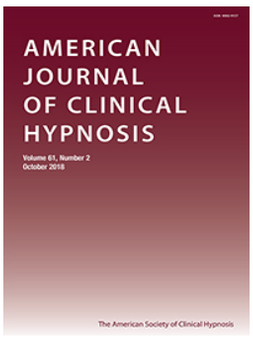


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# Alert, Eyes-Open Sport Hypnosis

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Sport hypnosis (SH) is a form of alert hypnosis defined by mental training procedures based on three techniques in combination: eyes-open hypnosis, traditional eyes-closed hypnosis, and self-hypnosis. The self-hypnotic state is operationally defined as the imagined "inner mental room" (IMR). The main purpose of SH is to produce the sport hypnotic state (SHS), or the flow state, a form of alert hypnosis. Another purpose of SHS is also to allow a user to initiate and release specific posthypnotic effects. These effects are designed to enhance the user's performance and well-being as an athlete. The SHS can be induced through rhythmic athletic activities and by posthypnotic signals (triggers). Performance in SHS happens in a flow state, an alternative state of consciousness which increases results despite decreased effort (relaxed effectiveness). Reports from Olympic Games champions show the importance of SHS training for peak performance. SH techniques can also be applied in other areas in the quest for excellence.

**Keywords:** sport hypnosis, alert hypnosis, eyes-open hypnosis, developmental hypnosis, mental training

In addition to what in this article later refers to as sport hypnosis (SH), there are various forms of alert and active hypnosis reported in the literature. One technique, hyperalert hypnosis, was introduced by Ludwig and Lyle (1964) to identify a state in which physically active people seemed to follow suggestions in a "hypnotized" way. They mention, as examples, emotional contagion in crowds, the behavior of religious revivalist groups, and ritual ceremonies by tribal dancers. Their techniques may also be called natural hypnosis. Sometime later, Bányai and Hilgard (1976) proposed and reported a technique labeled active-alert hypnosis, induced by pedaling an ergometer bicycle gauged for high effort, combined with verbal suggestions for activity and alertness. The cyclist could have his or her eyes open or closed. An alternative, called alert hand, is less strenuous: The user waves one hand up and down. This technique was reported to produce a higher suggestibility score and a lower dropout rate (Cardeña, Alarcon, Capafons, & Bayot, 1998). The literature on alert hypnosis, with some exceptions, such as education (De Vos & Louw, 2006; Wark, 1996; Wark & laPlante, 1991), psychotherapeutic applications (Bányai, Zseni, & Tury, 1993; Iglesias & Iglesias,

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2005), and sports (Robazza & Bortoli, 1994), has focused on the theoretical aspects of alert hypnosis.

This article introduces two more terms related to alert hypnosis (Unestahl, 1982): *Posthypnotic trance* is a temporary, short trance state that promotes a posthypnotic effect. I also introduce a form of alert hypnosis that I call *hypnotic wakefulness.*

All of the mentioned concepts share the word *hypnosis*, a term which I define as an alternative state of consciousness, where information can bypass the logical mind and bring about changes in suggestibility and perception and in which there are alternative control systems available.

This article focuses on SH as a part of the Swedish model of mental training (called integrated mental training [IMT]), reviews background research, and presents an analysis of the sport hypnotic state (SHS) and the effect on sport performance and a variety of other body functions, such as electroencephalogram (EEG) synchronization, cortisol reduction, and increased immune response.

## Hypnotic Inductions

Hypnosis can be achieved by various formal and informal inductions, based on one or more of the following six suggestions (Unestahl, 1982): (1) decreased exteroceptive stimulation and/or motor activity; (2) increased exteroceptive stimulation and/or motor activity; (3) sudden increase of negative emotions, especially fear; (4) increased active concentration and mental involvement; (5) decreased critical functions, thought control, and directed thinking; and (6) somatic–psychic relations where hypnosis and hypnotic-like states can be induced by fasting, drugs, and so on.

Traditional inductions, based on relaxation, dissociation, and motor inactivity (items 1 and 4 from the previous list), and the traditional alert hypnosis induction (item 2), have, in most studies, given rise to the same kind of hypnotic state (Wark, 1998). Interestingly, Bányai (1980) found a small difference: Active-alert inductions were significantly more likely to be associated with reports of joyful dreams. And note that a sudden increase in fear (item 3) often produces a hypnotic-like state of immobility and catalepsy.

## Integrated Mental Training and Sport Hypnosis

I set forth the concept of mental training in 1969, and I changed the name to integrated mental training (IMT) after the 1980 Olympic Games, when additional forms of mental training appeared. I also introduced the term sport hypnosis (SH) in combination with the Sixth International Society of Hypnosis (ISH) Congress in Uppsala, Sweden, in 1973. (Unestahl, 1975). Both concepts were based on a 10-year research project at

Uppsala University, where I investigated several areas. One was hypnosis, self-hypnosis, and other alternative states of consciousness (ACSs), including flow (Csikszentmihalyi, 2014). Another was mind and body relations, especially ideomotor connections applied to sports performance. The third topic was the effects of systematic training to improve hypnotic susceptibility scores, mind skills, and attention in everyday life.

The applied, practical training programs in IMT and SH was developed, starting in the 1970s, in cooperation with 11 Swedish national teams and the Olympic teams for 1976 and 1980. Participants at those early meetings in 1970 made comments such as "I should like to have flow every time, but unfortunately it just comes now and then. I do not know when it will come, and if it comes I do not realize that until afterwards. If I become aware that I have flow, it disappears." Therefore, one important goal for the research on SHS was finding ways to increased flow control. The second application of SH techniques was the development of mental skills such as focus and attention. The third area was mental preparation for athletic careers and applications to the sporting season and competition by goal programming, establishing triggers for flow control, and so on (Unestahl, 1979). By the 1980 Olympic Games, there was a significant relation between athletes' results and their mental training experiences. While 29% of the total Olympic team had used mental training in preparation, the figures for the finalists was 58% and for the medal winners 67% (for details, see Unestahl, 1982).

## Research on the Background of Sport Hypnosis

### Flow

As flow characteristics can vary depending on the context (Csikszentmihalyi, 2014), flow in sport has been named the sport hypnotic state (SHS). There are several subjective experiences that define the SHS. One is a change of perception. Under flow conditions, time seems to pass more slowly and objects seem to be larger. Another change is a sense of automaticity. Events seem to take place automatically, without conscious control. The person in a flow state has a sense that his or her body moves easily in response to internal and external triggers. Events seem to happen effortlessly. Another related characteristic is a sense of disassociation. There may be weak memory recall, and sometimes even total amnesia, for an event.

### Olympic Support Center

After 10 years of research at Uppsala University, which produced the mental training concept in 1969 and the term *sport hypnosis* some years later, I moved to Orebro University where we started the Olympic Support Center to develop the practical

training methods and to investigate the criteria of flow and of sport excellence. In one study (Unestahl, 1979, 1997) SH-trained Olympic champions were interviewed about their SHS. Here are some examples:

- Kathy Kreiner, a Canadian Alpine skier, said, "After having learned through mental training to control the SHS, I started to experience my races in slow motion, which gave me more time to do what I had to do in order to win" (perceptual change).
- Pia Hansson, an Olympic skeet champion, reported, "As a peak performer, I have to establish a good relation and communication between mind and body, not by command and effort but through mental images, triggers, and thrust. In this flow state the pigeons look bigger and seem to move slower" (perception, disassociation).
- Olympic gold-medal-winning diver Ulrika Knape said, "I used mental triggers to enter a highly concentrated and focused state, where I was 'right there,' letting the thing happen in the right moment" (automaticity, disassociation).
- Ingmar Stenmark, an outstanding slalom specialist with two Olympic golds, five world championships, and 1985 World Cup victories, commented: "I just go ahead, letting my body take care of the race. I do not worry about my competitors; I just chase the perfect race in my mind" (automaticity).
- Pär Arvidsson, a champion swimmer, said, "I did program my brain and body every week for two years to swim at a specific time. At the Olympics, my body just did it" (automaticity).
- And finally, Thomas Gustafson, three-time Olympic champion speed skater, reported, "I had control over my flow state by using the mental room to pick up the flow feeling from past competitions and condition the flow to triggers" (automaticity).

## Inductions of the SHS

Running is often used as preparation for competition. But many noncompetitive people have become interested in running since the 1970s as a "lifestyle." One reason for this interest seems to be that running can produce a desirable mental state. This ASC or trance seems to involve the release of enkephalin, an opiate peptide in the brain. This chemical produces a euphoric, altered experience, commonly called the "runner's high." There are many positive aspects of being productive and organized in this alternative state, but there is also a dark side. Daily running became for some people more important than work, family, or routine activities. Pargman (1980) divided runners into two categories: committed-dedicated (CD) and addicted-dependent (AD). The CD belonged to what Glasser (1976) called "positive addiction," while AD runners were so addicted that they experienced severe withdrawal symptoms if they were prevented

from running. A similar phenomenon related to training is called *training or exercise addiction* (Landolfi, 2013).

There seems to be great interindividual differences in the runner's high state. I studied participants from two races, one for runners, the other for skiers, to identify who reported a runner's high and how long it took them to reach the state (Unestahl, 1979). The average times were 21 minutes running and 27 minutes skiing. However, some people were in a flow or runner's high state after a few minutes, and some never achieved the state. I also started to use what I called *meditative running* for problem solving. The runners were instructed to write down a problem and then run for minimum 30 minutes, on a familiar track in the forest, at an even speed, staying below 70% of maximum heart rate. They were told there should be no rumination on or thinking about the problem during their run. This was a quantitative study to explore the parameters of a running task. No scientific evaluation of enhanced problem solving was made. Instead, the only measurements were of flow, showing flow appearing after 10 minutes, on average.

These findings had practical implications for athletes. Those participating in endurance and team sports could enter flow state easily, as part of the competition. But athletes involved in short performances, like 100-meter races, or momentary focused activity, like golf, needed an alternative induction technique. For them, it was important to develop triggers for self-induction of flow.

## Mind–Body Research

One line of research has investigated the contents and principles of SHS/IMR, for instance, the self-hypnotic state itself. Some of the findings are noted here (Unestahl & Bundzen, 1996; Unestahl, Bundzen, Gavrilova, & Isakov, 2004).

The patterns of EEG neuromapping and the spectral analysis of EEG point to the fact that the mental training state (IMR) is characterized by an intensification of theta-activity in ante-central sections of the brain and smoothing of alpha-activity in the frontal-occipital direction. The subsequent analysis showed that the EEG frequency spectrum in retrocentral sections of the cortex represents a set of subdominant and harmonious bound frequencies in the range of delta, theta, alpha 1 and 2, and beta rhythms. Thus, the polymodal frequency harmonization of cortical bioelectrical activity in the brain, which may be considered to follow the so-called golden ratio (Livio, 2002) or "section divine," has been shown to be one of the specific neurodynamic correlates of the "IMT state" (Unestahl & Bundzen, 1996).

Other changes happen during and after SHS/IMT training (Bundzen, Gavrilova, Isakov, & Unestahl, 1998; Bundzen, Korotkov, & Unestahl, 2002):

1. A significant reduction of the level of cortisol and free fatty acids in the blood plasma
2. Increase in beta-endorphin levels
3. Increase in general immunomodulating capacity

4. Prevention of reduced immunology, normally related to overtraining
5. Reversal of the age-related decrease of the hormone DHEAS
6. Increase in self-regulating capacities and homeostatic processes

Many reports in the Swedish-Russian mental training research project were focused on applications of mental training and sport hypnosis in school, sport, and health areas. But in some reports we looked into the brain–body connections to identify the optimal zone of performance (OZP) using a field EEG measurement instrument called Omega potential. The Omega potential (Russian patent no. 20,113,775, 1994) registers bilateral digital values of quasi-DC potential and averages the middle latency evoked responses (MLERs). Field investigations with EEG measures of the Omega potential in various sports pointed to an OZP of 15 Mv to 25 Mv, where the difference between top athletes and lower-level athletes seemed to be in the left hemisphere. Thus, peak performance in SHS seemed to be related to an integration of left and right hemisphere signals inside the OZP.

To test these findings, we compared EEG measures of the Omega potential (see Discussion section) in two archery shooters during competition, one average and one an SH-trained world-record holder (Unestahl, 1997). Ten seconds before the shots, they both had similar patterns, with their left brain more active than their right. At the time of the shots, the average shooter still had the same differential pattern, but the world champion had integrated the left and right hemisphere signals so that the activity was on the same level in both hemispheres and inside the OZP. When the world champion afterward was asked: "How do you know when you are going to shoot?" She answered, "I do not know, but my body knows. The shot comes by itself when my body is ready. I do not have to think." Another difference was that the champion's arrow was released through an ideomotor system, which involved less tremor than shots released through the other shooter's voluntary decisions.

## Other Research Findings Important for Sport Hypnosis

Many of the over 40 studies I conducted and supervised as head of the Department for Clinical and Experimental Hypnosis at Uppsala University (1965–1973) had to do with posthypnotic phenomena. What I found has become an important part of SH training (Unestahl, 1973). For example, using the Stanford Hypnotic Susceptibility Scale (SHSS), one study showed an increase of SHSS scores for all subjects after three to six months of systematic training of ideomotor and imagery skills. Another study compared live induction with recorded induction, in counterbalanced order. The results did not show any significant differences in SHSS scores between live and recorded induction. A third study showed that subjects who learned hypnosis without any external helper were better in control and in application after six months of training

than subjects trained by a hypnotist. A fourth study showed that all hypnotic phenomena could be released through self-hypnosis, even amnesia for the user's own suggestions (Unestahl, 1973). These findings became the basise for my goal of making self-hypnosis available for everyone.

I found that recorded hypnotic inductions gave the same scores as live inductions. This finding became the base for my goal of making IMT and self-hypnosis available to everyone. Moreover, participants who learned hypnosis without any external helpers were, after six months of hypnosis training, better in control and in application than those who were trained by a hypnotist. I also found that all hypnotic phenomena could be released through self-hypnosis, even amnesia for one's own suggestions. I also conducted studies that showed hypnotic susceptibility could be developed to some extent in all people. Three to six months of systematic training in relaxation, imagery vividness, control, and ideomotor practices gave a significant increase of hypnotic susceptibility, measured with the Stanford scales (Unestahl, 1982).

## Hypnotic Wakefulness

Other investigations covered various mental states, from deep hypnotic trances to total waking. In these studies, I identified a new state, which I called *hypnotic wakefulness*, induced by such suggestions as "Soon I will ask you to open your eyes and be alert and active as you normally are, but you will stay in hypnosis until I ask you to leave hypnosis." Following are three examples (Unestahl, 1973).

National television wanted a demonstration of hypnosis, and I agreed, in order to demystify hypnosis and show that all hypnosis is self-hypnosis. I asked a patient of mine to take part. Karin had agoraphobia and became anxious when meeting new people. However, when I promised she would be in hypnosis for the whole program, she agreed, as she knew that she was totally calm in the hypnotic state. Before the program I gave her the suggestion about hypnotic wakefulness. When the program started she looked awake and normal. The TV host asked, "But how can we know that Karin is in hypnosis?" I then gave the TV host a short suggestion about "glove anesthesia," which had no effect when I tested him. Then I did the same with Karin, who experienced a total loss of sensitivity in her left hand. Then I said, "This effect is not related to me. She can do the same herself on her right hand," which she did.

The wife of one of my doctoral students was brought into hypnotic wakefulness for a full week. During that time, her suggestibility increased somewhat and we noted some smaller perceptual changes. But otherwise she seemed to be fully awake in the days and sleeping as usual at night. However, when she was brought back to full waking state, she had total amnesia for the whole week.

Three subjects were hypnotized and while in hypnosis asked about the differences between the hypnotic state and "normal" waking. Each difference that was reported was then taken away by hypnotic suggestions. The only thing remaining in the end was increased suggestibility.

## Posthypnotic Suggestions (PHSs)

Most of my studies during the 1960s focused on the variety and structures of post-hypnotic suggestions (PHSs) and effects, published as reports at Uppsala University and summarized in my dissertation (Unestahl, 1973) and in the proceedings from the Sixth International ISH Congress (Unestahl, 1975).

I found that any stimulus (a word, gesture, thought) could become a posthypnotic signal for either a specific response or a general emotional state. The stimulus was given a new meaning during hypnosis, after which the word "tired" could release a feeling of alertness or "sad" a feeling of joy; labor contractions and pain an experience of relaxed pressure; grabbing a golf club for total concentration, and so on. Thus, the subject could decide both the stimulus and the signal-released effect.

The posthypnotic response can be revoked in three ways. One is simply to connect the response to awakening. A second type of posthypnotic response is released at a specific delay after awakening. The response will occur more reliably on time if the subject has amnesia for the posthypnotic suggestion and the specific delay. The third way is to connect the response to a posthypnotic signal. Thus, any stimulus can be given signal value during hypnosis and then be used as a trigger for a posthypnotic response. The effect of a PHS for a specific response ceases when the suggested act has been executed. General responses like emotions, on the other hand, continue to work until the effect spontaneously ceases or until a new signal is given that abolishes the effect. Remarkably few studies have been concerned with the mechanisms of PHS, although these represent unique qualities of hypnosis and are a very important part of SH, for example, to induce and control flow states.

## Posthypnotic Trance (PHT)

In the experiments I noted that a peculiar mental state seems to appear when PHSs were released. The same observation was made by Milton Erickson:

> A post-hypnotic act has been found to be one performed by the hypnotic subject after awakening from a trance, in response to a suggestion given during the trance state, with the execution of the act marked by an absence of any demonstrable conscious awareness in the subject of the underlying cause and motive for his act… . This important attributive behavior belonging to the posthypnotic response consists of the spontaneous and invariable development, as an integral part of the

> performance of the suggested posthypnotic act, of a self limited, usually brief, hypnotic trance. (Erickson & Erickson, 1941, p. 104)

Based on these observations by Milton Erickson (Erickson & Erickson, 1941) and other later studies (Erickson, 1967), I started a series of experiments to identify and measure posthypnotic trance (PHT), with anesthesia and amnesia as trance criteria (Unestahl, 1973). Here is a short summary of the results: (1) The posthypnotic phase can be divided into period 1 (trance) and period 2 (posthypnotic effect). (2) Period 1 is of very short duration, compared with period 2, which can go on for days. These findings became important in the establishment of SH in the 1970s and especially in the development of triggers, which are today used by athletes all over the world.

## Integrating All the Research

Since 1970, mental training has been practiced by millions of Swedish people, from childhood age to retirement. Sport is still a very important area of application (e.g., all of the Swedish Olympic champions in the 2018 Olympic Games in South Korea had their own personal mental trainers), but SH/mental training is today used in most areas of Swedish society (school, business, health, personal development) both as a model and as a method.

The following section provides a summary of the training and practice schedule to implement the practice of SH to all areas of life. (For more details, see sport hypnosis training in Unestahl, 1979, 2008, 1983; Unestahl & Nilsson, 2016.)

### The Sport Model Basic Training

The sport model basic training starts with three months' practice in muscular and mental relaxation, IMR, and recovery (active rest and sleep quality) training of different uses of IMR in daily applications. There are several goals for this level of training. One goal is to decrease basic tension levels, which provides relaxed effectiveness, or *relaxense*, a term which I use for the excellent muscular sport state, defined as optimal tension in the agonists and relaxation of the antagonist muscles (Unestahl, 1979). This is an aspect of the flow state, which is necessary for high performance. Relaxense can be accomplished by images but only after having learned relaxation of all muscles. Another goal, learning recovery, is also very important to prevent the negative effects of "overtraining" or the negative stress leading to burnout. A third goal of basic training is to learn to produce the SHS state by rhythmic physical activities, letting flow come at its own speed without trying to get it.

## The Sport Model Developmental Training to Excellence

The second phase of mental skills training lasts 21 weeks. The goal is to develop mental skills and emotions toward excellence. As a method for development, IMT and SH are based on self-instructional, systematic, long-term, and evaluated training in order to learn, use, and expand mental skills and attitudes and achieve life excellence. The term *excellence* is a vision showing direction and providing everyday motivation and meaningfulness. The excellence model (E-model) or sport model differs from the C-model (clinical, critical, complaining, censure), where interventions are most often related to problems. The E-model always ask the question "Can this be done in a better way?" or "What can I do to improve?" even if there are no problems present. The C-model, on the other hand, relates almost all activities to problems. Some of the areas for excellence training in sport are muscular excellence, mind–body excellence, focusing excellence, mental toughness excellence, and recovery excellence. An additional interesting area is immunological excellence. We have shown in one investigation with Russian athletes that SH can increase the effectiveness of the immune system over normal function (Bundzen et al., 1998). This opens up a new area of hypnosis, called *developmental hypnosis* (DH), using hypnosis and the sport model for personal and professional development.

Mental training is based on four models, two of which are the training model and the excellence model. The other important models are the psychoneurocybernetic model and the empowerment model, where SH/IMT looks at life as a do-it-yourself project, starting with creating one's own future with clear and attractive goals, related to the overall vision. To prevent high goals from becoming a stress factor, the goals are transferred to goal images, which are programmed in IMR/SHS. These programmed and integrated goals serve as an autopilot that directs everyday automation toward the goals. This makes it possible to live in—and enjoy—the present on the way to the goals (Unestahl, 2006).

Once that level of self-hypnosis is achieved, the trainee learns and develops alternative systems of control, where the dominant system—voluntary and effort-based control—is complemented with control through images and triggers. In this stage, there are four success factors: self-image, goal images, attitude, and emotional control (inner climate). Individuals are trained for 21 weeks (Unestahl, 1997). Special emphasis in self-image training is placed on self-esteem and in the goal area on goal programming, which is an important alternative and complement to "intellectual" goal setting and rational action plans. Programmed goals will serve as autopilots directing the automation of life toward the goals. This is especially important in athletic situations, where precompetitive and programmed goals will lead the body to excellent performance without having to "think."

One important part of the attitude training is mental toughness training, where problems and obstacles are transferred to challenges and problem-solving activities. This decreases negative stress and increases mental strengths (Hansson & Unestahl, 2004). The last factor—emotional control and development—covers many areas from enjoyment in sport to happiness and well-being in life (Unestahl, 1999, 2006).

### Preparation for Excellence in Career, Season, and Competition

After having learned mental training/SH, much personal/sport development will grow automatically through the psychoneurocybernetic system. However, there are also possibilities to use the method to prepare for special events like competitions in sport or situations where negative stress reactions decrease the ability to act in a rational and intellectual learned way. As thinking and planning may deteriorate quickly with negative emotions, it is important to program the brain in advance. One of the mental training applications in the Swedish police academy is to learn how to handle stressful events and then "translate this intellectual knowledge" to situation-related images and finally programming these images in IMR. This training will help police officers act in a previously decided way when being provoked or shot at—in the same way a soccer player can maintain a good performance in critical situations if the game plan has been programmed (Unestahl & Nilsson, 2016).

## Some Applications in the Postsport Career

The transition from sport to "normal life" has been difficult for many elite athletes. However, there are many examples from Swedish sport where learning and application of SH during the active sport period has facilitated this transition. As most athletes have used SH not only for sport but also in their private lives, it is natural for them to continue to use this mental training for lifelong development.

I conclude this article with points from two investigations that relate to sport and postsport life. One study examined elite sport and aging (Johansson & Unestahl, 2013). We investigated two ice hockey teams, both with lack of experience in mental training, one from the National Hockey League and the other from a lower-level, amateur league. The average age was equivalent (23 years), but the biological age (measured with DHEAS) was about 10 years older in the elite team. One reason for that seemed to be the higher level of negative stress (measured with cortisol and questionnaires) in the elite team.

In an earlier study (Johansson & Unestahl, 2006), we measured the biological age in a group that was training mentally for six months. Compared with the control group, which received no mental training, the mental training group decreased their biological age by an average of seven years. The result has created great interest and is also mentioned in the Discussion section.

## Discussion

That sport performance is influenced by mental factors is a generally accepted fact, where some sports like golf are regarded as more mental than physical (Hansson & Unestahl, 2003). The idea that the mind can be systematically trained in the same way as the body has had growing acceptance since the start of mental training in 1969. Contributing to this idea has

been research in neurophysiology showing that the brain is plastic and that mental factors can bring about changes in the brain all through the life span (Kolb, 2017; Van Ooyen, 2017). Investigations of the effects of mental training programs have also shown significant increases of both performance and well-being in many areas of society, sport among them. Hypnosis, with eyes closed or eyes open, directed by the self or by another, has been an important part of these mental training programs.

IMT is a systematic way to use sport-based hypnosis. One goal has been to develop and control a state of flow (SHS), characterized by the ability to achieve high performance with low effort. This article provides two main ways to establish and control this state: one by rhythmic activities and the other through posthypnotic signals (triggers). A second goal has been to develop the mental skills and attitude that are related to peak performance in sport. As a bonus, it seems that the same mind factors are important for peak performance in all areas of life and well-being. Examples from some of these areas (health effects, slower aging) has been mentioned in this article.

Sport hypnosis has mainly been used to help athletes be able to use all capacity and ability when it really matters (e.g., competition). However, recently we have shown that it is also possible to learn a sport (golf) by modeling an excellent golfer while being in the SHS (Unestahl & Nilsson, 2016). This opens up new application areas for mental training and SH using motor neurons (Jeon & Lee, 2018). It also raises a question: Is the mirror neuron system more effective in an alternative state of consciousness? This is a important question to be answered by future research.

The quantitative and qualitative changes of brain activity in the SHS seem to change the informational system in such a way that the athlete, or indeed any user, decreases "reality testing" and interprets internal images as "real." The differences between a physical event and the image of such an event seem to diminish or disappear. Imagining a goal makes it more likely to occur. This may be one of the reasons that SH/IMT training has a significant impact on various psychosomatic problems.

Investigations of brain activities during sport performance have been difficult to investigate, as it is presently impossible for an athlete to compete while inside a functional magnetic resonance imaging (fMRI) scanner. However, by using the Russian Omega potential, it has been possible to get an idea about the relation between brain activities and the flow state during competition, as was shown in the investigation with the archery competitors. The findings indicate that the flow state in sport is related to a holistic brain with equal activity levels in left and right hemispheres. This can also explain why another holistic concept, imagery, is so effective to use in sport instead of analysis (i.e., "paralysis by analysis") and thinking, which seem to interact negatively with sport performance. This can also explain the positive effects of SH/IMT on other body functions, such as the muscular, cardiovascular, hormone, and immune systems.

The two studies about faster aging in elite sport and the rejuvenating effect of mental training are examples of how mental training can be of value in the postsport career in the often-difficult transition from elite sport to ordinary life.

In summary, SH is a form of alert hypnosis that can have positive effects for anyone, not just athletes. I invite readers to consider how the approach to SH can be used in other fields to lead to excellence in learning, artistic creativity, interpersonal relations, or indeed any field in which the user wants to achieve excellence. I also invite the readers to think about how the mental training models and methods can open a new field for hypnosis, where developmental hypnosis becomes an important complement to clinical hypnosis.

When SH and IMT were introduced, most people made a connection to the clinical, problem-solving, and sport psychology model instead of the sport, developmental, and excellence model. It took some time to change the image of a mental trainer from a "shrink "to a "stretch" in people's minds and to understand the meaning of the continuous improvement model that can be applied to everyone. In mental training, this has been accepted since the end of the twentieth century. However, for some people, their opinions about hypnosis are still centered on the clinical model. It is hoped that alert hypnosis and sport hypnosis will change that and eventually help developmental hypnosis become recognized as a valuable and appreciated part of the scientific hypnosis societies.

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