ATHLETICS OMNIBUS – PSYCHOLOGY IN SPORT

From the Athletics Omnibus of Richard Stander, South Africa

1. INTRODUCTION

For the advanced athlete, the development of mental skills should be as important as physical conditioning. The advanced athlete will only achieve peak performance when the athlete is in top shape both physically and mentally. If the athlete does not use his or her mental skills to capacity, the athlete will simply be outsmarted by the opposition.

Sport Psychology is a study of the human's mental capacity and it functions, with specific focus on those functions that affect the behaviour of the athlete during competition. Sport Psychology can provide the athlete with a better understanding of the psychological processes in the mind and can assist the athlete to apply the mind more effectively.

Mental skills development requires considerable commitment of time and energy and needs to be conditioned in the same manner as the development of the athlete's physiological capacity.

2. FUNCTION OF THE NEURO-MUSCULAR SYSTEM

The human mind will react on information received from the external environment e.g. through the eyes and ears. The human mind will also react on information received from his/her internal environment e.g. through the movement of the body limbs, sensations from organs such as the skin and taste buds, as well as the process of muscle contractions.

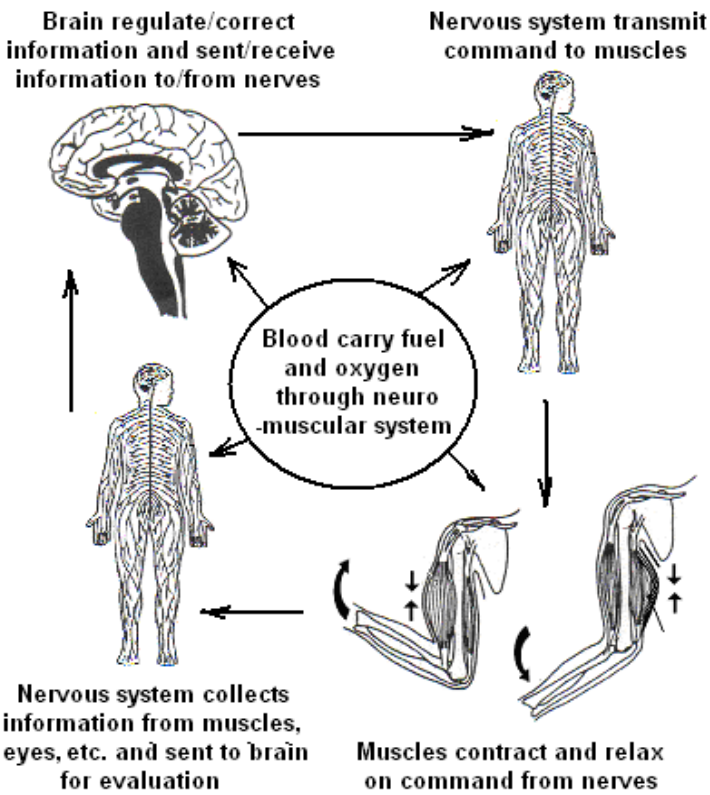
The external and internal information received by the athlete's brain are coded, interpreted and filtered by mechanisms in the brain.

The information received by the brain externally and internally, will be compared with experiences stored in the memory banks of the brain. Once the best scenario is identified by the brain, it will automatically start to act in line with one of the experiences stored in the memory banks of the brain.

The brain will formulate the commands and sent the commands to the muscles. The muscles will pull the bones which acts as levers to create movement in a specific way.

After the movement of the limbs is completed, feedback is given to the brain through the system of nerves in the body, and based on the feedback information the commands from the brain may change the behaviour of the muscles.

The decision making process will affect the arousal level of the athlete which in turn will affect the level of motivation or anxiety.



FUNCTION OF NEURO-MUSCULAR SYSTEM

The level of arousal and anxiety will affect the effectiveness of muscle behaviour and the capacity of the brain to process information. Emotions such as uncertainty, fear and fury will interfere and prolong the brain's process of making of decisions which in turn, will impair performance and learning.

3. HIERARCHY OF NEEDS

The coach should keep in mind that the average athlete will be willing to utilize advanced skills such as Sport Psychology only after the personal needs of the athlete is addressed.

The evaluation of the athlete's personal needs can be evaluated against Maslow's needs hierarchy.

3.1. Food, sleep, heat and sex are regarded as the most basic needs of athletes. An athlete will not concentrate effectively, will be aggressive towards others and will not be performing if the athlete experiences a shortage of food, sleep, heat and/or sex. If these basic needs are ignored, no skills development will be effective and objectives will not be achieved.

3.2. The need to feel safe and secure is regarded as the 2nd most important need of athletes. If an athlete feels unsafe or insecure it will be difficult to develop a sense of belonging.

3.3. The need to be loved, peer group expectations, social acceptance and affection are regarded as the 3rd most important need of athletes. Athletes can be productive in an environment that lacks love, peer group expectance or social acceptance, but the athlete will be easily distracted if any of these needs are offered to them.

3.4. Respect for yourself and others are regarded as the 4th most important need of athletes. Athletes can be productive in an environment where the athlete does not respect himself/herself or others, but the athlete will never reach full satisfaction in what is achieved.

3.5. The ideal is to achieve self realization. Only if the athlete understands his/her own potential, weakness and strengths, will it be possible to reach full potential in athletics.

4. HIERARCHICAL CONTROL

The athlete's mind has various systems that control conscious and sub-conscious decision-making.

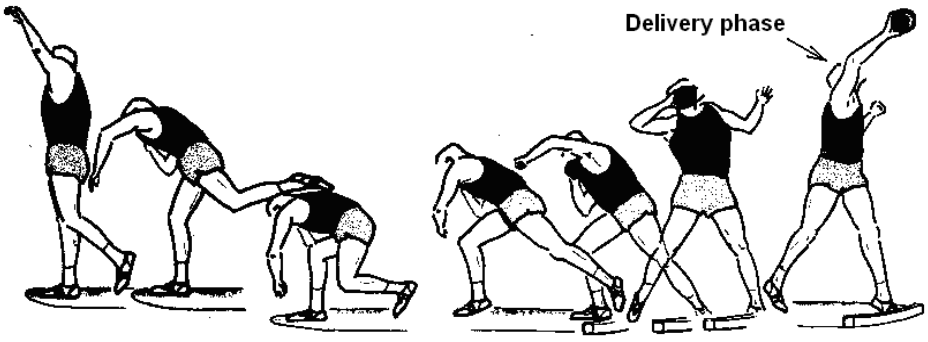
Examples of sub-conscious control are the regulation of the heart rate, breathing, and other vital functions.

Examples of more advanced sub-conscious control will be the mastering of a technique to a point where the response become automatically such as techniques used in running, body movement during jumps, body position and footwork during throwing events, etc.

Sub-conscious and conscious control of movement follows a hierarchical pattern, e.g. in Shot Put, the athlete will apply a specific technique to execute the delivery of a shot.

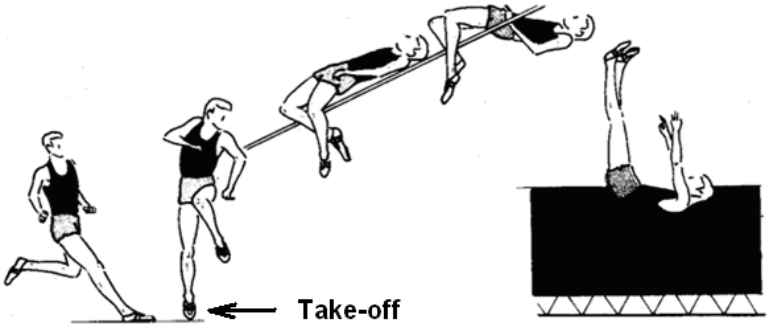
Each technique is executed according to a hierarchical pattern with the objective to move the shot smoothly from start to delivery as fast as possible to gain maximum momentum prior to delivery.

Each phase of the technique also have its own hierarchical pattern e.g. during the delivery phase in Shot Put, the foot will be placed correctly first, then the legs will move into the correct position, followed by the hips, the shoulders, the elbow and finally the wrist before delivering the shot.



Likewise in high jump the front foot must be placed correctly on the ground before take-off.

The legs will then follow, followed by the hips, the shoulders and the arms. If the hierarchical pattern was executed correctly, the athlete will cross the bar successfully.



If the hierarchical order of movement is not executed correctly and at the right timing, the technique will not be executed successfully and may even lead to injuries and perceptions of failure and inferiority.

The hierarchical patterns must be developed until the actions become automatic even under the most severe conditions.

Once the hierarchical patterns are automatic it is much easier for the athlete to cope with situations where conscious decision-making is required such as the intimidation of an opponent, a slippery surface, extreme weather, etc.

5. SPORT PSYCHOLOGY AND THE CHILD

There are 5 clearly defined phases of growth from birth to adulthood.

5.1. Infancy years are defined as the 1st 3 years after birth of both the baby boy and girl.
5.2. Childhood years for boys are 3 to 11 years after birth and for girls 3 to 10 years after birth
5.3. Puberty years for boys are 11 to 14 years after birth and for girls - 10 to 13 years after birth
5.4. Adolescence years for boys and 14 to 20 years after birth and for girls - 13 to 18 years after birth
5.5. Adulthood for men are reached at 20 years after birth and for women - 18 years after birth

It is important to note that the growth phases used as a reference are based on averages. It is possible that the mental capacity of some children will develop faster than others. The difference in psychological capacity of the child may as much as 4 years.

Coaches must keep in mind that both the body and the mind of the child are continuously changing. Coaches must also keep in mind that physiological and psychological changes are also not taking place at the same pace.

Externally induced psychological preparation e.g. from coaches, teachers, parents, etc. should be avoid during infancy, childhood and puberty phases. Externally induced psychological preparation should at the earliest be introduced at the adolescence phase of growth development.

Puberty is regarded as the golden age of skill learning and mental capacity growth. During this period the child wants to learn skills and the word “why” will appear in almost every sentence. The child is now more capable of learning then any other development phase in the live of the child.

Because of the child in the puberty phase’s natural willingness to learn new skills, it is tempting to subject the child too externally induced psychological preparation such as organized play and highly competitive competitions.

Specialization, both physically and psychologically must be avoided during puberty to avoid the suppression of the development of basic athletics skills of a wide variety.

There is sufficient scientific evidence that athletes specializing, both physically and psychologically, too young are injury pruned and suffer regularly from staleness during the adolescence period.

Athletes that developed a wide variety of skills, and are allowed to play with little external psychological pressures during puberty have 500% better chance to achieve success in later development phases than athletes specializing during puberty.

Children, particularly in the puberty phase, will not understand why they can not control their arousal levels when mastering certain techniques, particularly during puberty.

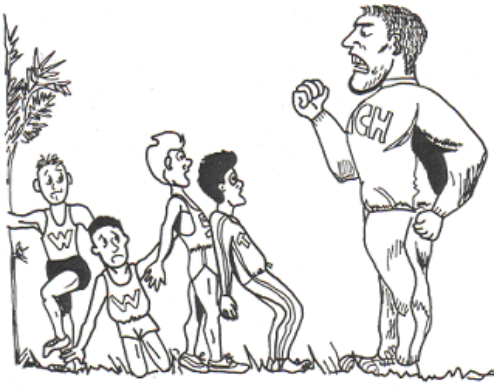
It is important that the coach explain to the growing athlete e.g. that the reason why they struggle with coordination is because their legs are growing faster than normal. Regular feedback and support from the Coach will help the child to control anxiety levels.

Children in general find it difficult to evaluate their own progress. By playing without external psychological pressures during puberty, the child will obtain the skills to evaluate their progress naturally.

Children, particularly in the puberty phase should not be subjected to training programmes and the setting of objectives.

During the adolescence phase, the child should be introduced to training programmes, setting of objectives and other psychological preparation methods.

THE COACH MUST REMEMBER



- Do not subject children to specialized psychological training before the adolescence phase.
- Develop the confidence of the child by encouraging children to try new things.
- Apply the "KIS" (keep it simple) principle – Use simple understandable language
- Do not give the child too many instructions at a time to implement.
- Be positive when giving feedback to children
- Give everyone in the training group some success during a session

6. FACTORS THAT AFFECTS THE EFFICIENCY OF MENTAL SKILLS

6.1. PERSONALITY

The personality of an athlete is a combination of characteristics or qualities that form an athlete's distinctive character. No two athletes are the same. As a result each athlete will:

- Interpret the same piece of information differently
- Respond differently to the same situation
- Respond differently in different situations.

Athletes can broadly be categorized into two types of personalities namely extroverts and introverts. The type of personality the athlete has, will determine how the athlete will react to specific information and situations.

CHARACTERISTICS OF AN EXTROVERT	CHARACTERISTICS OF AN INTROVERT
1. The extrovert can handle more pain and punishment because they tend to share their experiences with others	1. The introvert can handle less pain and punishment because they tend to keep their emotions to themselves.
2. The extrovert reacts positively to encouragement and motivation but is not easily aroused internally.	2. The introvert is difficult to motivate externally but are easily aroused internally
3. The extrovert requires more variation in training and loses interest faster in objectives set.	3. The introvert can continue longer with the same type of training and tend to remain focused longer on an objective
4. The extrovert is less reliable during training. The training programme of the extrovert requires close monitoring.	4. The introvert is more reliable during training. The introvert can train for long period of time without supervision
5. The extrovert become easily bias to certain training methods	5. The introvert will follow training methods slavishly
6. The extrovert will experience difficulty to master new techniques and ideas	6. The introvert will master new techniques and ideas easily.
7. The extrovert must be reprimanded or redirected in a group during training. The extrovert will absorb the reprimands and refocus on the task at hand faster.	7. The introvert must be reprimanded or redirected individually and must be dealt with cautiously. The introvert will experience difficulty to absorb a reprimand and will take longer to refocus on the job at hand.
8. The extrovert develop less tension because of their nature to share their experiences	8. The introvert develops tension faster because of their nature to keep their emotions to themselves.

6.2. MOTIVATION

Motivation is the why of the athlete's behaviour. Motivation is the expression of the athlete's desire to participate in athletics.

The nature of the athlete's motivation to participate in athletics may be:

6.2.1. Intrinsic e.g. to master new skills, to compete and win, to make friends, to become fit and to experience excitement
6.2.2. Extrinsic e.g. to win medals, trophies, money, etc.

It is important for the coach to understand the reasons why the athlete takes part in sport. These reasons will also influence the way the athlete will approach any form of physical or psychological activity.

If the athlete does not get satisfaction from the sport, the athlete will be de-motivated, and will drop out of the sport.

External pressure from coaches and parents add very little to the level of motivation in the long term. It may even decrease the level of the athlete's motivation.

Success comes from self-motivation, not the imposed ambitions of someone else. The role of the coach is to assist the athlete in formulating his or her objectives. Once the athletes agrees to the objectives are set, motivation will be easy to obtain.

6.3. AROUSAL LEVEL

The athlete's need to respond or to react, determines the arousal level of the athlete. There is a direct relation between the athlete's arousal level and the level of anxiety.

The athlete's need to respond will vary according to the objective set, the individual's personality and the situation. The athlete's arousal level may as a result of internal or external factors, objective driven or general, conscious or sub-conscious. Even the personal, ethical and religious values of the athlete will affect the arousal level and will influence the efficiency of the performance.

Arousal is a vital factor in performance.

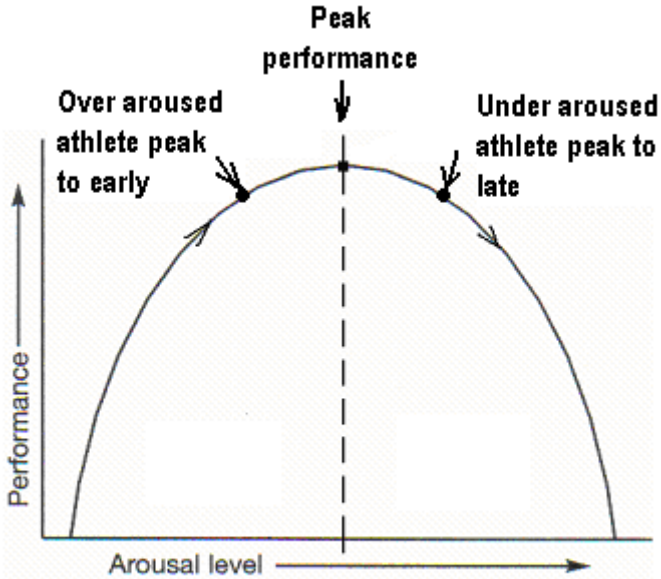
The degree of the arousal level will influence the performance level of the athlete.

Under aroused performers may react too slow or with too little power and as a result peak too late.

Over aroused performers may act impulsively with excessive power, disrupt delicate control mechanisms and as a result peak too early.

The level of arousal should be adjusted according to the personality of the athlete and the performance required.

When new skills are taught, the arousal levels should be kept at low levels.



RELATIONSHIP BETWEEN THE LEVEL OF AROUSAL AND SPORT PERFORMANCE

Children experience the mastering of skills in the beginning stages as very challenging and experience very high anxiety levels. Once the child has mastered the new skills and the anxiety levels have dropped, only then can the child gradually be exposed to higher arousal levels again.

Generally, young children are motivated easily. Their arousal level however are not controllable yet and by providing additional motivation will over arouse the child and result in impaired performance, uncontrollable emotions and concentration levels and the athlete becomes a greater injury risk.

The arousal level of the child is also increased when surrounded by large crowds, important or valuable rewards, parents, teachers, peer group pressure and the emphasis to win at all cost.

The psychological messages received by the child's brain externally through the eyes and ears e.g. when a stadium is fully packed with singing children from their age group, easily raise the arousal level of the child to uncontrollable levels.

Excessive arousal levels among children lead to a high drop out rate in the sport and have far reaching effects on the physical and emotional health of the athlete as well as the state of the sport.

To assist the child to learn the skills to control external information to the brain is through group activities such as relay events and team sport.

The level of the arousal must be controlled by setting objectives according the athlete's skills level.

6.4. ANXIETY

Anxiety, a form of stress, is a term used to quantify the negative arousal level of the athlete.

The personality of the athlete will, to a large extend, determine the anxiety level of the athlete. Young and inexperienced athletes tend to be more anxious, often at uncontrollable arousal levels.

Anxiety can be caused by a variety of fear factors, generally categorized as the fear for physical danger, the unknown, disruption of routines, negative social evaluation and failure.

All athletes should experience some level of anxiety to be able to perform. The symptoms of anxiety can be categorized into 2 groups:

- **WORRY**

  Worries are thoughts or images about what might happen in an event that is about to start. Examples are the fear for false starts in track events, what their friends may think if they lose the competition, etc.

- **PHYSIOLOGICAL AROUSAL**

  Physiological arousal is part of the body's natural preparation for "fight or flight'. Examples of physiological arousal include increased heart rate, sweating and the need to go to the toilet.

  The level of anxiety can be controlled through practice. There are 2 ways to help the athlete to control the anxiety level; by setting objectives and by relaxing. By setting clear objectives and by relaxing, the athlete will be able to control the level of anxiety and concentrate thoughts on the effort required during competition.

6.5. AGGRESSION VERSUS ASSERTIVENESS

There is a fine line between permitted violence and illegal violence. Permitted violence can be defined as assertiveness. Illegal violence can be defined as aggression.

The higher the arousal level of the athlete, the more likely assertiveness can become aggression. Very high arousal levels lead to uncontrollable emotions and concentration levels.

The focus when raising the arousal level of the athlete should be on how to outsmart the opposition, rather than harming the opposition.

There are two types of aggression:

6.5.1. Reactive aggression occurs when a person is seen as the enemy and the response is to attack. Reactive aggression consists of emotions such as anger and frustration.

Initially, during the mastering of new techniques and skills, reactive aggression will form part of the emotional reactions of the athlete, particularly among young inexperienced athletes.

6.5.2. Instrumental aggression occurs when striving for a reward such as winning a medal. Through regular training with the objective to master the technique of an event to a point

where the hierarchical muscle reactions are subconsciously and automatic, reactive aggression can be transformed to become instrumental aggression.

Instrumental aggression can easily become hostile. When the actions of the athlete are harmful to other athletes, instrumental aggression becomes hostile aggression.

The actions of athletes should have clear parameters (rules) during heightened arousal levels e.g. no use of foul language, no causing of bodily harm, etc.

As long as the action of the athlete during competition is within the agreed parameters of the sport, aggression can be defined as assertiveness.

6.6. PERCEPTION

If the athlete misread or misinterprets information received externally or internally, the athlete will make a decision that will negatively affect the performance level.

The misreading of information maybe as a result of a lack of experience, a lack of ability, an unfamiliar environment or even as a result of misinformation provided by an opponent.

Coaches can set up drills to perfect motor response of the muscles. These drills are aimed at ensuring that the muscles act correctly under severe conditions such as fast movement and movement over long periods of time.

The coach must also set up drills that will teach the athlete respond at the right time and under different conditions.

By creating drills and techniques that enables athletes to enjoy success, the perceptions of how they experience live will also change.

6.7. DECISION-MAKING

Athletes take decisions continuously. These decisions are normally taken in a more relaxed environment. During competition decisions must be made very quickly and very often in abnormal situations. To limit the amount of decisions that needs to be taken at any given time during competition, where a number of decisions are taken in a short space of time, technique training can be applied.

Through technique training some of the decisions that need to be taken under pressure will become automatic and do not require specific thinking.

Actions that do not require active thinking takes place faster and provide the athlete with more time to take decisions on matters that is unexpected or unscheduled.

6.8. VARIETY OF RESPONSE

Responses during competition are always based on previous experiences. It is therefore important that the athlete should be subjected to a variety of actions that requires different responses. The responses must form part of the athlete's long term memory store.

Decisions taken under pressure tend to be stereotyped. To avoid stereotype decision making, the coach must subject the athlete regularly during training sessions to situations where the athlete needs to be creative. Responses that should form part of the long term memory store are obtained through exercises that develop general perceptual skills such as balance, co-ordination, agility and timing.

If the athlete has a greater variety of decisions to chose from his or her long term memory banks, it become less likely that an athlete will be outsmarted by the opposition during competition. The athlete will be able to execute a specific skill even in unexpected situations and environments and in the process outsmarts the opposition purely because the decision was taken faster.

The child learns perceptual skills at a much greater speed than adults and therefore the child should be subjected to general perceptual skills development as early as the puberty and adolescence phases of human development. During infancy and childhood phases general skills are developed during normal daily physical activity such as games and daily chorus. Any attempt to develop general skills in an organized manner during infancy and childhood phases will lead to abnormal physical and psychological development patterns later in life.

General perceptual skills should form the base of more specific skills required during situations where short term results are required such as during competition or dangerous situations. During competition, advanced techniques must be applied to outsmart the opposition.

Both general and specific skills required in sport, must be practiced in a variety of circumstances, to ensure that the athlete has the option of a variety of responses when confronted with unexpected situations during competition.

6.9. STALENESS

Staleness must not be confused with a slump in performance levels. The performances of athletes may slide backwards for short periods of time. This may be as a result of physical, psychological, technical or tactical shortcomings. When the shortcoming is identified and corrected, the performance of the athlete will increase and the athlete will be out of the slump.

Staleness is more than a temporary decline in performance levels. The athlete will experience difficulty to cope with training programmes or former performance levels.

Physical symptoms of appetite loss, weight loss, continuous muscle pains, headaches, a higher resting heart rates or a heart rate that take to long to return to the resting rate are common among athletes suffering from staleness.

Psychological factors such as depression, sleep disorders, loss of self esteem, mood swings, emotional isolation and increased anxiety are also common among athletes suffering from staleness.

External factors such as restrictive and unreasonable rules, abusive treatment from coaches and administrators, and a lack of positive feedback can also lead to staleness.

If the period of staleness can not be stopped, the athlete will lose interest in the sport. The athlete's self-worth will deteriorate, disassociates him or her from the sport and try to avoid training or competition.

During a period of staleness, the increase of physical, psychological, technical or tactical training will not improve the performance level of the athlete. In fact the opposite must happen. It is important to identify the source of the staleness.

To avoid staleness, regularly change training routines, training environments and training methods. It might even be necessary to change set objectives to avoid the effects of staleness.

If the symptoms of staleness are detected, identify the source as soon as possible. If the source is overtraining, reduce the training. If the source is dietary, improve the diet and temporarily decrease training loads. If the coach is abusive, try to convince the coach to be constructive and if not successful, change the coach. If the source is a lack of focus or anxiety, reset the objectives.

7. SETTING OBJECTIVES

An objective is a statement in writing with a firm date fixed to it, describing the achievement. An objective should be set positively and should highlight the positive aspects of the achievement.

Objectives when set incorrectly can easily been pursued as challenges rather than advantages. The setting of objectives is intended to control the arousal level of the athlete. When objectives are set incorrectly, the athlete will experience emotions such as frustration or fear failure. As a result, the athlete will experience anxiety rather than arousal.

The athlete who has clear objectives will be able to focus on the objectives rather than on some vague worry about all the possibilities of competition.

The lack of objectives to achieve will have a direct impact on the arousal level of the Athlete as well as the general level of motivation of the Athlete. The Coach must help the athlete to identify and formulate the objectives that must be achieved by the Athlete.

Achieving objectives consists of two phases:

7.1. STRIVING TO IMPROVE

Achieving success can be measured as running a personal best time, to jump a personal best height, etc. Award functions and merit awards are based on this principle.

Setting personal best performances as objectives for the athlete form an important part of the motivation to achieve success. The setting of objectives should be a joint effort between the Athlete and the Coach.

The objectives should consist of long term, medium term and short term objectives. The long term, medium term and short term objectives should be used as stepping stones on the road to success.

As the various objectives are achieved the Athlete will get more motivated to achieve the next objective.

As the objectives are achieved, the Athlete will become more motivated to improve even further.

It is important that the objectives set for the Athlete by the Coach are acceptable for the Athlete.

The objectives should be of varying difficulty but must at all times present a challenge for the Athlete to achieve.

It is important that the objectives are measurable. Athletes are motivated much easier by measurable objectives.

The objectives should be singular of nature and the outcome of the objective should not depend on other objects that must be achieved first, e.g. the focus should be on achieving a personal best performance that is not subjected to winning the opposition first.

Setting an objective such as “try to do your best” is vague, not specific and not measurable.

All objectives should be recorded and every time an objective is met, it should be written down as well. Writing down the achievement makes the objective visible and serve as a reminder of other objectives to be achieved.

All objectives met by the athlete, should be acknowledged by the Coach. This will help to motivate the athlete.

7.2. STRIVING TO WIN

In pursuit for absolute success the measure for the Athlete will be to beat the opponent. The success of organizing competitions and championships events are based on this principle.

Athletes that set the winning of medals as objective to early in their careers will enjoy limited success. Winning medals should be set as the ultimate objective to achieve. The Coach should transform the performance level into measurable long term, medium term and short term objectives.

If the long term objective is to win a medal at the Olympic Games, the long term objective should be set slightly higher than the performance of the winner of the Olympic Games.

8. RELAXATION TECHNIQUES

Relaxation is the key to high level performances. Relaxation skills cannot be taught in a short space of time, and must form part of the preparation of the athlete. An athlete that is skilled at relaxation can use these techniques when anxiety threatens to go too high.

The advantages of physical and mental relaxation are:

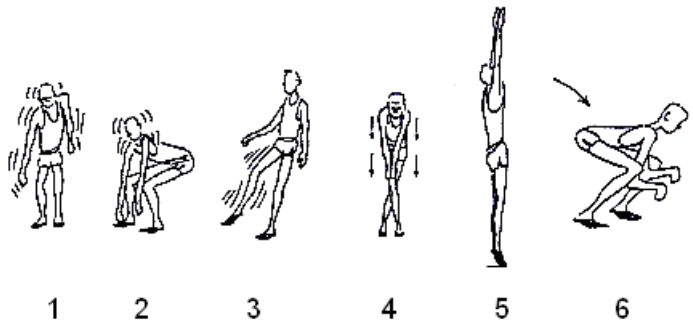
- One can concentrate better when relaxed.
- One can learn faster and retain better when relaxed.
- One can learn physical skills faster and make good habit patterns more quickly.
- One will have faster reaction time.
- One will be better co-ordinated.
- One can get to sleep more quickly and sleep a more restful sleep.
- One will not fatigue as quickly.
- One will feel better.
- One will be more confident.

8.1. RELAXATION SKILLS CAN BE DEVELOPED AS FOLLOWS:

- Every day, as part of a training session, learn to keep your hands and jaw relaxed. No matter how fast you run or how important the competition, you must try to relax your face and hands.
- Go through a relaxation routine before every run, jump or throw, trying to relax all the muscle groups. For example: take the wrinkles out of your forehead, let your face sag, drop your shoulders low, collapse your chest, take all the bones out of your arms, shake your legs, let your feet go limp, etc.
- Check your ability to relax daily during technique exercises. (The coach can help here).
- Before a run, jump or throw, go through a routine of relaxation exercises.
- During hard training session, when you are very fatigued, concentrate on good form and stay 'loose' (relaxed).
- During the execution of the event stay relaxed.
- When doing a time trail, use 90% effort while concentrating on relaxing. Evaluate the performance. You will find it is better than 100%, even though it will not feel that good a performance.

8.2. RELAXATION EXERCISES

A few simple examples of relaxation exercises are shown in the diagram. Relaxation exercises can be adapted to suit the personality of the athlete.



9. CONCLUSION

In pursuit of the competitive advantage, the athlete requires a better understanding of the psychological processes in the mind.

The psychological processes in the mind can be utilized to the advantage of the athlete when the athlete is objective driven and relaxed.

It must always be kept in mind that the athlete is not a machine. To ensure that the athlete remain competitive throughout his or her career, it is important to remember that the athlete must be developed holistically.

The athlete's performance level is not the only aspect that needs management. Athletes should also set lifestyle objectives, personal development objectives, medical development objectives, wealth development objectives, family development objectives and spiritual development objectives in order to develop holistically.

BIBLIOGRAPHY

1. Coaching Theory Manual, British Athletic Federation, 225a Bristol Rd, Birmingham B5 7ub
2. Introduction To Coaching Theory - I.A.A.F., 3 Hans Crescent, Knightsbridge, London Swix, England.
3. Sports Injuries, Dr Malcolm Read - Breslich & Foss, 43 Museum Street, London, Wcia Ily
4. Sports Injuries, Dr L. Peterson, Dr P. Renstrom - Juta And Co Ltd, Po Box123, Kenwyn, S.A. 7790
5. Sports Medicine, Dr I. Cohen, Prof. G Beaton, Prof. D. Mitchell - Sports Medicine Clinic, Campus Health Service, University Of Witwatersrand, Johannesburg, SA, 2000
6. Sport Psychology – Theory and Practice – Dr Justus Potgieter, Institute for Sport Science, Stellenbosch University, Stellenbosch, SA, 2003
7. Thirteen Attributes of Success, Dr Brian Jude, Zebra Press, P.O. Box 5563, Rivonia, 2128
8. Training Theory, Frank Dick - British Athletic Federation, Edgbaston House, 3 Duchess Place, Birmingham B16 8nm