

## **Sport Psychology in Theory and Practice**

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From a booklet by Uneståhl, L-E.

## Sport Psychology in Theory and Practice

*The first World Congress in Sports Psychology was held in Rome 1965. Twenty years later Scandinavia was the site for the 6th World Congress, held June 23-27 in Copenhagen, Denmark. On stage where the ever-present and the hectic Congress activities made the five days fuse into one another, 400 delegates from all parts of the world were gathered to celebrate the 20th anniversary of International Sports Psychology.*

This is some of the highlights of this Congress.

### The ideal performance

A comparison between different world-class athletes shows considerable differences in physical dimensions, between sports but also within the same sport. Psychomotor functions like coordination, flexibility and timing show many more similarities. The same is true with mental equipment. A good athlete will have more mental toughness and emotional stability than his more mediocre colleague. The insight that sport is much more than muscle strength, conditioning and technical skill is an old one. Today most coaches and athletes are well aware that psychological traits and abilities play a significant role, especially in competitive sports.

However, this insight is often combined with a passive view about mental skills. "Some athletes have what it takes, others have not". Some athletes are regarded as "Björn Borgs types" with success waiting around the corner, others have the same physical talent, but lack of the right mental equipment will be the decisive factor.

This view represents a very pessimistic approach to human nature, looking at individuals as growth perspective and in the language of learning and development. It starts with a question: "Into what type of person should I develop in order to use my resources and reach my goals?" This view looks at the borders and limitations in the light of "self-fulfilling prophecies" and at mastery and self-control from the point of "alternative systems of control". It emphasizes individual responsibilities as well as personal possibilities.

### Variations in athletic performance

Competitive sports contains two forms of variations in performance, inter-individual (if not, we wouldn't need competition) and intra-individual variations (if not, we would only need one competition). Many investigators have described inter-individual differences in sport like differences between athletes and non-athletes or between good and bad performers. Many of the findings are, however, unclear and some even confusing. The more consistent differences between good and bad athletes seem for instance to consist more of trainable mental skills than of rigid personality traits. Intra-individual differences, how the performance vary for the same athlete from time to time is of special interest for the applied Sport Psychologist. There are at least three types of variations related to consistency:

1. The training - competitive variance
2. The inter-competitive variance (between competitions)
3. The intra-competitive variance (within the same competition)

Field investigations and experimental induction of variations in athletic performance are two approaches in the attempt to identify the "ideal performance".

#### 1. Example of field studies

An analysis of 152 soccer games in the Swedish National League (Uneståhl, 1981) showed, among other things, a very clear grouping of scoring. The probability for a goal within 5 minutes of another was significantly higher - for both teams. This change in quality of play after scoring may be attributed to:

- a) Emotional reactions (positive or negative), which seem to disturb the flow and rhythm of the play.
- b) Change in internal goal-programming due to the increased probability of winning or losing.

## 2. Example of laboratory studies:

The effect of posthypnotic variations of task-difficulty, self-confidence, muscular tension and mental tension (calm, worried) was studied on maximal isometric strength, measured by left and right knee extension and elbow flexion. Compared with the base-level ("normal maximum") there was a decrease of performance in six of the eight conditions. The two conditions with increased strength were

- a) optimal attitude towards the task (task-difficulty)
- b) optimal attitude towards themselves (self-confidence)

## The Ideal Performance State

In order to investigate the Ideal Performing State (IPS) (Uneståhl, 1979) top-athletes from various sports were interviewed after peak-performances. Many of their comments pointed to IPS as an alternative state of consciousness (ASC) like hypnosis. Some of the most typical similarities were:

### Amnesia.

Often athletes seem to have selective or even total amnesia after perfect performance. This makes it even more difficult to describe IPS. For example, the Swedish high jump champion explained that he could see a direct relation between the degree of amnesia and the quality of the jump. The better jump the less he remembered. As a learned and automated pattern of movement is controlled by an alternative level of consciousness, the experiences and memories often remain on a more unconscious level.

### Concentration - Dissociation.

A more intense attention on a narrow attention area (focusing) or a limited number of task-relevant stimuli (defocusing) is accompanied by a larger inattentiveness (dissociation) on everything outside this area or a detachment of task irrelevant stimuli. Expressions like "another world", "glass-room", "shell", "tunnel" and trance are common in the descriptions. Hypnosis is often similar defined as a dissociated state or as a state of increased concentration.

### Pain Detachment

A spontaneous increase of pain tolerance seems to occur in IPS much in the same way as does in hypnosis. The athlete does not have the common feelings of exhaustion and tiredness.

### Perceptual Changes.

Trance-like phenomena like time-distortion or tunnel-vision are not necessary in IPS but happen sometimes. In sports, which require quick decisions and reactions it can be experienced as a slowing of time (slow motion), which gives the performers, more time for necessary moves. Another experience is enlargement of objects like the beam, the baseball, the golf-hole or the pigeon, which gives a feeling that there is no possibility to miss at that moment.

### Power and Control.

One of the most typical features in IPS (like in self-hypnosis) is the feeling of being in control, the feeling of being able to do anything that is required.

### Description of IPS.

One of the best descriptions, which nicely summarizes most of the typical features in IPS, is the following. "Suddenly everything worked. I did not wonder any longer what to do or how to do it - everything was automatic. I just looked on. Nothing could have disturbed me in that moment. I was completely involved with what was happening. I had no thoughts of doing it correctly, no thoughts of failure, no thoughts of fatigue. I felt an inner security and confidence that was tremendous. It was completely natural that I would succeed. I watched my accomplishment and enjoyed it while at the same time I was as one with it. It was a trance-like state, which I would like to experience every time, but, which I probably won't experience again for a long time.

## The Ideal Performance State (IPS) as an Alternative State of Consciousness (ASC)

Consciousness, the frame of reference or the information-processor, which structure and colour experiences, is sometimes compared with a computer-program. One difference, however, is that consciousness is changing and varying all the time depending on the situation. Most of these changes are quantitative in nature and can be included in the "normal" or the dominant mode of consciousness (D-mode). Sometimes, however, more of qualitative changes happen, mental processes disappear or appear, and we can talk about a more radical shift in the consciousness (ASC, A-mode).

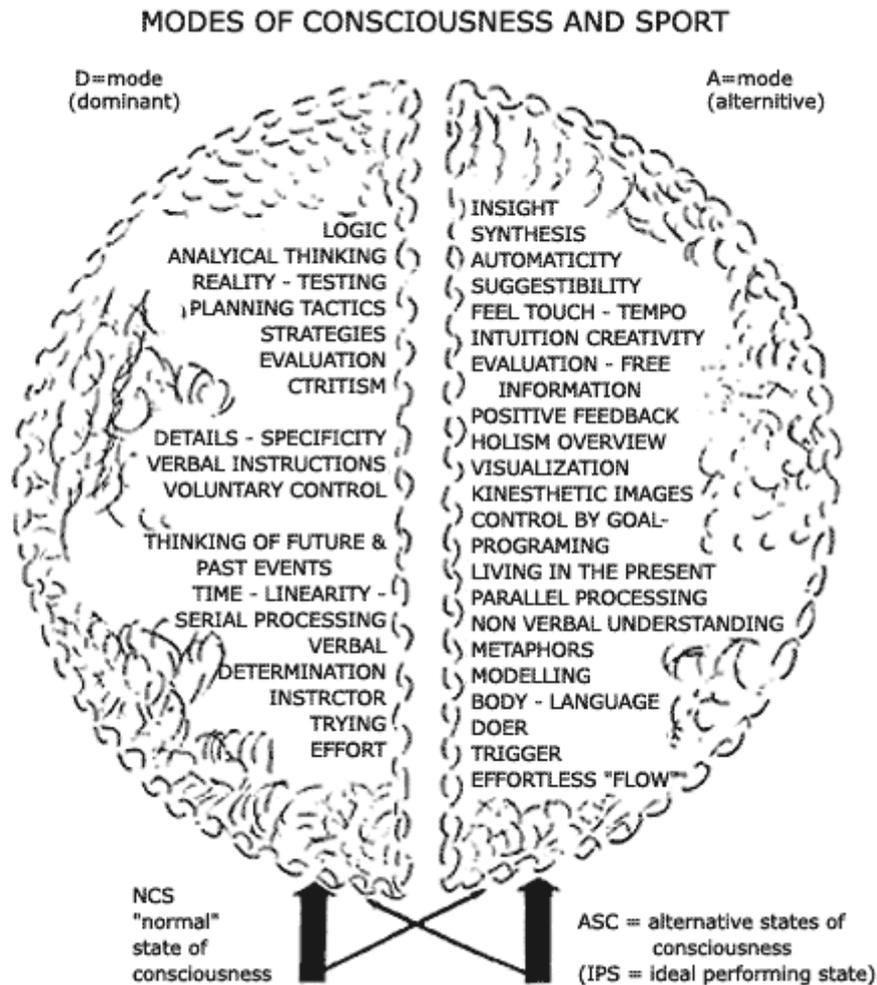


Figure 1 "modes of consciousness and sports"

As the cerebral location of many human functions are still questionable, it is at this time too early to equate a shift in consciousness with a hemisphere shift. What is clearer, however, is that a shift in consciousness from D-mode to A-mode will give better access to functions, which are important for a good athletic performance.

We spend many years of our life in ASC like sleep and dream. Other common ASCs are active or passive hypnosis and meditation. They can both appear spontaneously or in a more formal setting. Quantitative and qualitative differences exist between different ASCs but also within the same state. Sleep varies in depth like hypnosis. Hypnosis has also considerable qualitative variations depending on what the hypnotized person feel or do.

The ideal performing state seems to be a more homogenous ASC. Variations exist, however, mainly due to the type of task. IPS is for instance somewhat different in an open, compared to a closed skill sport between individual sports and team-sports.

Thus, it is important for an athlete to learn to identify and induce the right state of consciousness for a certain task. The reports from mentally untrained athletes showed very little of such control. Not only did IPS appear very seldom, they almost never knew when it would appear, it came and disappeared very unexpectedly. Thus, one main goal for the mental training has been to teach athletes increased control over IPS.

### **Alternative Systems of Control (ASC-2)**

Most problems, inside and outside, sports, arise when the dominant system of control, "voluntary effort", is non-effective or contraindicated. Trying to go to sleep, to concentrate, to relax or to master emotions often creates the opposite results with feelings of helplessness as a result. The same is true for physical performance. A high of voluntary effort will activate the antagonistic of relaxing the antagonistic muscle.

Thus, one of the main purposes with mental training is to introduce and train alternative systems of control like trigger-control or control by images. However, in order to become effective the systems require an alternative mode of consciousness.

### **Alternative Systems of Cognition (ASC-3)**

Alternative states of consciousness contain more of primary processes and another way of processing information.

When I have "frozen" top athletes in the middle of a movement and asked to describe their body position with their eyes closed, the descriptions have often been rather inaccurate. One of the Swedish Davis Cup Tennis players had a difference in his elbow of 50 degrees.

As a change of racket angle of one single degree will cause the ball to deviate 3 meters there is no possibility of using an analytical, mathematical operation to get the ball to the right point. Instead, a goal-image will compose the right body position out from experience of hitting the ball, experience that has been stored during years of training and competition. As long as the player has the flow and stay in the A-mode (he plays as in trance), this type of information process will function. However, when he starts to "think" (d-mode) the performance usually drops (paralysis by analysis)

Thus, one of the main purposes for mental training is to be developed the quality and consistency of peak performance by control of the ideal performance state.

## **Mental Training**

The phrase "Mental Training" (Uneståhl, 1982) is used as a label for psychological techniques aimed at control and change of an individual's external, internal, mental and physical behaviour and experience. A systematic training of mental skills, behaviour, attitudes and strategies is based on the philosophy that "mental strength" can be handled in exactly the same way as physical strength.

Mental training can be "general" or area-specific. The general training can be divided into three steps:

### **A. Mental Conditioning**

1. Muscular and mental relaxation.
2. Self-hypnotic induction training.

### **B. Mental Technique Training**

1. Direct, indirect and posthypnotic suggestions.
2. Short- and -long term images.

### **C. Mental Strength training**

1. Skill - acquisition, detection and development.
2. Motivational training.
3. Attitudinal training.

## Inner Mental Training

A systematic program for mental training, using ASC-principles, was designed in the mid-seventies and has so far been tested on 12000 Swedish athletes.

### Purpose:

1. To increase quality of IPS by developing and enhancing IP-related mental skills.
2. To increase the ability to reproduce, induce and control IPS.
3. To remove obstacles for general performance improvement.
4. To remove causes for situation-related performance decline.
5. To increase the uptake of physical training by:
  - a. improving the quality of training (model training).
  - b. improving the ability for rest/recovery between the sessions.

### Guidelines

Mental training ought to be as similar as possible to physical training in the following respect:

1. Self-instructional, to make it possible for the athlete and the coach to manage and control the training.
2. Concrete and practical designed training programs.
3. Step-by-step build-up in order to reflect a development approach from training in the basic to specialized skills.
4. To start long-term training with the emphasis on acquisition, enhancement and automatization of skills.
5. To proceed from general training in basic mental skills to more sport-specific and competition-directed training.

### Phases of mental training

Mental training is divided into several phases from basic to more applied preparation.

- I. Career-training
  - a. Skill-acquisition - 8 training programs (8 weeks)
  - b. Motivational training (goalsetting) - 5 steps (5 weeks)
  - c. Attitude training - 7 programs (7 weeks)
- II. Pre-seasonal training - mental and physical conditioning
- III. Competitive training - model training
- IV. Mental rehearsal - IPS, goal-programming, problem-solving
- V. Countdown mental preparation - pre-start routines and triggers
- VI. Pre-trained competitive strategies

The "career-training" is a "one time" training with the purpose of developing important mental skills. It has the same contents for all kinds of sports. The athletes are recommended to do the training during non-competitive seasons.

The program for seasonal and competitive preparations (II-VI) vary in sport-specificity. Some are general, like career-training, some are made for a group of sports, like team-sports, and some are designed for each specific sport. The training, which is scheduled 5 days a week with a new program each week, is described in a training manual. The programs, recorded on 3 cassettes, vary in time between 8 and 22 minutes.

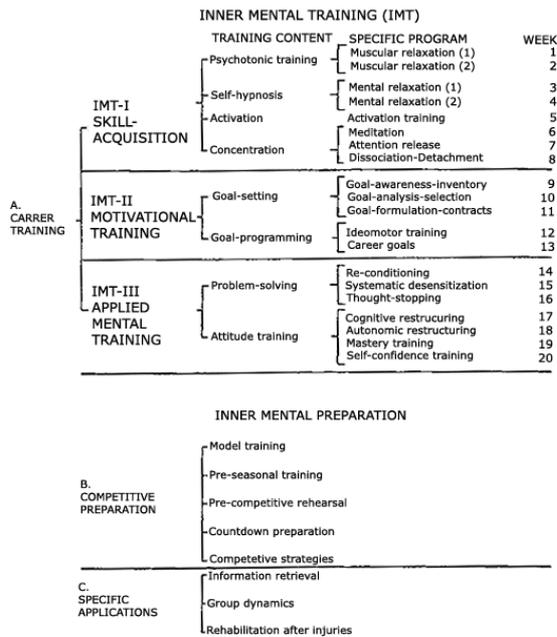


Figure 2 - "Inner Mental Training (IMT)

### Muscular relaxation I

Early this century Edmund Jacobsson showed that muscular relaxation was a reliable method for rest and recreation, problem prevention and gaining emotional control. The first program in physical relaxation contains progressive relaxation of "Jacobson-type", but shorter in time. The program is initiated by a prolonged contraction, of the left fist and a deep inhalation. This will later serve as a "trigger" for fast relaxation. An accelerated form of contraction-relaxation is progressively and differentially used with the other parts of the body. By observing the differences between tension and relaxation and memorizing the experiences of relaxation the notion of "relaxation" will get an experiential meaning.

### Muscular relaxation II

The purpose of this program is to deepen the relaxation and to learn to enter the relaxed state more quickly. Relaxation is facilitated both through the effects of practice and by the suggestions given on the tapes. The athlete's attention is also directed to the state of relaxation that accompanies exhalation. This is used later as another trigger to induce relaxation. The associated psychological states that accompany the warm, heavy sensation of physical relaxation such as calmness, certitude, comfort, security and confidence are introduced and enhanced. The training is supplemented by scanning the body and thinking of relaxation 3 times, 1 minute a day.

### Mental relaxation I

The attention of the athlete is now more directed to the psychological effects of the relaxation by using reassuring verbal cues such as "calm", "comfortable", "certain", "controlled". A melting of barriers between mind, body and the surroundings is noticed and emphasized. Feelings of liberty, floating and gliding are experienced. A direct control over these mental effects, without the use of muscular relaxation, is practiced. The concept of a warm and comfortable imaginary "mental room" is introduced. This sheltered spot provides the athlete with an inner locale in which the rest of the mental training procedures are carried out.

### Mental relaxation II

In this program tools and aids for effective programming are introduced. The imaginary mental room is equipped with a screen, a blackboard and an "energy machine" to later be used respectively for mental rehearsal, self-suggestions and activation control. The program also contains the first session in how to induce post-hypnotic suggestions.

**Conditioning of C-words**

Calm, committed, concentrated, confident, and consistent are 5 notions which are all important for a good competitive performance. The key-word for the day (5 days) is used in two ways.

1. The athlete repeats a different key word for each day, for every pulse-beat during 3 minutes twice a day.
2. The key-word is used as a mantra (focus-sound) for 20 minutes of meditation once a day.

The athlete is also asked to form an image which is most connected with each key-word. These are model scenes to be used later on.

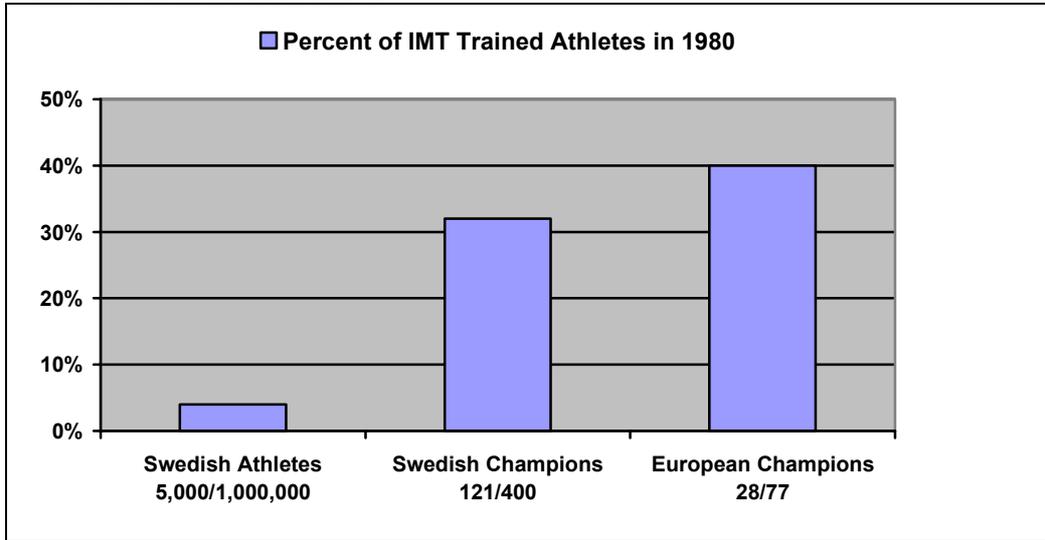


Figure 3 - "Percent of IMT Trained Athletes in 1980"

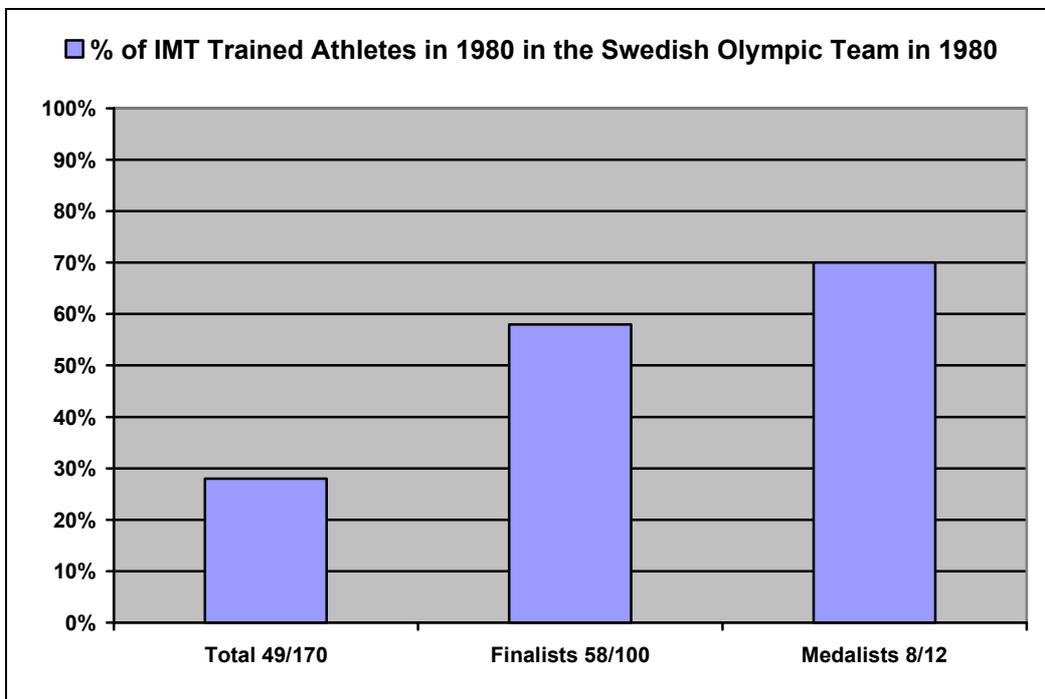


Figure 4 - "% of IMT Trained Athletes in 1980 in the Swedish Olympic Team"

### Dissociation and detachment training

The athlete is asked to carry out this training in non-protected environments in which distractions can occur. Such distractions could be noise, other people watching or uncomfortable body positions. The athlete is then introduced to various techniques that allow him to decrease the "noise-value" by mental detachment, passive observation or reinterpretation. This week can also be regarded as an introduction to the concentration training, which will continue during week 12.

The main purpose of the training so far has been:

1. Learning to induce, control and use a hypnotic-like alternative state of consciousness for rest, recovery and effective self-guidance.
2. Learning stress-management and tension/arousal-regulating skills by:
  - a. decrease of the automatized basic tension level.
  - b. regulating the effect on performance of the situational tension increase.
  - c) changing the interpretation of body arousal from negative worry/tension to positive excitement (week 5).
3. Learning the right combination of confident "inner mental fire" and a relaxed body.
4. Developing ability to detach from irrelevant stimulation (noise).

The basic mental training not only provides the necessary base for later forms of mental training but it also has a value in itself. It helps athletes to deal with chronic pressures of training, travel or extended competitions. Sleep facilitation, energy conservation and general emotional stabilization can also result from learning these basic coping skills.

### Ideomotor-training

The term "ideomotor" is an expression for the connection between "ideo" (thoughts and images) and motor expressions. Thoughts and images influence the body in many ways, both direct and through mediators. By structured practices the athletes can learn how images of movements can cause measurable and noticeable reactions in those muscles which are active in the voluntary executed movements. The athletes here can experience immediate effects of the alternative and non-voluntary system of control and can get a thrust in this way of self-guidance, which is important to have before he starts with long-term goal programming. After having learned how thoughts and images about a desired outcome can have direct effects upon behaviour, this experience is used in "mental practice" or "sofa training", the learning and automatization of skills (especially technical skills) by images of ideal performance.

### Goal programming

During the basic mental training (Weeks 1-6), the athletes have had an additional training program in goal-setting in regard to short-range and long-range goals. During week 8 the selected long-term goals are integrated into the mind by a combination of the learned mental state of deep relaxation (hypnosis) and the concrete and vivid images of the long-term goals. They are then supposed to serve as a directing "cybernetic" background to the automatized sport-related behaviour in everyday life.

### Problem-solving I & II

Sometimes an athlete or a team is already beaten before a competition due to negative expectations from earlier experiences. These negative prognoses however, are not only effected by the interpretation of real-life situations but also by experiences in the mental training. By vivid and "realistic" images in a hypnotic-like state the nervous system is "fooled" and the new and positive experiences are treated in the same way as "real" memories. By breaking the not-desired connections between situations and negative feelings or situations and bad performance, the expectations change. The desired behaviour will appear in the real situation as a sign and reinforcement of what has already happened in the mind. Week 9 (a modified desensitization program) works with phobic-type problems while the program during week 10 concentrates on situations with former bad performances.

### Assertive training

An athlete's self-confidence is a "general goal-programming" or a "standing order" creating expectancies and influencing performances (self-fulfilling prophecies). An improvement in confidence and self-esteem can be brought about by:

- a. changing the interpretation of earlier events (hypnotic regression) or attitude training.
- b. creating new and more positive experiences (week 9-10).
- c. ego strengthening techniques (week 11).

In order to reinforce good emotional components and the tough-minded attitudes of certainty, confidence and control, repeated and rhythmic designed suggestions are given to the athlete in a dissociative state, where reality-testing, analysis and ego-defence are put aside. As this is a slow process, recommendations are made to continue this training even after week 11. The gradual improvement of the general self-image will increase the believability in the goal-programming and make the more specific and situation-related expectations more positive.

### **Concentration training**

Concentration can be defined as an increased attention on a decreased number of stimuli. This can mean both a narrow area of attention (focusing, tunnel vision, hypnosis, individual sports) or more of peripheral vision ("soft eyes", defocusing, meditation, team sport). The demand by different sports for a certain kind of concentration also varies in relation to competition time and the ratio between performance time and competition time. This ratio can vary from 100% down to 1%. The effective performance time in a 3-hour golf competition can be just some few minutes. Such sports can use a "Trevino-concentration" which means full concentration during the short performance periods and relaxation during the longer non-performance times. This, however, demands effective triggers in order to quickly induce full concentration when needed. A trigger is something you do or think in order to produce an effect (like going to sleep, relaxing or concentrating) which cannot be produced directly by voluntary effort

Before listening to the program, the athlete chooses 2 triggers. The first one is something which is included in his normal preparation (gripping the club, placing the feet in position, etc.). The second one is a movement, word, image, etc., which only shall be used if needed. In the training program these two triggers are conditioned to feelings of total concentration, which have been experienced in the past.

### **Motivational training**

#### **I Goal-settings**

In order to find the best goals before the goal-programming period starts, the athletes are working with goal-setting during the basis mental training. it insides the following steps:

#### **1. Goal-awareness (former goals)**

The learned mental relaxation with its decreased defense-mechanisms often provides a spontaneous increase in self-insight and a better awareness about conflict areas (like success-phobia, Ogilvie, 1966). By combining deep relaxation with non-verbal techniques like ideomotor questioning, diagnostic visualization or by introducing an interrogator/advisor in the "inner mental room" more information about the athlete's unconscious motivation can be revealed.

#### **2. Goal-inventory (possible goals)**

The athlete is introduced to various types of goals like long-term - short-term, abstract - concrete, realistic - unrealistic, high - low, desired - not desired, private - public, intrinsic - extrinsic, etc. He is also shown that competition can be defined as a fight between him and a standard, which means a goal which he has control over and which no one else can prevent him from reaching.

#### **3. Goal-analysis (suitable goals)**

One part of the analysis of goals comprises goal-probability. The athlete is shown that too high or too low probability decreases performance. He is then recommended to choose goals where a) the probability is decided not by the opponents (winning) but by himself (time, points, perfect performance); b) the probability can remain at optimal level for the whole competition game.

#### 4. Goal-selection

The athlete is asked to pick out long term goals, career goals, seasonal goals as well as short-term goals in relation to a certain competition or competitions in general. He then designs part-goals and concrete specifications on various improvements which are needed in order to reach the goals. He also suggests how this can be measured and at which times the goal-process is going to be evaluated to see if a change of goals is needed or if the content and/or intensity of the training program has to be modified.

#### 5. Goal-formulation

Verbally designed goals are formulated without negations (don't miss - hit) and without words like net, sandbunker, bar, etc. The need for concrete goals makes it necessary to fill the empty space in a soccer-, ice hockey-, handball-goal or in a basket rim with something which can serve as concrete targets for goal-programming.

The long-term goals can be formalized in a written and signed contract, which expresses the potential in present terms (or as a faked photo). The short-term goals are written into a goal-card where evaluating measurements and program specifications are also handled.

### II Goal- integration

Goal-setting is just the first part of motivational training. The second part, goal-programming, is extremely important. If the goals are not integrated, then goal-setting may become a negative factor, another stress factor, obstacle or burden in life. Goal-integration in a deep relaxed state will transfer the analytical goals into an energy producing and stimulating motivational force and steering mechanism.

#### 1. Attitude-training

Attitude-training, the third part of the career-training, has been added to the training-program during 1982. It consists of cognitive restructuring techniques (2 weeks), self-suggestive techniques (1 week) and ego-strengthening training (1 week).

#### Cognitive restructuring

- a. Attribution retraining (for instance learning to attribute success to stable internal factors like ability and failure to unstable external (unluck) or internal (lack of effort) factors).
- b. Failure training (techniques to avoid negative effects of single mistakes).
- c. Thought-stopping and thought-replacement (identification of negative thoughts/images, selection of positive alternatives, reconditioning training).
- d. Reinterpretation (learning and automatization of a more positive frame of evaluation and selection of perception, learning to turn threat to challenge, an end to a beginning, etc.).

#### Autogenic formula

Learning to construct self-evaluating statements and to use these formula in the D-mode in such a way that the effects will be similar to DSUH - direct suggestion given under hypnosis.

#### Ego-strengthening

A continuation of the training, which started earlier (assertive training).

#### 2. Pre-seasonal mental training

The pre-seasonal training, which is repeated every year, consists of some programs, which are the same for all sports, as well as of some sport-specific programs.

- a. Activation training.
- b. Self-confidence training.
- c. Seasonal goal-programming
- d. Mental rehearsal of important sport-specific situations.
- e. Mental rehearsal of key-competitions during the season ahead.

### 3. Competitive training (model training)

#### A. General model-training

##### A1. External conditions

- a. handicaps, time restrictions, task-difficulty.
- b. fixed situation (penalty-shot), tight situations (match-points), missed, bad performance, be behind or ahead.
- c. optimal speed/effort.

##### A2. Internal conditions

Optimal level of tension, arousal, activation, motivation by

- a. mental simulation.
- b. in vivo simulation.

#### B. Specific model-training

- a. Time of the year, time of the day.
- b. Location (photos, films).
- c. Climate.
- d. Type of competition. "Mental atmosphere".

### 4. Mental Rehearsal

The main purpose of this program is:

- a. To reactivate the "ideal performing feeling" by reliving a "model-competition" in the past and to familiarize body and mind with the future competition (goal-orientation)
- b. to condition "the winning feeling" to the coming competition.

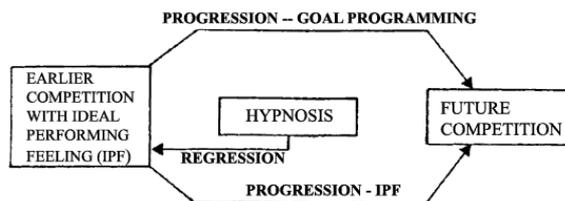


Figure 5 - progression - goal programming

The program is used differently depending on the type of sport. Here is an example from Par Arvidsson, an olympic champion (1980) and world record-holder in an individual, closed skill sport (swimming). "I sit down about 8 months before an important race and try to figure out what time should be needed for winning. Then I decide what times in between I must have in order to make this final time. I then start the mental rehearsal of the race. I increase the intensity as time goes on until I reach a maximum at about 2-3 weeks before the race. I usually take the program at night just before going to sleep. During training I often obtain "the winning feeling", "the ideal state".

A team-player with 1-2 matches a week might instead start with the program 2 days before the game. The content of mental rehearsal is also different. Five different applications are recommended:

1. Selection and programming of the player's individual and team goal for the game.
2. Rehearsal of fixed situations, especially those which are going to be used in the next game.
3. Mental correction of earlier problem situations like:
  - a) Individual/game-general (Headings-duels, certain shots, etc.)
  - a) Individualgame-specific (a certain opponent, judge, etc.)
  - b) Team/game-general (be ahead, behind, tight, start exit, etc.)
  - c) Team/game-specific (away-fields, certain teams, surfaces, etc.)

4. Tactic dispositions  
Transfer of the verbal/technical instructions to images through visualization of game situations. For that and other reasons the tactical instructions should be given at least 1-2 days before the game.
5. Mental habituation.  
Rehearsal of everything that could happen, possible game-situations and various possible trends, with the purpose not to be surprised by anything that might happen. Application of pre-planned strategies in order to more effectively control the game and finish the game in accordance with the goal-setting.

## **V. Countdown Mental Preparation**

Two of the most important purposes with the IMT-training are:

1. Development of mental skills.
2. Relating performance-enhancing conditions to triggers.

Triggers will then work spontaneously before and during competition. This makes it possible for the athlete to keep to his former pre-start routines. Exception: If he has routines which:

- a) cannot be applied everywhere.
- b) can be prevented or disturbed by opponent
- c) a negative reaction has been conditioned and received positive value (vomiting).

The training so far works in 2 ways in relation to competitive performance: a) Spontaneous effects. The athlete's previous pre-start and/or game-routines now contain a trigger for total concentration. This means that the athlete does not have to change anything in order to receive this effect.

B) Activation control. It is the responsibility of each athlete to be on his optimal level of activation, arousal, tension and motivation when the competition starts. The previous training has given him the tools for such a control.

On the third cassette, however, there is a 'psych-up' program, which can be used as an aid until the athlete masters self-regulation.

## **VI. Pre-trained competitive strategics**

The athlete should have selected, trained and preferably automatized strategies to be used in relation to situations like bad performance, misses, external disturbances, bad feelings, negative thoughts and images, etc. He should also have used mental and in vivo habituation to the competitive setting in order to know the stable and non-varying factors, selecting focusing-points, etc.

These are "if-needed" techniques, which hopefully do not have to be applied. However, an athlete who knows that he has effective methods for most of the things that can happen in a competition. will have a feeling of control, which often prevents things from going wrong.

## **EVALUATIONS**

An investigation of 5,000 Swedish athletes from different sports, ages and sex (Uneståhl, 1981) showed a clear relation between IMT-training and level of competence. For instance, 30% of the Swedish champions and 37% of the European champions belonged to the IMT-group, compared with only 1% of athletes in general. Of the Swedish Olympic Team 1980 less than 1/3 had IMT-training, however, more than half of the finalists and more than 2/3 of the medalists had had the training.

This relation is probably a combination of 1) effects of the mental training and 2) selection factors, meaning that there is an over-representation of gifted athletes in the group, which starts mental training. Possible reasons of that are:

1. Exposure. Through their national federation top-athletes will be easier introduced to programs in mental training.
2. Motivation. A sign of being good is to always be on the way to something still better, and to take every Opportunity to improve.
3. Recognition. IMT is mainly a systematization and development of what good athletes always have found themselves. Thus they can more easily recognize and understand the value of such training. Evaluation have been made of:
  1. - the effects of single IMT-programs in specific parameters (for example EMG-measured effects of the ideo-motor training, specific effects of concentration training etc.)
  2. - the effects of the entire IMT-program on specific parameters (for instance speed of recovery after maximal strain , measured with blood lactic acid concentration - Uneståhl, 1981).
  3. Seasonal improvements in competitive performances.
    - a. One type of evaluations has been the comparison of results , international meets before and after mental training. As an example, the Swedish swimming team went from 2 to 14 finalists or from 0 medals to 2 gold, 2 silver, 1 bronze in 2 consecutive Olympics. However, there are also other factors who probably contributed to this improvement, which makes it difficult to isolate the role of mental training. This is especially true when everyone in a national team takes part in the training.
    - b. Of the more studies of seasonal improvement can be mentioned one in bowling. 100 bowlers varying in age, sex, level competence and location, were selected and trained mentally (the IMT-12 weeks program). They were then followed during 3 years and compared with a control group. The training gave immediate effects on the subjective ratings, but the objective improvement in bowling skills did not reach significant level until the second year.

This study shows that athletes must sometimes wait a long time before the positive effects of mental training on performance are visible. Mental training can even sometimes cause an initial performance decline in the same way as can happen when athletes change to a new (and better) technique. The best results from mental training seem to appear when the mental skills and strategies are so integrated that they have become a way of thinking, feeling and behaving in a natural way.

A large part of the athletes evaluations of the mental training concerns changes in everyday life. Reports like better sleep, calmer, more harmonious are common. Similar principles seem to be valid for sport and non-sport performance as well for quality of life in general.

During the last decade the use of mental training has spread around and has reached most of the various groups in the Swedish Society. It has been included in the Swedish school system (Sweden is still the only country so far) it is used in theater as well as in hospitals. A recent investigation (Uneståhl, 1985) showed that over 2 million Swedes have used parts of the Inner Mental Training system. A mental training that can teach stress-management skills, good self-esteem and a positive attitude to life can have influences far beyond physical performance. The physical conditioning might disappear quickly when the athletic career is over, while mental training can create a mental conditioning, which lasts for life.

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