



FITA  
Coach's  
Manual

**PSYCHOLOGY**  
Module

Intermediate  
Level

# FITA Coaching Manual

## Intermediate Level

### Module

### PSYCHOLOGY

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#### 1. Introduction

*'Mens Sana in Corpore Sano'*

Archery is a game, where a specific routine has to be executed many times: to shoot an arrow into the centre of the

target. To perform this routine with the desired result it is necessary that body and soul (mind, psyche) be in balance. Practice for archers is not only perfecting the shooting technique and keeping the body in a good physical shape; mental preparation of the athlete is equally important.

To practise archery, strength, flexibility and dexterity are desirable; to be successful in competition it is essential that:

- The equipment fits the archer and is well tuned.
- The athlete is in a sufficient physical condition.
- The athlete has a good shooting technique
- The athlete is mentally strong.

When a task has to be repeated over and over again in a modern factory, we use a robot, i.e. a machine that is capable in repeating many times a predefined action with great precision. So in a way an archer should act like a robot. Unfortunately performing like a robot is very difficult for a human being. The human mind is creative and much more complex than the command system of a robot: it can inspire, but it can also hamper the performance.

The central nervous system controls the muscles of the athlete. It is recognized that tasks that have been practised many times over and over again and that have reached a certain level of automation, are executed easier and more precisely than non-routine tasks.

The number of components involved in the human nervous system is uncountable. The human nervous system is a highly complex, sophisticated and effectively integrated network. A change in the mental-emotional state of the athlete is consciously or subconsciously accompanied by a change in the human behaviour.

The human brain is part of the central nerve system; brain activity influences the execution of the shot. All kinds of events that are watched by the athlete and also thoughts that go around in the head of the archer can distract them of the task at hand and disturb the archery routine. Learning to react adequately to relevant stimuli and not to react on non-relevant stimuli is part of the preparation of archers.

In the specific state of concentration an archer is capable to act robot-like. Movement is going by itself, without conscious control, using the global image of the routine that is stored in memory, the relevant information that is filtered from all actual information that is gathered by the organs of sense (mostly the eyes and the ears) and disregarding task non-relevant information such as performance of the opponent and results from the past.

A coach, who is working with a group of archers on a regular basis, gets a special relationship with their athletes. The archer relies on the coach and this implies a special responsibility from the coach's side. It is the coach's job amongst others to free the athlete from all organizational work that has nothing to do with the primary task of shooting arrows.

## **2. Data banking**

There is a lot of 'data' that a coach has to record and, at the appropriate time, to retrieve. For each athlete the personal data, as well as the archery results, has to be recorded. Also details of shooting technique and physical preparedness are of interest for use in the future. For a successful cooperation between archer and coach over a longer period of time, planning is needed. It is an important task for the coach to make long term and short term planning and to have evaluations at appropriate moments.

For each training session the coach works out in advance a plan on paper in detail for the activities they want to guide. During the training session the inexperienced coach can consult the plan in order to guide a logical and smooth session. After the training session the coach establishes that they have worked in conformity with the planning or otherwise changes the plan for the next year.

Each coach can draw a 'contract' with their archer, stating the objectives for that archer. The archer signs their contract together with the coach and the coach keeps the contract filed. Evaluation of goals is not too difficult then.

Each archer has to do with data banking too. Tuning parameters such as bracing (or string) height, sight marks and so on have to be written down in the archer's notebook. It is also of importance for the archer to record their objectives in the long term as well as a goal for each competition. Archers should on a daily or weekly basis keep track in their notebook of activities and goals, goal achievement, strategies and goal progress. The archer's notebook should be kept in the bow case as a part of the 'equipment'.

## **3. Variability**

A person can accomplish the shooting task in many different ways, using different sets of components of the muscle system. Although not every execution will look and feel like an efficient and beautiful one, the result can still be an inner ten! For the result of a single shot in archery the forces that work on the arrow on release are im-

portant, the way in which the archer uses the muscles is not uniquely determined. For the human skeleton there is an ideal stance. The archer tries to fix this stance of the bones by means of their muscles. In reality, even without any windy conditions, 'fixation' of the body is in fact maintaining equilibrium around this desired position.

## **4. Motivation**

Motivation, or the will to perform and to abandon activities that do not lead to the desired goal, is necessary for an athlete to fulfil the long route to the highest platform. To become a champion apart from talent and hard work motivation is absolutely necessary. In competition motivation is sometimes called the 'killer instinct'.

Archers have their own motivation: they do it for fun, for their own sake, for their satisfaction, for sheer enjoyment. This is called intrinsic motivation; it is part of the athlete's personal character.

Extrinsic motivation comes from the archer's environment: financial awards, trips to distant countries, status, medals, and so on. Even a very small amount of money to win can be an extrinsic motivation for a recreational archer. The presence of spectators (social facilitation) is another example of extrinsic motivation.

During a training session, when instructing, the coach must motivate the archers for each exercise to raise alertness and to increase enjoyment. They can use external motivation of the athletes by promising an award for the winner like a free drink.

## **5. Self-confidence**

Most important for (intrinsic) motivation is self-confidence; which is a mental property. The athlete must regularly experience success in order to develop self-confidence. In archery, on level 1, the coach manipulates the experience of success by organising shooting at a short distance and by using a big target face. On level 2 the archers themselves can regain self-confidence after some bad scores during a training session by shooting a few ends (on a bare butt) at a short distance, so that the arrows group much closer together.

It is of great help for the archer's self-confidence when the coach encourages the archer by giving positive feedback. Examples of positive feedback are: "Well done!" "Good!" or similar. As a coach try, in a practice situation, not to tell the athlete what they are doing wrong. On the contrary, make some comment about what is done very well and find a task to repeat the exercise with less change for errors.

## 6. Goal setting

The way to a high performance level is a long one, motivation from archer and coach and a lot of (hard) work is necessary. Goals can help to go through this long route; they motivate and improve athletic performance.

There are different types of goals; they can be achieved or missed. Missing a realistic goal is part of the sport. The coach must encourage the athletes to set goals. It is a common mistake for inexperienced archers setting too many and non-effective goals.

Good goals meet a lot of properties. The acronym SMART (ER) is a reminder for some of them. The meaning of SMARTER is Specific, Measurable, Action-oriented, Realistic, Time-phased, Exigent and Recorded.

- **Specific** means that the goal is not too general. Goals like 'I will do my best' are not specific; they are too general and therefore not very effective.
- **Measurable** means that the outcome, i.e. the goal achievement, can be measured in the sense that it can be decided afterwards whether the goal has been achieved or not.
- **Action-oriented** means that the goal describes an outcome of the activities of the athlete. The performance of other competitors should not influence the goal.
- **Realistic** means that it is possible that the goal will be achieved. For a beginning archer it is not realistic to set as goal: 'Next year I will be the world champion'. 'Next year I will have the same results as this year' may be very realistic, but it is not challenging. So, challenge is another item.
- **Time-phased**. Time limits given for the goals must be clear. (Short range as well as long range).
- **Exigent**. Challenging goals motivate the archer to work hard to realize the goal.
- **Recorded**. Writing down the goal helps the archer to stay aware of the goal.

Goals can be subjective (e.g. 'having fun') and objective (e.g. 'to win the competition'). A subjective goal is not SMART; it is not measurable.

Goals can be positive or negative. A positive goal puts the focus on success; a negative goal puts the focus on failure. A negative goal tends to change the mind during execution and can harm the performance.

There are outcome goals (e.g. 'to beat a particular opponent', 'a score of 1200'), performance goals (e.g. 'to enter the national team') and process goals (e.g. 'relaxing the bow hand after release').

Outcome goals, although SMART, can be less effective than performance goals. If the (outcome) goal is 'winning', then the outcome is very uncertain if the competitors are of equal level. The archer has at best only partial control over the outcome and becomes inflexible in the goal-adjustment if it becomes clear during the competition that the goal cannot be reached any more. Focusing on outcome goals can distract the athlete, as they tend to worry about the outcome of the event and 'forgets' to attend to their task-relevant strategies.

A process goal orientates the archer to focus during the execution of the shot on a specific part of the shooting routine. An example of a process goal for a training session: 'keep focussed on the relaxation of the wrist joint of the bow arm after release'.

When athletes take part in goal setting they become more involved in the programme and more committed because they feel responsible to some extent for their tasks. Don't force your athlete to set goals if they have a negative attitude to do so.

### **Goals for an exercise**

When the coach presents an exercise to their pupil during practising it is important to explain the goal of that work out. The athlete appreciates the goal-oriented work out and will be motivated to do their best. The exercise should not be too easy, otherwise it does not motivate; on the other hand, it should not be too difficult, as it could just create frustration or even de-motivation. It must be challenging. Examples of an objective with appropriate exercises:

Objective	Exercise
<b>To improve physical form</b>	We shoot eleven ends, numbered from 1 to 11. In the ends 1 to 6 the number of arrows equals the number of that end. (So in the first end 1 arrow, in the second end 2 arrows, ..., in the 6th end 6 arrows.) In the ends 7 to 11 the number of arrows equals 12 minus the number of that end. (So in the 7th end 5 arrows, in the 8th end 4 arrows, ..., in the 11th end 1 arrow.) 'Shooting pyramids'
<b>Shooting with relaxed bow fingers</b>	Tense and release your bow fingers before shooting; we shoot an end of three arrows with stressed tension on the bow fingers; next we shoot some ends with relaxed fingers

### ***Goals for a training session***

For a training session you can set as a goal to work out with your athletes some part of the shooting routine, e.g. the stance, the bow shoulder, etc. In the coach's plan for this training session you can prepare special exercises for the warming up, which introduce the subject of that session. If, for instance, the bow shoulder will be the topic, then you can conduct in the warm-up part some special exercises for arms and shoulders.

### ***Goals for a competition***

The goal for an archer in a competition should only depend on the archer's performance (and not on the opponents' performance). An archer is not at all capable to influence the opponents' performance.

Before each competition the archer must set a goal. 'Winning' sounds quite nice, but it will not have the positive effects we expect from a goal. The goal must be incorporated in an overall planning for the long term. So, 'winning' is not always what counts. A competition may also be 'training' for more important competitions to come. Example of a goal for a (indoor) competition: 'To shoot the first arrow of each end after 30 seconds'.

### ***Goals for the short term***

A clear goal for the short term prevents disappointment. If the goal for the short term is realistic, then it gives the athlete the feeling that they know what the perspective of their activities are. A recreational archer can do without a goal; it is enough to have fun. For an archer on level 2 and for elite archers goals for the short term play a role in their planning cycle.

### ***Goals for the long term***

A goal for the long term helps the archer to stay motivated. There are examples of some Olympic medallists who, although being a young and ambitious novice, already put as their objective 'I want to become an Olympic champion'. Planning on the long term is marked with goals to be achieved at fixed dates. Once a goal has been identified, it should be recorded by the archer and by the coach. It is not inspiring for the archer if they have to do just what others (the coach) have thought to be good for them, so involve your athletes in setting a goal. An objective for an archer on level 2 for a season could be: 'to shoot all arrows in the yellow and the red (with the possible exception of a miss)'.

Objectives for the long term on which athlete and their coach have agreed serve to motivate their cooperation. The objective can be 'to participate in the Olympic Games', which is very ambitious, or 'to have a nice time during the hours of practice', and anything between.

For the long term (several years) the objective could be 'I want to be among the best in my country'. To achieve such a (middle) long-term plan it is wise to plan this achievement in several steps (years). For each step we formulate a partial goal.

### **7. Frequency of training sessions**

The human body is a complex system with many physiological processes. These processes play a role in sport performance. Through training sessions we try to improve our athletes' level of shooting technique and quality of physiological processes. However, one cannot be training all the time; periods of activity have to alternate with periods of rest. Within certain limits one can choose (plan) when to practice, when to compete and when to take a rest. This is the essence of the coach's yearly planning. The periods of rest are more important than sometimes assumed. Shooting a few hundred arrows six days a week is less effective than shooting a deliberate number (say 80) of arrows three to four times in a week. A heavy training session just before an important competition can become disastrous.

With novices we may have one training session each week. On level 2 this is no longer optimum. Archers should practise a few times per week. It is a fact of experience, that practising archery twice a week is just enough not to forget what has just been practised, so archers on level 2 should have training at least twice a week. On the other hand it is important to give body and mind enough time to recover, which means no shooting for one to three days per week.

The skill of shooting must be well trained. In organising the training sessions it is important that athlete and coach follow a systematically predefined plan.

### **8. Learning and teaching**

Archery is a routine or motor skill, which has to be learnt like writing or driving a car. On entry level we find out what archery is all about; we have 'learnt' archery if we can reproduce the shooting routine with great consistency. This takes years of practicing archery two or three times a week.

If we want to learn how to drive a car, we need a car and an instructor to explain how to use the gear lever, how to master dangerous situations in traffic, etcetera. For archery we need equipment and a coach to teach how to shoot.

On level 1 you have instructed your novice archers to shoot their first arrows. You probably did not interfere too much in their (poor) technique. Your archers got the confidence that you as a coach guarantee safety and their first contact with archery gave them fun. After a while you will conduct your athletes step-by-step to the correct technical execution of the shot. When all the technical details have been trained, coaching continues on a higher level.

Athletes generally follow their trainer's instructions; the coach observes how the archer executes the shot. As long as not all arrows hit the bull's eye, the coach tries to discover what the archer is possibly doing incorrectly. The coach cannot directly observe all the visual and proprioceptor\* information that the archer collects during the shot nor can the athlete tell that to you.

The athlete's thinking, remembering and considering during the shot determines the outcome of the execution, so it is important for the coach to find out what is going on in the archer's mind.

If in a training situation the archer pays special attention to one part of the routine, then other parts are often badly executed. By asking the athlete "What did you do?" the coach gets an idea about the athlete's mental focus.

As a (quasi) paradox the archer's performance usually drops after corrections in technique proposed by the coach. This can be caused by the attention the archer is paying to parts of the routine that were previously performed subconsciously and that are now consciously executed for some time. This is a normal experience. After a certain period of practising the new movement will be routine and executed automatically again. It is therefore not wise for the coach to suggest changes in shooting style shortly before a competition. Such corrections should be made preferable after major tournaments.

We consider five stages in learning archery.

- s1.** Getting the idea of the skill
- s2.** Rough coordination
- s3.** Fine coordination

\* A proprioceptor is a specialized sensory nerve ending that monitors internal changes in the body brought about by movement and muscular activity. Proprioceptors located in muscles and tendons transmit information that is used to coordinate muscular activity

- s4.** Refining and performing under various circumstances
- s5.** Elite perfection

The athlete has to go through these stages, one after the other. It is the coach's responsibility to keep this sequence in mind. Always realise at what stage your archer is currently learning. In a level 1 course we have to deal with stages S1 and S2. On level 2 we have to work on the stages S3 and S4. Stage S5 is left over for level 3.

An athlete uses different means of learning.

- Feedback of the result at the target.
- Verbal feedback from the coach such as 'well done!' or a comment on the execution of a specific task.
- Non-verbal feedback from the coach such as 'thumb high'. If the coach usually gives verbal feedback, a silence can also be meaningful.
- Imitation or model learning. On level 1 young archers like to copy a popular archer's shooting style, sometimes from a movie. If this 'model' has the perfect shooting style that fits the pupil there is no problem, but mostly it is not advisable to imitate fully another athlete's shooting performance. The coach can use the ability of model learning by showing a posture or movement to the archer. Use a good model (yourself or somebody else) to show the shooting sequence and use a video camera or a mirror to show this athlete's performance.
- Understanding. If we understand that moving the sight pin for example to the left, leads to holding the bow more to the right, we know how to correct the sight if the arrows hit left. We can use standard rules such as 'Follow the arrows with the sight pin'.

### ***Methods of teaching***

The coach can use one or more of the following methods of teaching.

### ***The fragmentation or checklist method***

The shooting routine is divided into a sequence of about 10 isolated steps. These steps are practised with the bow. The advantage is that the athlete can easily carry out these steps separately. The disadvantage is that the archer may continue to analyse all these steps of their acting, which in a stressful situation leads to convulsive movements and decreasing results. The isolated steps may not evaluate into a smooth routine, which is the biggest disadvantage in this method.

### ***The analytic or element syntheses method***

The shooting routine is divided into four or five relevant parts. Each part must be practised on its own and without the bow. After having practised the parts separately, they are put together using the bow. A great advantage of this method is that a lot of mistakes in the shooting technique are avoided. Teaching can be very efficient, with relatively big groups of athletes. It is very difficult in many countries of the world, however, to motivate athletes to practice ‘archery without a bow’, even when the advantage is evident.

### ***The comprehensive method***

The movement is executed as being undividable. If necessary, elements such as raising the bow arm can be practiced separately, but are as soon as possible reintegrated in the overall movement. The comprehensive method of learning can easily lead to a personal shooting style, which could be seen as a disadvantage.

For the above-mentioned reasons we prefer a combination of the analytic and the comprehensive methods of teaching. Don’t be afraid that your archers on the 2nd level will make a lot of mistakes. It is part of learning. People learn also by experience. After having been shooting in their own style without a high score, the athlete will be interested to listen to the coach’s suggestions.

If the coach teaches an inadequate kind of style, the archer will learn this form and the scores will drop permanently. It is very hard to get rid of an improper style in a later stage.

### ***Explicit versus implicit learning***

In a training session the coach makes remarks on the shooting style of the archers and gives them a task to focus on in the next ends. These suggestions of the coach can be based on explicit learning and on implicit learning.

Using explicit learning, nothing is left to the imagination of the archer; the archer has to do just what the coach describes, the coach tries to stay as close as possible to the ideal technical execution of the shot by the archer.

Implicit learning leaves a lot of things to the archer to discover themselves. If the coach observes that the archer has a collapsed stance, they can use the words “Make yourself tall”, leaving to the archer to discover the translation “Stretch your spine, cant your pelvis”. Using analogies is another example of implicit learning. For instance the remark “Keep the bow in your hand as if you keep a little bird in it; if you open it, the bird is

gone, if you pinch too much, the bird is dead” leaves to the archer to discover that the bow fingers should be relaxed.

Explicit learning works faster than implicit learning, especially at the beginning of the learning process. Implicit learned skills are less sensitive to stress than explicit learned ones (‘choking under pressure’) and therefore have a significant advantage above explicit learned ones.

A coach who wants to use implicit learning tries to offer a task to the archer, where the archers themselves to find out how to adapt their technique. For instance you fix an extra target face just above the ground; you tell your archer to pull the bow and to aim on the lower face, not loosing the arrow and to move the point of aim with the drawn bow to the upper target and then release. The archer has to find out how to swing the body around the hips, maintaining the T-shape.

### **9. Relaxation techniques**

Stress is the human process whereby an individual perceives a threat and responds with a series of psychological and physiological changes such as increased mental arousal and muscular tension. For sport performance stress should be avoided.

Arousal may either facilitate or inhibit sport performance. In the absence of arousal high performance is not possible; too much arousal can cause stress. The ability to regulate arousal levels is an important mental skill. Mostly the archer needs to relax; sometimes psyching up is needed to reach the optimum level of arousal. With relaxation techniques athletes can lower their general muscular tension under any condition.

In a situation of a competition or championship there will be increased mental arousal. Relaxation can facilitate recovery during the short time between two ends of arrows. An archer must learn to communicate with their body, i.e. to learn how to self-regulate arousal.

Relaxation teaches the athlete to regulate tension so that the nerve pathways to the muscles are never overcharged. Relaxation also promotes the onset of sleep and reduces insomnia problems that plague many athletes prior to competition. On the other hand, relaxation techniques can also help when the archer is fatigued.

Some methods of relaxation or diminishing a high permanent arousal (stress) are controlled breathing, progressive muscular relaxation and meditation.

### **Controlled breathing**

In general archers should have the habit to breathe like a baby does: do not raise your chest too much. A good breathing rhythm has to be an automatism. It is a normal reaction on anxiety to stress the upper breathing instead of using diaphragm (lower breathing). It's actually a sign of fear; yawning and sighing are other signs.

The recommended breathing uses the diaphragm rather than the intercostals (chest) muscles. The conscious effort of paying attention to one's breathing may relieve anxiety: one cannot consciously concentrate on both, breathing and worry. In contrast to upper breathing yawning and sighing are active means to create and/or support relaxation

### **Progressive muscular relaxation**

Progressive muscular relaxation can give the feeling of the difference between tense and relaxed bodily sensations by alternately contracting and relaxing designated muscle groups; it can reduce body tensions that harm good execution of a shot.

## **10. Mental preparation**

### **Pre-performance (pre-shot) routines**

Watching (elite) archers, you may observe different pre-shot routines. Examples are watching a fixed point anywhere in space before each shot, moving the body weight from one foot to the other (Cf. the three times bouncing of the ball on the ground before the serve by a tennis player), putting your quiver in place (as if it was not already there) and so on. Pre-performance routines provide time for liberation of task-non-relevant thoughts and to focus on task-relevant observations.

Pre-shot routines are executed subconsciously, most archers are not aware of them. Pre-shot routines serve several reasons. They help to make the archer's mind free from all that happened just before behind the shooting line: your all-day talks, the score, all advice you got from different people. Pre-performance routines belong to the shooting routine; a coach should not try to abandon them. Executing pre-performance routines is an archer's personal start to get into the state of concentration.

### **Instructional self-talk**

What athletes think or say is critical for performance. Thoughts directly affect feelings and ultimately actions. Appropriate or positive thinking leads to optimistic feelings and good performance; inappropriate or misguided

thinking leads to negative feelings and poor performance.

Examples of positive thinking are 'I achieve my goal', 'I have confidence', and 'I will win this game'. Examples of inappropriate thinking are 'I can not win this game'; 'I will not have a high score today'.

Anytime you think about something, you are in a sense talking to yourself. Such instructional self-talk can help the archer to keep appropriately focussed in the present, not staying with past mistakes or projecting good results into the future. Examples of instructional self-talk are 'I keep my bow elbow in position', 'I keep my release fingers relaxed' or 'I move my scapula to my spine'.

'If I shoot 28 again in the next end, I break my personal record' is an example of projection into the future, which often does not lead to the desired result.

### **Visualisation**

Visualisation (mentally rehearsal of the shot) is seeing and feeling oneself performing a skilled movement (launching an arrow) in one's imagination. Archers may (they actually should) use visualisation in a training session prior to the actual shot. Visualisation just before a shot suppresses non-relevant task thoughts. Visualisation does not offer feedback similar to the actual shot like kinesthetic sensations or score.

In a relaxed situation, an archer may sit down, the eyes closed, and imagine how they go to the shooting line, take the appropriate stance, nock an arrow, focus with the eye on the gold, raise the bow, draw, anchor and complete the shot.

As visualization occupies the mind, it is not a good idea to use visualisation on the shooting line during periods and/or actions requiring a lot of care. A mind free of thoughts is characteristic for the state of concentration.

## **11. Getting into the state of concentration on the shooting line**

For a good performance the athlete needs to know how to get into the state of concentration on the shooting line. The major element of concentration is the ability to focus one's attention on the task at hand and thereby not to allow to be disturbed or affected by irrelevant external and internal stimuli.

It is not so easy to get into the state of concentration; you cannot achieve it just 'by demand'. The following conditions have to be fulfilled.

- The archer must be motivated.
- The archer must have one clear goal.

- The archer must feel the importance to achieve the goal.
- The mind has to be free. Temporarily forget everything that is not exclusively involved in your shooting.
- The archer must be physically fit and should not have any (major) injuries. Fatigue or harm causes distraction and therefore hampers concentration.
- The archer must not take any drugs or alcohol.
- Any thought of what might happen in future or has happened in the past must be excluded, only the presence of NOW counts.

### **Social facilitation**

Well-known skills are executed well in the presence of other people; complex or poorly learnt skills are executed worse in the presence of others. Other people can be the opponent, the spectators, the coach or a judge. This is a general phenomenon, called social facilitation.

### **Focusing attention**

Focussing attention sustains alertness and keeps you free from distraction. At the start of the shooting routine the archer has freed their mind from task non-relevant thoughts and things that happen around them occupy the attention. On raising the bow the notice should be focussed on one single point of attention. There are thousands of possible points of attention, specific and internal for the archer such as: my stance, the movement of my scapula, my bow shoulder, my breathing, and outlining my bow, but also general and external such as the effect of the wind. The point of focus is a personal preference of the archer. By directing the attention on one point, all the (other) elements of a good shot could be executed subconsciously, that is in the state of concentration.

‘The focus on the centre of the body’ in Eastern archery literature is equivalent to ‘The state of concentration’ in western terminology.

Relaxation techniques and goal setting can harm focussing and are therefore not appropriate on the shooting line during competition.

### **12. Feedback and pitfalls**

Kinaesthetic sensation is the feeling that the archer has immediately after the shot, even when the arrow has not yet hit the target. Elite archers rely more on kinaesthetic feedback than on visual feedback, i.e. score.

After a perfect end there is little physical feedback: the athlete is not capable to report afterwards what they did right and what they did wrong. The usual reaction is “everything went correct; it felt quite nice”. We do have a pitfall here: the athlete is so excited of their perfect performance, that they are enjoying it in the next end, instead of focussing the mind ‘from zero’. We call this mental pitfall ‘euphoria’.

After a non-perfect end the athlete can easily formulate all the mistakes they made. At the next end they can use this information. However, this is also a pitfall. The focus will not be on the task-relevant elements, but on all the mistakes they remember. They tend to focus in a negative way, trying to ‘avoid’ these mistakes, thinking ‘this and that should not go wrong’. As we have seen before, in learning and teaching, focussing on parts of the shooting routine can easily lead to bad execution of other parts and/or even the whole shot.

### **13. Archery is a game**

The execution of a shot should happen spontaneously and automatically, in the state of flow. Archers should not be concentrating too much on their score. A good coach wants them to perform as comfortable as possible. A nice pace (rhythm and tempo) is more important for the shot than the knowledge about their own and/or the opponents’ intermediate standings.

We can divide the activities of archery into three parts: (technique) training sessions, shooting a tournament and doing some recreational archery. The importance of recreational archery should not be neglected. Informal matches with colleague archers are also considered as ‘recreation’.

Archery should be practised also ‘for enjoyment’. Depending on the circumstances, the elements stance, execution of the shot and score play a different role. There is a relation between these elements and the activities of the archer. In table 1 we show the coincidence matrix of this relation.

**Table 1. Points of concern in different circumstances:**

	Stance	Execution	Score
Technique training	+	+	-
Tournament performance	+	-	+
Recreational archery	-	+	+

Table 1 should be read as follows. Score is important, but during a training session we mostly neglect it.

- During technique training attention is paid to stance and movement; score is not important (there can even be a blank butt)
- During a tournament score is important: the archer with the highest score wins. We see that elite archers pay a lot of attention to pre-shot routines and stance. The shot is executed as if it is of no consequence
- In recreational situations, such as playing a game at the end of a training session or in traditional archery, scoring is very important. Archers tend to ‘neglect’ the stance, but they try to perform the movement as well as possible.

### ***Shooting in bad weather conditions***

A good coach assists his athletes in learning to perform in different circumstances.

In many parts of the world archery training sessions often take place indoor, where circumstances do not change. If we were training only indoors, the archer will be facing problems when competing outdoor. The tournament fields always differ from the training indoor facility. Shooting outdoor implies a lot of disturbances. There may be wind! There may be some trees behind the butt

that in general are not straight or vertical. The grass can be cut skew to the target, and so on.

We can train to anticipate these situations by introducing an element of ‘game’ in our training sessions. This means that we try to deal with all kinds of ‘changing circumstances’. For instance you can change the route the archer has to go from the equipment area to the shooting line by introducing some obstacles like a chair etc. In practising indoors we could change the lighting.

By introducing such ‘games’ we can increase attention and create a situation in which certain parts of the shooting technique are practised unperceived and without effort. Use different target faces, be an inventive coach! Training in a more ‘slovenly’ way gives your archers the mental room to perform better on the tournaments.

Fun is important. On the shooting line archers are very serious and try to perform their best, i.e. in the state of concentration. However, between the shooting sessions it is time to relax. The archer empties their mind from the competition by a (sometimes more than) relaxed behaviour. It is a matter of personal character, some people are introvert; others are extrovert. For the team in the ideal situation there is a mix of characters each with their own personality.

## **Literature**

Richard H. Cox, Sport Psychology, Concepts & Applications, (1997) ISBN 0-697-29507-9.

Aidan P. Moran, Psychology of Concentration in Sport Performers, (1996) ISBN 0-86377-443-9.

Don Davies, Psychological Factors in Competitive Sport, The Falmer Press, (1989) ISBN 1-85000-606-7.

Jean M. Williams (editor), Applied Sport Psychology, Mayfield Publishing Company, (1998) ISBN 1-55934-950-6.

Rico Schuijers, Over scherp zijn gesproken, Bohn Stafleu Van Loghum, (1997) ISBN 90 313 2447 7 (In Dutch).

Reinier Groenendijk, The Netherlands (Private communications)

F.C. Bakker, R. Groenendijk, J. Huijbers, Presteren onder druk, Arnhem: NOC\*NSF (1995) (In Dutch).

Paco Verkoelen, Aspects of Coaching, In: Technical Bulletin 10 of the Archery Coaches Federation of the Netherlands (2004) (In Dutch)