excellence?

All athletes get exposure to the details, measurements and press coverage comparing them to other athletes. What concerns athletes in most sports is that performance is not based on an athlete’s own empirical measures, but on the athlete’s performance relative to other athletes. Therefore an athlete has to develop a healthy attitude early in life, where the comparisons, statistics, and so on are not threatening, but taken in stride. Once an athlete has associated anxiety/fear with his/her performance, there becomes a great likelihood of developing bracing habits (muscle tension, nervousness, vaso-constriction, EDA activity, etc.). These bad habits will persist and will require training to remove.

Detractors from Excellence

Negative thoughts not only impair athletes striving to perform their best, but they also reduce serotonin levels in the brain. A high level of serotonin is directly linked to superior job performance and leadership ability. Low serotonin levels affect the athlete’s emotions and thoughts, leading to a less hopeful attitude and a reduced threshold for the guarding response, not only during the competition, but during training (and in all walks of life, for that matter). Research conducted by the Shealy Institute indicated that 30 minutes of AVE stimulation with white lights increases serotonin levels by approximately 23%, which increases hopefulness, self-esteem and the drive to win!

High arousal from negative thoughts, fantasies of fame and fortune, and excessive stimulation can also prematurely tire an athlete. Golfers, tennis players and baseball players can fatigue their fast-twitch muscles (critical for fast movements like swinging a bat, racquet or golf club) before they even begin their game. There have been only too many occasions where the stress surrounding a competition or Olympic event has brought a top-notch athlete to his or her defeat! Managing arousal increases the chances of being in the best psychological and physiological position for peak performance. This concept is not limited to sports performance, but also applies to all areas of life including the performing arts, public speaking and academics.

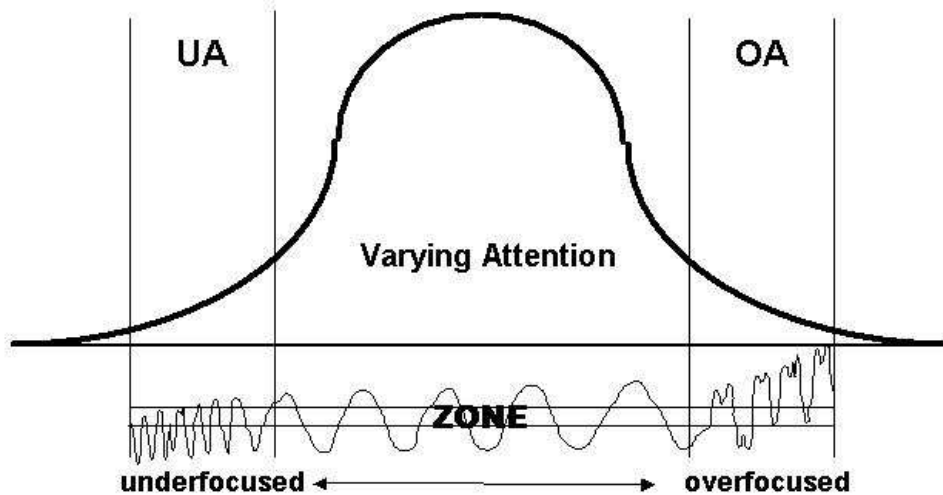
Look!! A Duck!

The ability to concentrate and stay focused strongly influences an athlete’s performance. Figure 1 shows how arousal influences an athlete’s ability to perform in the peak-performance state. There are many stories of normal and “slow” people who suddenly become “super humans” performing acts of heroism in a crisis (as a result of being pushed from the hypo-aroused state into the peak-performance state). But most athletes train in a fairly optimal peak-performance state as it is. However, on the day of the big event, nearby distractions (such as camera crews, celebrities, crowds, noise and the “big money” excitement of winning), interfere with the athlete’s ability to focus, pushing the athlete’s arousal and attention from the peak-performance state into a hyper-aroused state as shown on the right-hand side of

Figure 1. This occurs when the athlete is too physically and mentally “wired” to function in the peak-performance state. This highly anxious state influences the athlete’s attention, impulsiveness and hyperactivity, behavior similar to that as seen in people with Attention Deficit Disorder.

figure 1

Bell Curve of Attentional Stability



Comptronic Devices Limited 1995

Athletes & AVE

The first athlete I helped use AVE to enhance sports performance was an amateur tennis player. He was experiencing pre-game anxiety which was costing him games because of mental mistakes and muscle fatigue. After using the audio visual entrainment (AVE) for only one season, he was pleased to report back to me that he had improved his overall standing from 150th place to 47th place.

In 1988, the Dallas Cowboys’ sports psychologist, Bob Ward, used a AVE to help the football players visualize passing, kicking and other skills. He also placed AVE units, with view holes in the eye sets, into the players’ fanny packs so they could receive AVE while running at practice. Bob noted that the players ran further in less time when running with a AVE system. He believed that, on their own, the player’s performance was hampered by a mental protective mechanism. He also believed that the real inhibiting factor came from their conscious mind and that at some point during their run, when they believed that they had run far and long enough and that they shouldn’t push so hard, they slowed down! This supports the belief that what we believe is possible actually affects our physical ability. For example, it was once thought to be impossible for humans to run a mile in less than four minutes until Bannister proved it was possible in 1954. Prior to this historical race, Bannister received not only intense physical training, but psychological training as well! Since Bannister broke the four-minute mile, many others have followed. Now an Olympic level athlete must run a mile under four minutes in order to qualify!

Rocky Thompson worked relentlessly on the mechanics of his golf game but it wasn't until he settled down some anxieties about his performance that he showed remarkable improvement. Two weeks after Rocky's introduction to the AVE, he attributed his win at the Seniors Digital Classics in September 1991, to the relaxation he benefited from after using the AVE unit. With his increased relaxation, his body was more relaxed and he made better decisions, allowing him to deliver the shots he needed to win. Throughout his career, his anxiety cost him many games. But by learning to relax, he could play the game at the level his body and mind were capable of!

Olympic speed skater, Christine Boudrais, used AVE to help with her emotional healing following a serious accident during competition when another skater collided with her and severely injured her. Fear of the accident haunted her and interfered with her training and competitive edge. She believes that using AVE helped her get back onto the ice with the mental power to compete and win again. She went on to Lillehammer in 1992 to win a silver medal!

Over the years, many golfers have successfully used AVE to improve their game. Golf, like chess, is a tough mental game and golfers show tension all too well. Many golfers play an excellent game at practice, but do poorer under the stress of competition. When a golfer experiences anxiety, it will often be reflected as increased back tension and poor decision making. Sometimes, just hearing a tape recording of golf balls being driven will produce anxiety responses in a "struggling" golfer.

Excellence Through AVE

AVE devices can be very effective in training an athlete to learn to stay focused and control their level of arousal during sporting events. Using AVE with visualization is a good way to achieve this. One way is to use any pre-recorded material including recordings of the sounds and noises surrounding the actual event. For instance, Golf Skills Enhancement Pre-Golf Conditioner plays interludes of music with the sounds of golf balls being shot. In a short time, the user will begin to associate a relaxation response with golf balls being struck and will relax a little every time he/she hears someone or themselves shooting a golf ball. The Sound Sync (or Music Modulation) session provides an excellent means to stay both relaxed and yet lucid by making small fluctuations in the stimulation rate in response to bass and treble sounds within the recording. This session will run so long as the recorded material is playing and will automatically shut off when finished.

Figure 2 shows the Skill Development Session that serves the purpose of improving peak performance. This session begins with 10 minutes of alpha stimulation, at which time the athlete imagines being at his/her best on the day of the event. This allows the athlete to experience feeling relaxed and calm, yet sharp, clear and prepared. The athlete then imagines everything happening smoothly and effortlessly. After ten minutes of alpha, the stimulation rate speeds up to a beta frequency, related to alertness. The relaxation experience from the alpha in the first half of the session is carried over into the remaining half (beta) of the session. It is during this beta stimulation that the athlete imagines going through the motions of the game with confidence and skill. This session uses the heartbeat sounds for paced breathing and controlled heart rate as practiced in heart rate variability, which enhances relaxation. It is helpful to use auditory cues (the sound of the golf club striking the ball, the stick slapping the puck, or the sounds of the crowd during a race) played through on audio. This conditioning, can help the athlete learn to create a relaxation response instead of anxiety whenever he/she hears these sounds during the actual event.

Another factor that can interfere with an athlete's performance is the inability to sleep well the night before a big event. You can use the AVE device a few weeks before the event and imagine falling asleep easily and deeply on the night of the event as if it were any other night. Again, using auditory relaxation cues on CD or imagining the sounds that may be heard during the event as you fall asleep will be helpful.

Because AVE is especially effective with visualizing, use the following simple imagery exercise during an AVE session:

EX-RAY to Peak Performance

The EX-RAY allows you to “see” through the blocks of destructive thoughts, conditioned responses, and associations - to see straight into success through your creative imagination. The EX-RAY is a simple 5-minute technique similar to other visualization techniques used by Olympic athletes. The athlete identifies the exceptional feelings he/she has had during previous events or practice sessions when he/she performed above his/her normal level of performance. Practicing this exercise can help a peak performer stay at the top of the bell curve more consistently during events when stress is higher. It can be helpful to use the EX-RAY in conjunction with the EDA Bioscan (electro-dermal biofeedback) to track trait and state arousal while visualizing. The EX-RAY can also be used for increasing performance when learning, public speaking, during recitals and perfecting any skill.

E - Think of an **E**vent when your performance was exceptional.

X - Feel the e**X**ceptional feelings and thoughts you had during this event.

R - Recall these exceptional qualities with all of your senses and feelings.

A - Allow these exceptional qualities from the exceptional event to fill your body and mind as you apply them to the new event you are about to become part of.

Y - Say **YES!!!** as you see through your obstacles and feel your success in the upcoming event that you have just witnessed in your mind.

Repeat this process as often as needed. For increased effectiveness use EX-RAY along with the Skill Development session. When the session speeds up (after about 10 minutes), visualize doing the actions of the actual event until the session ends.

Dave Siever

- dancing in the dendrites!