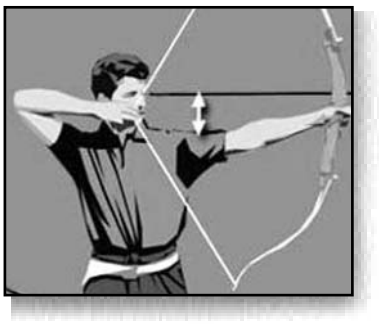
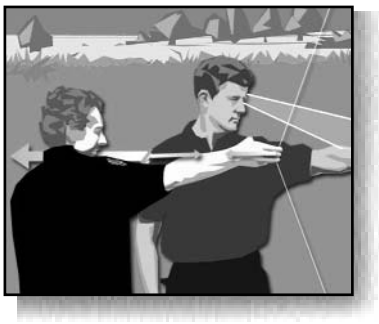
COACHES MANUAL

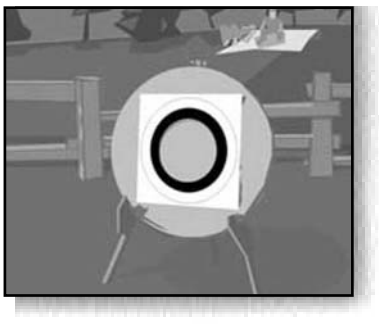
ENTRY LEVEL

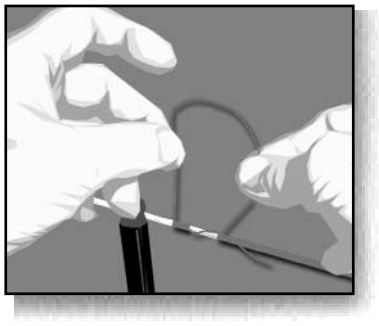
http://www.archery.org

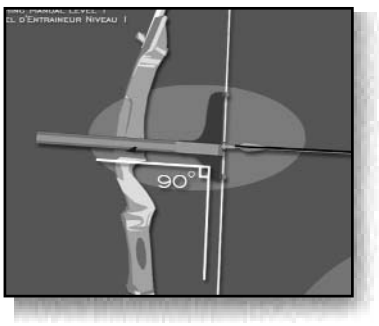
Table of Contents





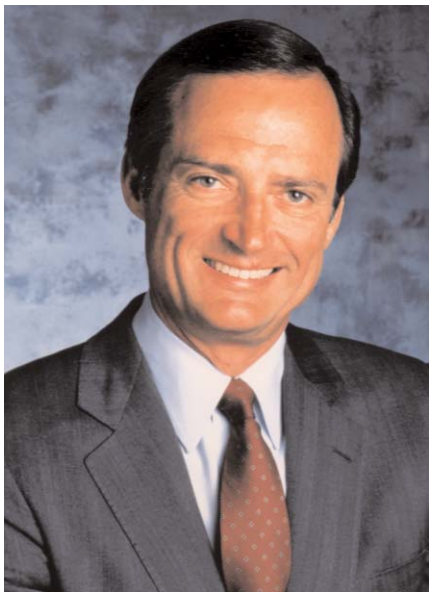






Glossary

Foreword by FITA President



Dear Coaches and Friends,

As President of FITA, I am very pleased with the results of the hard work of the Coaches Committee, the FITA office and all those coaches who have contributed to this valuable manual.

FITA now has an updated coaching manual that will unify the basic coaching knowledge of the best coaches in the world. It is important that a uniform method be used at the basic level to give all new enthusiasts a well-tested foundation of the best archery practices. Archers will be able to go from this level to that of a recreational, national or international participant, building on this basic training with intermediate and expert coaching.

My special thanks to Juan Carlos Holgado, Coaches Committee Chairman and Pascal Colmaire, FITA Development Director for their great effort and knowledge to write and compile this manual.

Best regards,

Jim Easton
President

Foreword by FITA Development Manager

Here is the first coaching manual of the Federation Internationale de Tir àl'Arc (FITA). This particular manual is dedicated to the teaching of archery to beginners.

The project was exciting to manage due to two factors. First, knowing how valuable it would be for archery development and secondly being able to collaborate with coaches, who were of such a high standard. My thanks to all of those coaches who made contributions to the development of this manual. I may report that we never faced any significant difficulties in getting agreement, on either the technical or teaching aspects of the content of the manual. The only philosophical difference to resolve was that presented by some of our Asian colleagues. This was the practice of numerous shooting sequence simulations before the first shots were actually taken.

Hence, pending the resolving of some social and ethnical principles, the contents of the manual should probably be adapted for certain scenarios. If this is so, we would very much appreciate to know how to alter the material, and for whom it may be done. Furthermore, any feedback, suggestions, and positive criticism towards improving this manual will be most welcome. This is certainly not a perfect Coaching Manual, however, it is one that may be improved with your contributions.

The National Archery Federations (NAF) that do not yet have this type of training tool for their coaching education are invited to use it. The same invitation to use the manual is offered to coaches who are not given a specific entry level program by their NAF. Some countries that have already established a coaching program could probably amend their coaching material with some parts of the manual. This approach is also acceptable.

The more that the manual is used the more will FITA be pleased, especially those people who have developed this teaching tool. We would really appreciate it if you will inform the FITA office if you make use of the manual, or intend to use it. It will help us to assess the usefulness of the manual. Thank you beforehand for you cooperation.

Very few of those who have collaborated with the development of this manual have English as their mother tongue. Hence, we beg your forgiveness for the mistakes in language that may have happened.

The illustrations have been made by an archer who is a former European champion, and World record holder by team (Compound Bow). He has created his own business in that field of work. Best wishes to Thomas, for his business enterprise. Congratulations on the work, you did a great job!

We have chosen a binder format for easy use by the coach, during archery classes and also for an easy updating process. We hope that the system will be convenient for you.

At present we (FITA) do not intend to certify archery coaches from this material. The original intention was to develop a coaching education tool for our Member Associations (NAF); it is up to those NAF's to use this manual, or another, for developing their own National Coaching Certification Program.

On the other hand the FITA Coaches Committee is already preparing a course for Archery Course Conductors. We have invited persons who could serve as "experts" at Olympic Solidarity Courses and FITA Development and Technical Assistance events, in the near future, to develop our sport worldwide.

I would like to thank the following organizations for their support of this project: FITA, Olympic Solidarity, FITA Coaches Committee and FITA Development and Technical Assistance Committee.

This was my third experience in the development of Coaching Manuals. The first experience was in France, with the development of the first two coaching manuals of the FFTA. The second experience was in Canada, with the entire revision of the FCA level 1 manual. The third was with FITA, with this manual. After each project I experienced a mixture of feelings:

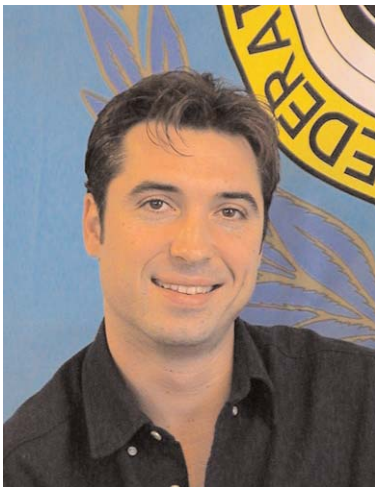
> 'Enough!"…. "We did a better job that time!"……"We could have done better!"…….. "It really is useful!"……"I would have enjoyed a manual like this when I began coaching."……"If I had spent my energy and time in coaching archers, instead of writing manuals, I could have produced more elite archers."……..and, lastly, "I could have presented a better contribution to this manual if I had done more writing throughout my coaching career."

However, I now recognize that I am fortunate to have had all these experiences. Furthermore, these experiences have generated opportunities, on many occasions, to discuss archery and coaching with archery fanatics, both old and new. If you are one of them I look forward to chatting with you in the future.

Enjoy Coaching!

Pascal Colmaire
FITA Development Director

Foreword by FITA Coaches Committee



Dear Friends and Fellow Archers,

It is truly an honour for me to introduce this Manual both to you personally and to the Archery Community as a whole. Despite all the hard work involved, I derived a great deal of pleasure from compiling and preparing the Manual. And finally here you have it, in your hands, a tool to help you develop the sport of archery in your town, city, region, country or continent. This Manual was not created to make you a better archer, but to help you on your way to becoming a better archery coach or instructor.

The FITA Coaches' Committee is extremely focused in helping anybody and everybody who is trying to develop the sport of archery on a worldwide basis. For this reason we have tapped into the experience of most of the top-level coaches from all the continents in order to compile a useful Manual that presents a global concept of archery style, basic and safe steps, and an adequate all round technique. This Manual contains the knowledge of the best archery experts from Asia (including the Koreans), Europe, the Americas and Oceania. It was a real team effort and I am very proud, as Chairman of this Committee, to have had the collaboration of such excellent and energetic contributors to help us create and develop this Manual. Without these incredible contributions, we could never have converted this project into a reality. Basing our work on a Canadian Archery Manual, and after drawing up draft upon draft and incorporating a great deal of input, we transformed this book into a very practical basic Manual for every archery coach or instructor. With the great help and constant work of Pascal Colmaire in the FITA office, this primary objective of our Coaches' Committee is now a reality.

I cannot finish this introduction until I have expressed my heartfelt thanks to all the experts and archery friends who have helped us in compiling this Manual. Thanks for the great work done by all the contributors who are identified at the end of this manual.

This is, first and foremost, a Manual that covers the basic level of archery. I would hasten to add that this Manual does not mark the end of our labours. We now have to start working on the second level, and any help will be welcome in order to make this next objective a great success and reality like this the first Manual.

I hope to see you somewhere around the world and hear any feedback or suggestions that any of you might have that will help us to develop our wonderful sport of archery, simply the best there is.

Best regards and good coaching!

Juan Carlos Holgado
Chairman

Chapter #1

The archer s skill

Archery consists in **propelling arrows with accuracy and consistency to the centre of a target**. According a simplified physical view, we can state that the archer's task is to repeat:

- **the arrow position in the space;**
- **the propelling force applied to the arrow.**

A well repeated form and release result in similar arrow trajectories and impacts.

That is to say that the archer must **accurately repeat**:

- the **position** of all the parts of his/her body, in relation to the target; and
- his/her **release** technique of the string.

Note:
A simplified description cannot be perfect; the one above does not consider the gestures repeated by the archers to open his/her bow, not only during the draw but also during aiming. Therefore to be more accurate, we should write that the archer should repeat his/her entire shooting execution - all his/her shooting sequence - including the positions and gestures taken and executed by the archer to prepare and accomplish his/her shooting.

Whatever we consider the archer's task according to a simplified analysis or not, we can understand that a simple easily reproducible shooting technique is the most efficient in producing similar results with each arrow shot. Nevertheless there are several positions and ways to open the bow and release - in other words "techniques" - that can efficiently be used in archery, because what is important is the quality of the repetition, not the technical choices.

Coaches often begin in helping the archer to develop and repeat a shooting sequence. For this purpose, this manual describes the most popular techniques used - as today - that the coaches will use to build an efficient shooting sequence.

Once the novice can link these techniques into a well repeated shooting sequence, his/her main task will be:

To **release** during the coordination range between:

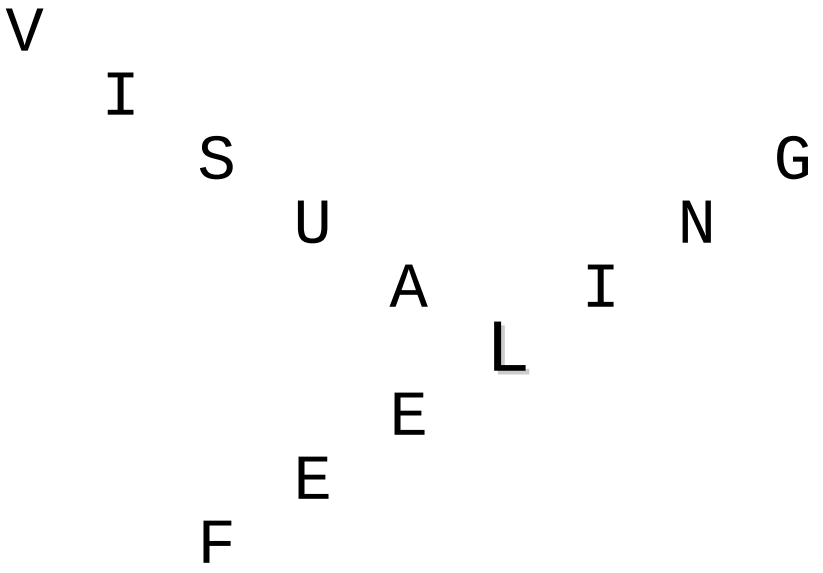
- his/her **visual references** - what the archer can see: *sight floating in a reasonable zone located in the centre of the target face - vertical bow - string alignment...* and
- his/her **feeling references** - what the archer can feel from the start of the draw until after the release:

- physically: *sensations related to positions (body stability), with effortless relaxed form quality.*

and

- mentally: *Confidence - Low stress- Concentrated/ Focussed...*

WITHOUT disturbing the quality of this



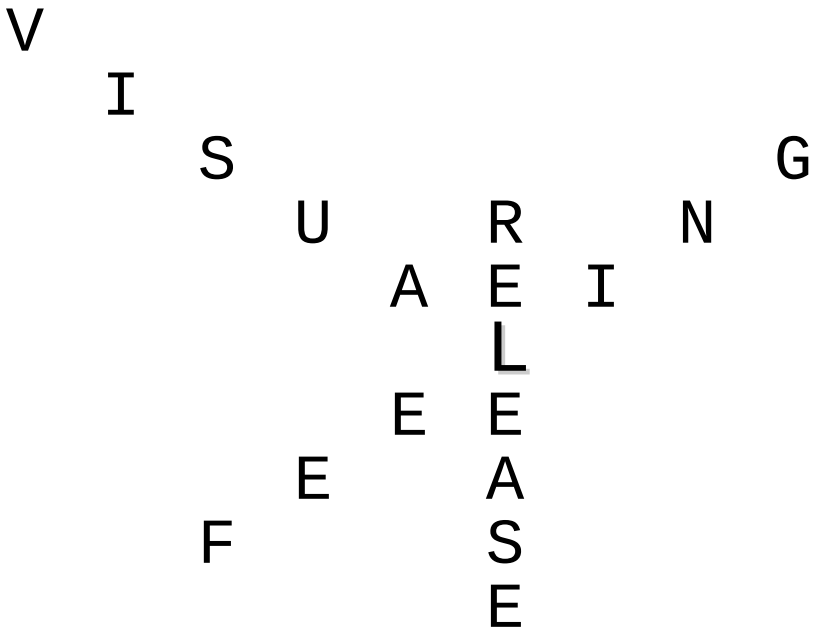
The archer strives to identify the coordination between his/her visual and feeling references (motor).

motor-visual coordination.

The coach will help the archer to identify, develop and organise all his/her feelings; all types of sensations: *joints and body position, relaxation level, body balance, stress level, confidence level, ...*

We suggest that you start to coach the archer toward the enhancement and development of the body and joints positions, the body balance, and the archer's strength.

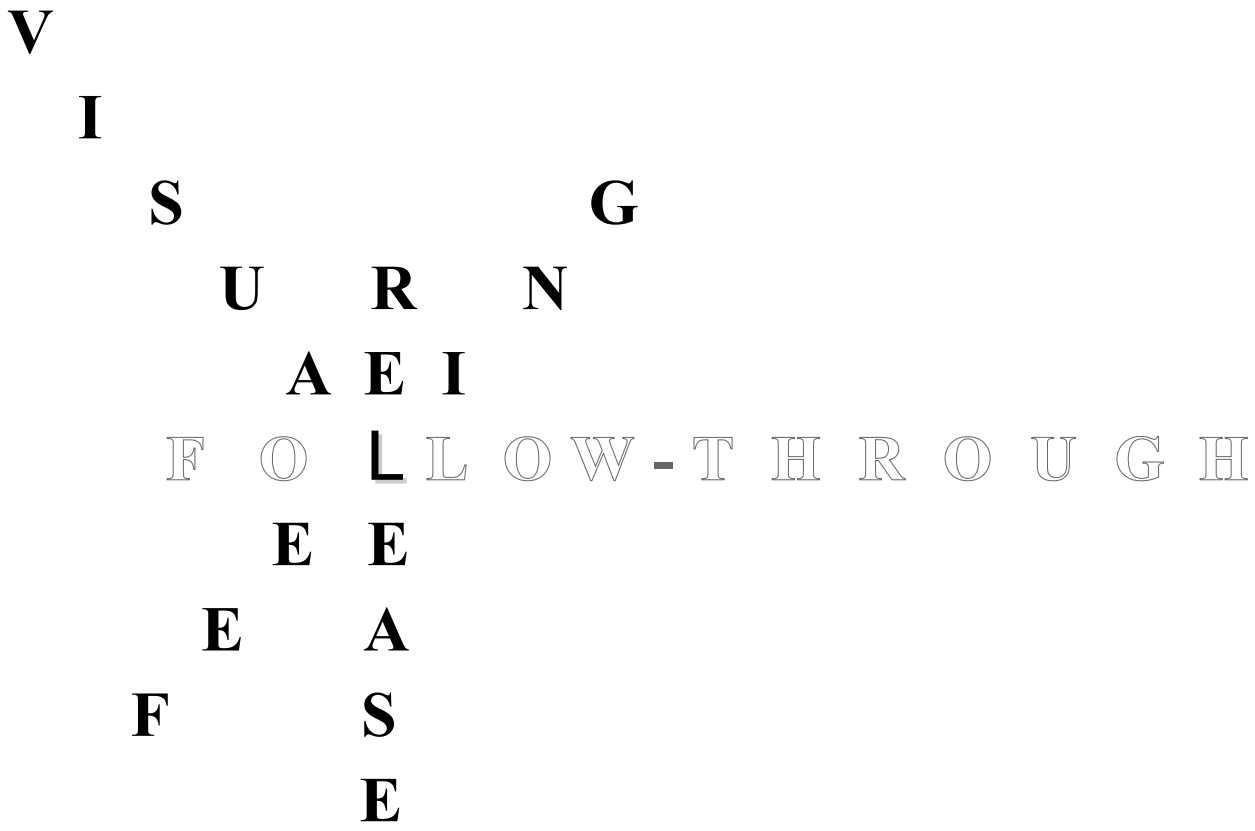
The more stable the archer is in the stance and the stronger he/she is at full draw, the more often the coordination time between his/her aiming and feeling occurs. Furthermore, the duration of this coordination is longer than a weak/unstable archer can endure. The result is that the archer can release



The release must happen during the visual-feeling coordination for a successful shot.

with more confidence and control.

A release executed only on the visual references (aiming) will rapidly lead the novice into "Target Panic"; a serious problem that we will be discussed further in this manual.



The release should not disturb the quality of the above coordination.

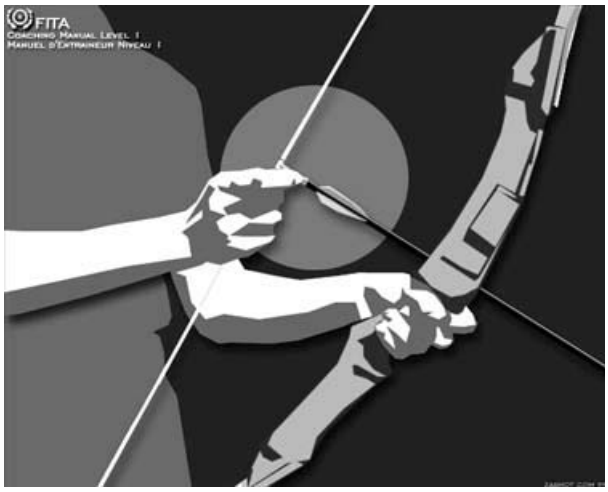
Release should only occur during the archer's visual and feeling coordination range

The release process should not disturb the quality of the vision-feeling coordination of the archer, because even during the propulsion of the arrow by the string, the shot must be orientated. Hence the archer must strive to maintain the harmony of vision and feeling. In other words: a perfect continuity of all the archer's activities (mental and physical) must be ensured during and a little after the release.

An unconscious/automated release contributes in keeping the quality of the vision-feeling coordination of the archer during the loose of the arrow.

Chapter #2

Steps of the Shooting Sequence



Arrow nocking

Any sport activity can be introduced in at least four (4) stages:

Preparation movements
Effort Production Period
Critical instant
Follow-through

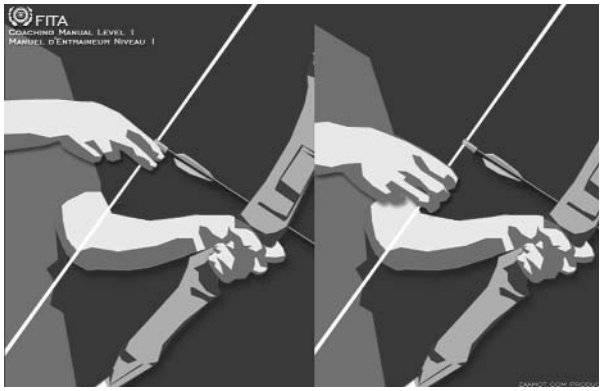
Let's apply these stages to the shooting process:

2.1. Preparation movements

Most of these are movements precede the draw. Their goals are:

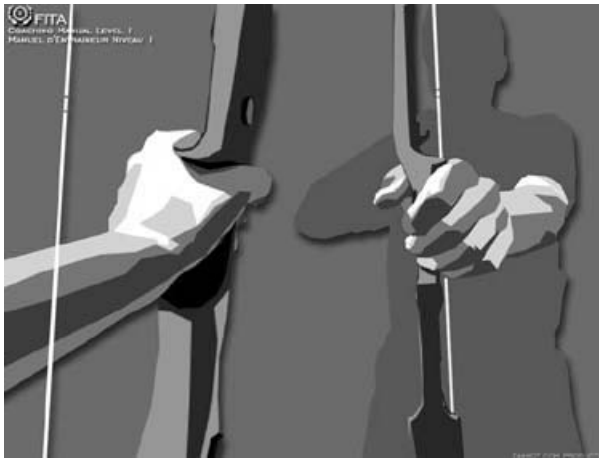
- to bring the archer in the same physical state(position), but also psychological state, before his/her main action;
- to prepare the archer for an efficient action by providing a STABLE body, STABLE contacts with the bow and an overall form, allowing for an effortless forthcoming action.

The Preparation movements include: stance, arrow nocking, string grip, bow grip, and body pre-positioning and bow raising.



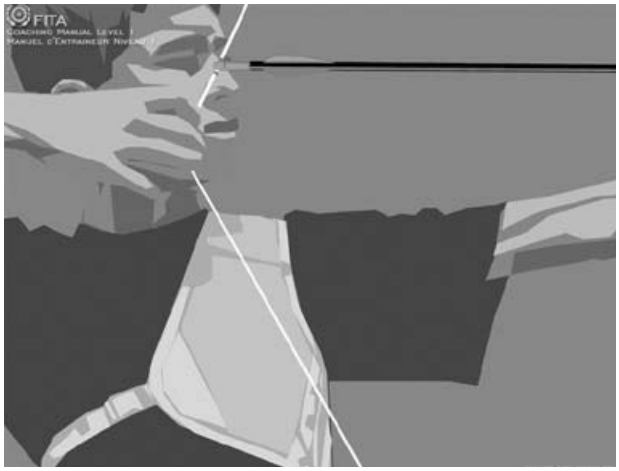
String hook.

Stance.



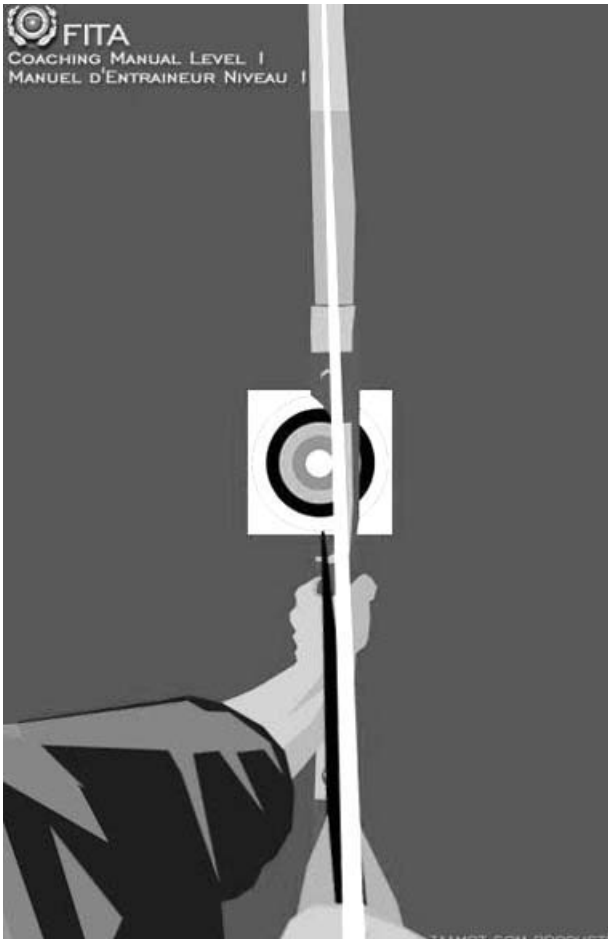
Bow grip.

Body pre-positioning.



Facial marks.

Bow raising.

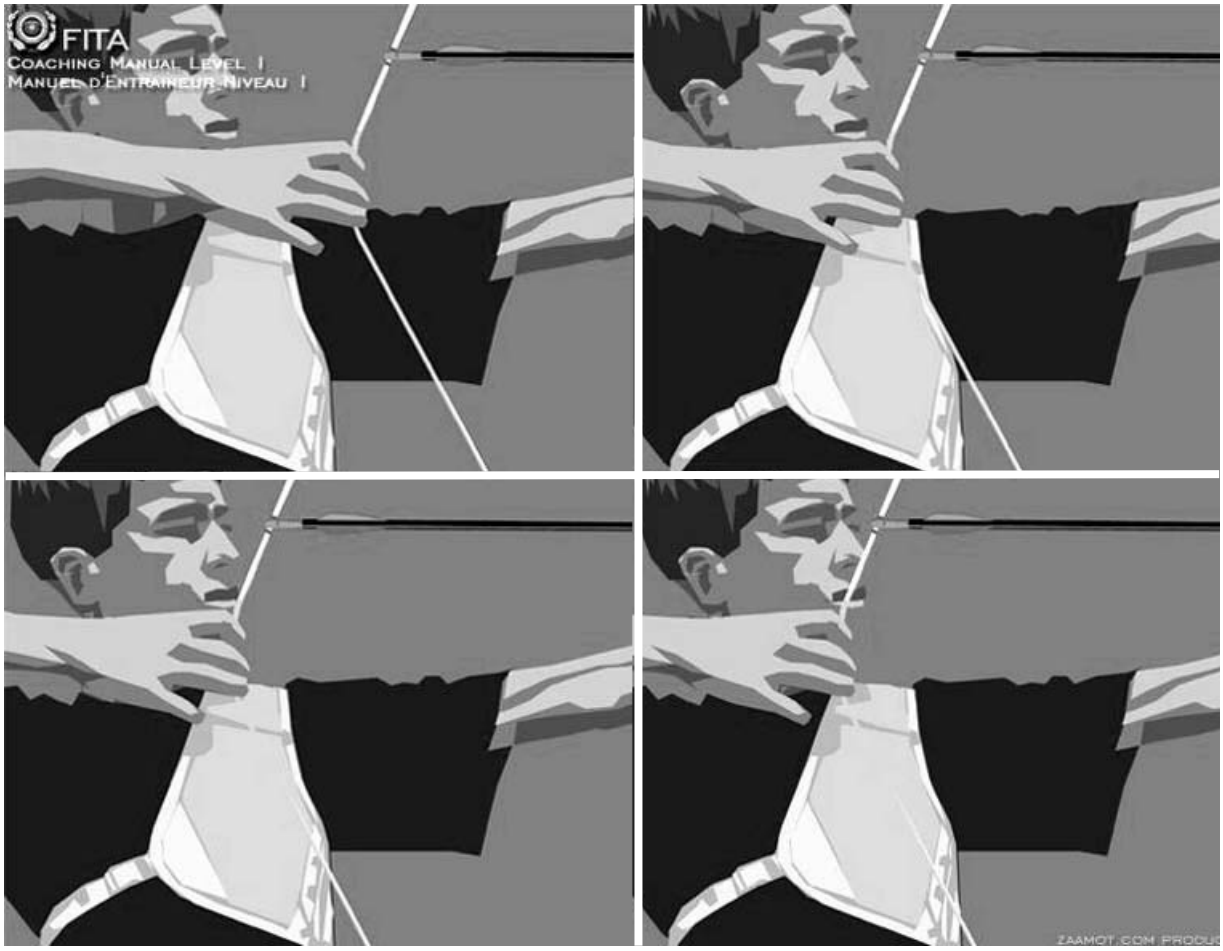


String alignment.

Some "Preparation" movements are performed during full draw, such as face/draw hand location and string alignment.

2.2. Effort production period

These are the movements involved in coming to full-draw, such as drawing, "holding" the bow open and aiming.

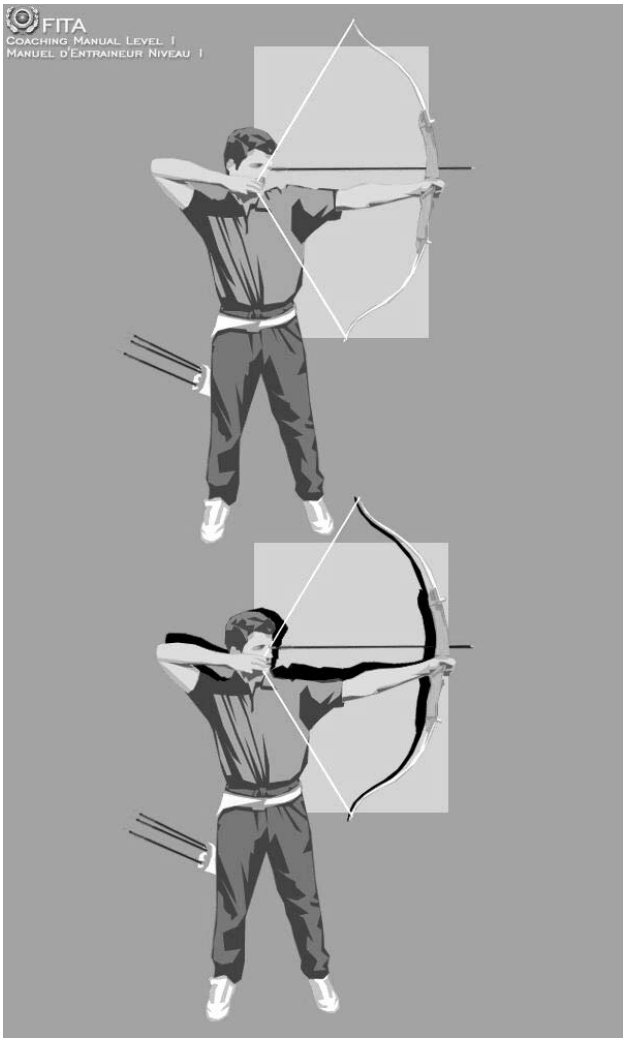


Drawing.

While at full draw, the archer strives to identify the coordination times between what he/she can see and feel. These periods of coordination are ideal for releasing. This research of coordination is the aiming task of the archer.

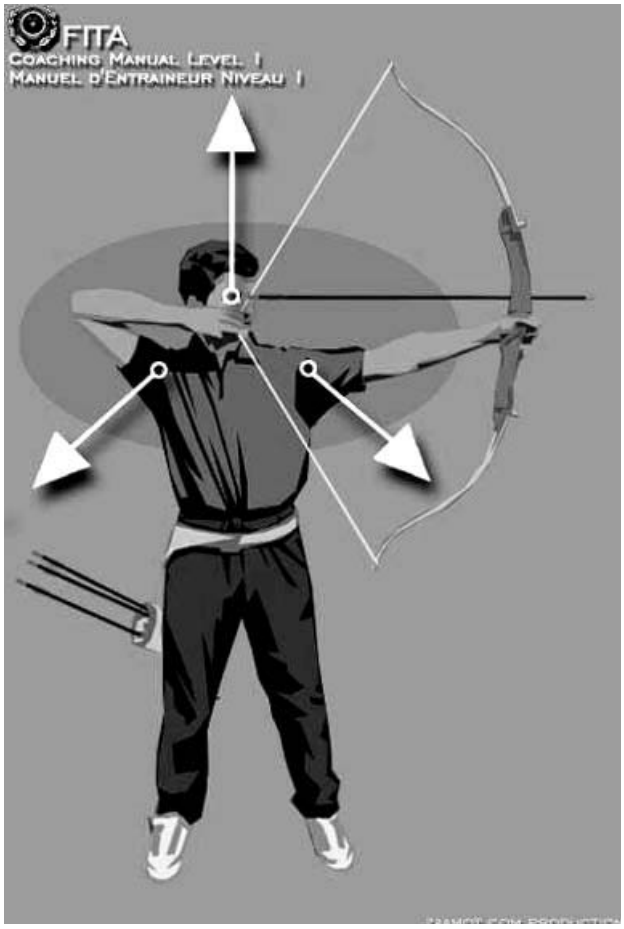
Continuous opening:

We wrote holding between brackets because the archer cannot just hold. Due to the spring effect of the bow, the archer's bow shoulder moves up and in, while his/her head moves forward and low, making the top body of the archer creeping progressively. To avoid this continuous deformation of his/her form, the archer must experiment a continuous bow opening feeling.



(Top) Collapsed top body due to the spring effect of the bow - Draw length is reduced

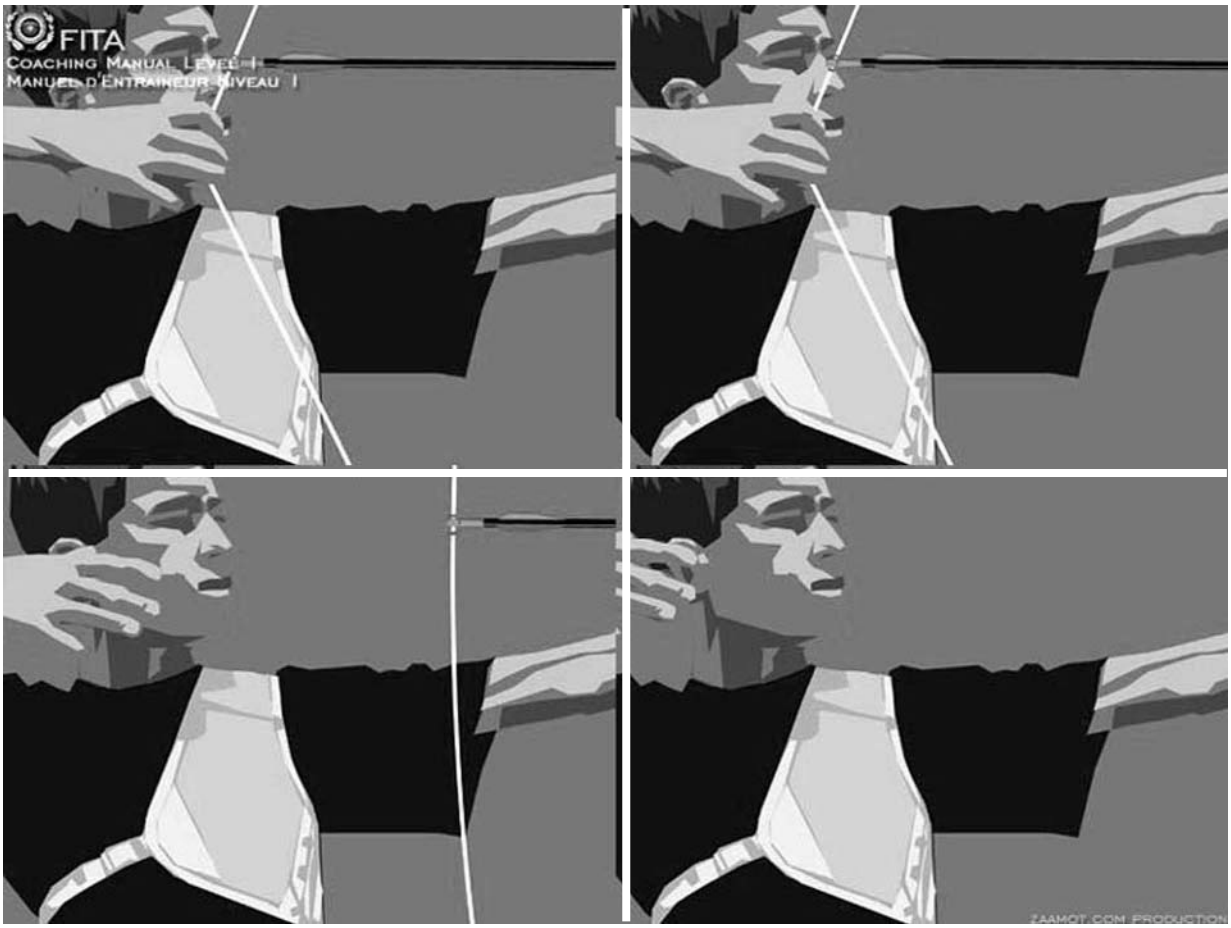
(Bottom) Expand chest - Draw length is increased



Chestexpansion while aiming.

2.3. Critical moment

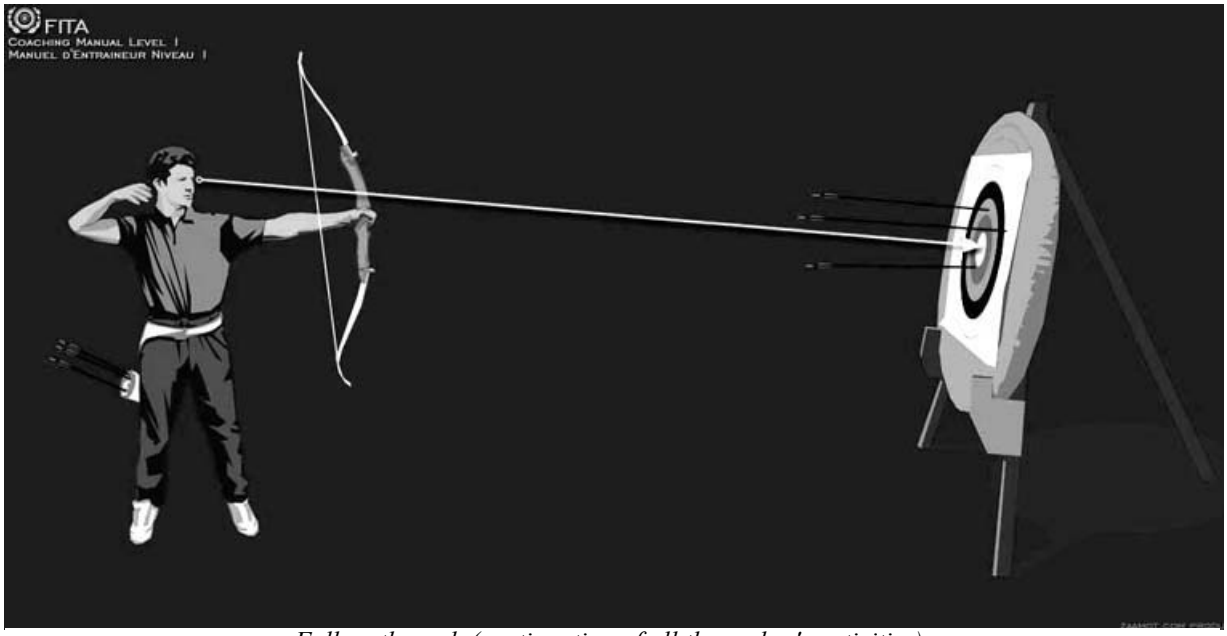
This is the release. Because the archer has identified a coordination between what he/she can feel and see, he/she frees the string whilst modifying as little as possible any other on-going activities, since his/her body acts as a "launching pad" for the arrow. The archer must be “still” except for the drawing hand, release and follow through.



Release.

2.4. Follow-through

This is the continuation of all the archer's activities provided during the effort production period; the physical ones, mental ones, visual ones, ….
Follow-through is particularly important in archery, since the shot does not end at the release. From the release, the string starts to push the arrow away; during the arrow propulsion the archers must maintain the coordination between what he/she sees and feels, hence the same activities as during the aiming period.



Follow-through (continuation of all the archer's activities).

Each of the 4 above stages includes several small actions, which once performed in the appropriate order, make up the shooting process, often called "shooting sequence". Once this process is established, the novice archer must learn to repeat it as well as he/she can; this apprenticeship is essential for accuracy. Any alteration of the process usually results in the irregular flight and impact of the arrow.

The shooting process can also been taught according to a set of basic steps, building a repetitive sequence. Below is an example of a sequence based on ten (10) steps.

- Stance (#1), arrow nocking (#2), positioning the fingers/the mechanical release on the string (#3), positioning of the bow hand (#4), raising the bow (#5), string contact on face (#6) and even if it is usually not listed as a step, the string alignment. These basic steps will be detailed in this manual under the section "Preparation Movements";

- Drawing (#7) and aiming (#8) will be detailed in this manual under the section "Effort Production Period".

- Release (#9) will be detailed in this manual under the section "Critical Moment".

- Follow-through (#10) will be detailed in this manual under this name.

Notice how the different teaching aids that are above can help perceive situations differently. Refer to "Examples of exercices" in Chapter 10 for more examples of teaching aids.

Chapter # 3

Safety

An entry level bow is also a weapon, and as such must be treated with care. Hence any club, or group with entry level archery classes, must think about safety, focussing on the following sections:

3.1. PLANNING

3.1.1. Facility

Here are some other important things you should look for in a shooting facility:

- inspect the practice and playing surfaces for safety hazards (holes, objects, etc.) before each session;
- target butts should be firmly anchored so they will not tip over;
- keep all spectators behind the shooting line. Apart from being the only safe place for spectators, this also gives a good field of view to the coach. Take a special care to young spectators;
- outdoor ranges should have a sufficient safety zone behind the targets to allow for arrows that miss the target, particularly those that are over the butt. Always shoot at a designated target. Protection behind the targets is indispensable. Three methods exist to provide such safety mechanisms:
  - A fence whose height will vary inversely with its distance from the targets. However 3.5 metres is sufficient at the initiation stage;
  - A butt following the same criteria as the fence;
  - A safety zone of at least 30 m in length at the initiation stage will suffice if the ground is grassy and sandy. If not, a line of hay bales or a wooden border at ground level serves the desired purpose.
- indoors - block all entrances at, or in front of the shooting line, take care not to obstruct emergency exits. Restrict movement of people across the shooting area;
- indoor range - wall and pillars protection is indispensable over and under the butts, to reduce the possibility of arrows bouncing back, to protect the wall from errant arrows and to preserve the arrows. The stop-arrow net is often used, to install it properly see chapter " Facilities - Equipment ". The net could not only be of service during demonstrations, but also be of use during archers practice exercises;
- bow stands eliminate the possibility of some one kicking or stepping on equipment, which could cause damage or injury.

3.1.2. Emergency action plan

Although serious injuries or accidents are rare, you must be ready to deal with them if they occur. As a first step, formal training in first aid and CPR will give you the confidence and knowledge you need to deal with emergencies effectively.

Develop an Emergency Action Plan and write it down so everyone is clear on their responsibilities. Post this important record in a visible place, and keep a copy in your First Aid Kit.

Two key individuals to carry out the plan are the "person in charge" and the "call person".

Person in charge:

The person in charge should be the one who is most qualified in first aid and emergency procedures. This individual will:

- know what emergency equipment is available at the facility;
- secure a controlled and calm environment;
- assess and tend to the injured person;
- direct others involved until medical personnel arrive.

Call person:

This individual will:

- keep a record of emergency phone numbers and know the location of telephones in the facility;
- make the telephone call for assistance;
- guide the ambulance in and out of the facility.

You should maintain a complete first-aid kit to help you deal with minor injuries when they occur;

First aid kit:
The rule of thumb for first aid for a sports injury is RICE

- R Rest
- I Ice to cool the injury site and prevent inflammation
- C Compression to restrict the blood flow to the injury site
- E Elevation to overcome the effects of gravity and prevent swelling

Thus you would require some sort of cold compress or spray, bandages, antiseptic solution and simple pain killers. A simple first aid kit might contain the following:

- Blunt ended or bandage scissors
- Safety pins in various sizes
- Bandages - crepe and tubular in various sizes (ask your chemist),
- Zinc oxide strapping for securing bandages and strapping joints
- Gauze swabs, Cotton swabs/Cotton balls, Cleansing tissues,
- Elastoplast strip dressings, Athletic tape/adhesive tape.
- Antiseptic - Betadyne
- Orthopaedic felt or foam pads (can be cut to shape) - for chaffed heels
- Instant cold packs or cold spray (ask your chemist)
- Petroleum Jelly (Vaseline)
- Paracetamol tablets/Ibuprofen tabs for anti-inflammatory and pain relief
- Eye patches
- Insect repellent
- Towel
- Latex gloves
- Plastic bags
- Change for a telephone
- First aid manual

Make sure there is always someone around who knows how to use the first aid kit. DON'T have anything in your first aid kit that the first aider does not know how to use. Remember that the first aid is exactly what it says FIRST AID - don't be afraid to seek medical advice if the injury is anything more than minor.

Make sure EVERYONE knows where you keep your first aid kit.

DON'T be tempted to pinch the contents of the first aid box for purposes other than first aid and if you use the kit make sure that what is used is replaced as soon as possible. Regularly check the items included in your kit and remember to restock them before they are used up or when they are out of date.

When using an ice pack always ensure that cold is applied indirectly to the skin if applied for prolonged periods otherwise you may cause a cold burn - crushed ice should be wrapped in a small towel or cloth.

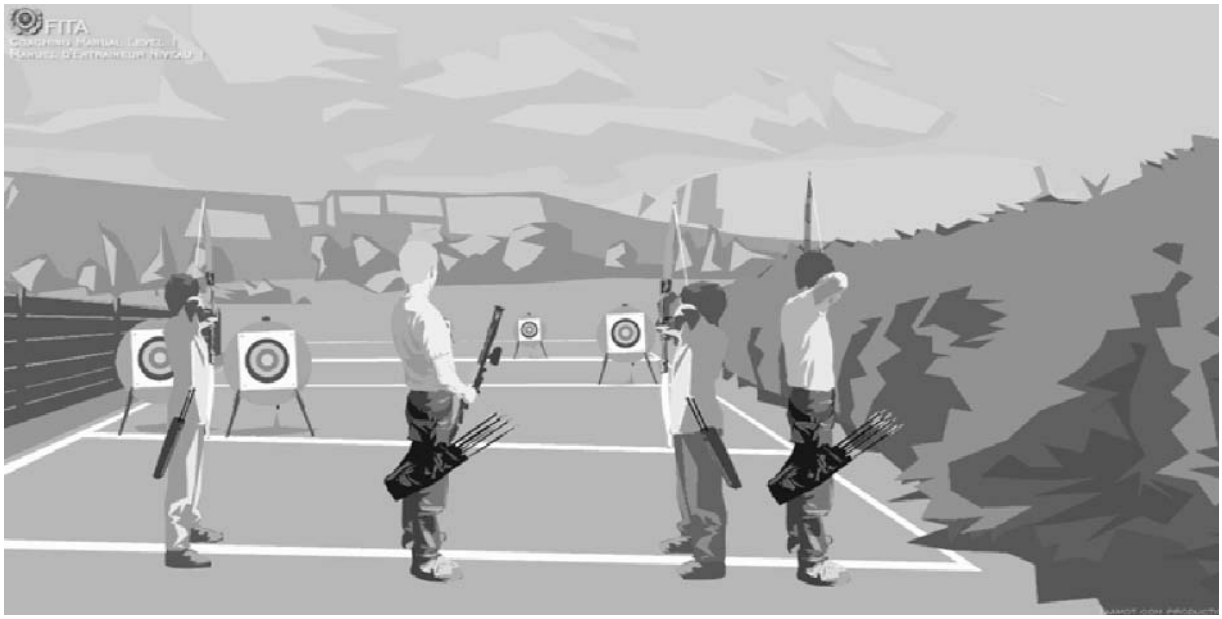
Archery site:
Draw a detailed plan of the site where the archery classes will be held. Indicate the locations of the telephones, the first aid room and the itinerary that the medical staff should follow in case of urgency, and all other details that you will consider useful

3.2. GROUP SAFETY

All shooting should be under the direct supervision of one coach, or designate person, whose duty is to control the shooting of the group. He/she signals the start of shooting. He/she also signals the end of shooting, when archers are allowed to go to the target to retrieve their arrows. Three or more blasts on a whistle (for instance) means cease shooting immediately and is used for an unexpected situation. Make sure you have adequate supervision. Strive for a 1:6, coach to archer, ratio (maximum 1:12).

Under no circumstances should anyone shoot if someone is on the field near the targets. Arrows may glance off the targets, or, depart from their intended path. The shooting line should be straight, not staggered. When in a group where archers do not shoot from the same distance, the safest method is having the targets at different distances and all the archers on the same shooting line.

- All archers must straddle the line, or have both feet on the line, during shooting, and step back five meters when they have finished.
- The arrow should be placed on the string only after the archers are standing on the shooting line and the all clear signal has been given.
- Archers can only draw their bow back on the shooting line. They should not draw the bow



A singleshooting line makes the shooting range safe

having the bow hand higher than the drawing hand, and they should not draw diagonally (toward a target that is not straight ahead).

- Bows and arrows must be handled with care when on the shooting line, to avoid hitting/injuring other archers. Any unexpected contact with an archer who is at full draw may induce them to produce a poor shot, which could result in an accident
- Archers should not draw in any way that interferes with archers shooting either side of them. It is advisable to keep the bow vertical, any canting of the bow whether it is left or right may impede other archers.
- By having a quiver, the archer will not have to carry the arrows in their hands, contributing to a safer environment. You have probably noticed the boundless imagination of certain beginners: "sword" duels, arrow throws. This may be funny, but during these playful times safety is often jeopardised! Hence don't incite such actions, and provide a quiver.

Some other important things to ensure the group safety:

- if your voice is not loud enough, start using a whistle from the first lesson, it is safest and instils the proper discipline;
- plan and organise practices with safety in mind. Be sure to space archers far enough apart;
- check your archers' equipment regularly for proper and appropriate fit, protective ability, and condition. Repair or replace damaged equipment immediately;
- ensure archers are not annoyed or abruptly touched by others;
- if a bow or an arrow falls in front of the shooting line, the archer waits until the archers on either side have finished shooting before retrieving the equipment. Any arrow which cannot be retrieved without moving feet on the shooting line should be retrieved after shooting has stopped;
- care must be used when drawing arrows out off the target, to see that no one is directly behind the person pulling the arrows. Arrows can come out of a target suddenly, and the nock may hurt anyone who is too close. Bending over in front of the target is dangerous; archers should wait beside the target to collect arrows;
- be sure that one member of the group should always stand in front of the target while the others are looking for lost arrows. If there are not enough persons in the group, a bow should

be placed across the target face, to indicate to the others that this target is not available.

- the session, ensure your archers have safe transportation home.

3.3. INDIVIDUAL SAFETY

Many archers do not concern themselves enough with their own safety while handling archery equipment. Let's look at some things that could cause injury:

- stringing a bow, if incorrectly done, can cause serious injury. Bows should strung before or immediately the first session begins;
- releasing the bow without an arrow on the string;
- damaged equipment such as twisted limbs, cracked bows or arrows, loose nock or point, cracked nock, …You must replace inappropriate and damaged strings. Armguards and tabs must fit the user and should not be torn off;
- short arrows are deadly. If overdrawn just before release, they can hit the bow and break, or go through the archer's hand;
- lack of warm-up. Conduct a proper warm-up at the beginning of each session.
- archers must not run while holding arrows. If they have no belt-quivers they should always hold or carry arrows with the points down. A belt quiver will reduce the damages if the archer falls down;
- Facial marks and head position must be such that the string offers a good clearance upon release, at the level of the nose and glasses, as well at the chest level of a female archer;
- when approaching the targets, care must be taken not to walk into arrows sticking into the ground or target. Nocks are very sharp, pick up all arrows that have fallen short of the target, whoever is their owner;
- take special care with athletes recovering from disease or injury problems, be aware of the athlete's capabilities;
- recuperate all the lost arrows to avoid injury of subsequent users of the field;

Clothing

Be certain to check for the following hazards in relation to string clearance, especially the shooting attire:

- Bulky, unbuttoned or loose clothing that could catch the string at the shoulder, chest, or arm areas;
- Clothing should fit snugly. If the archer has loose clothing it should be fastened down. If the string hits clothing when released, it can cause a bruised arm and deflect the flight of the arrow;
- Wear adequate clothing to ensure warmth;
- Check that no one is wearing anything (jewellery, watches, bracelets, necklaces, etc.) that may prove dangerous to themselves or to other archers;
- Hide drawstrings. Tie-up long hair. Turn around caps. Hide collar points. Protect chest pockets. Empty chest pockets. Remove crest, badges and pins. Tie-up short sleeves, especially if they have a trim;
- Stable footwear - sport shoes preferably - should always be worn on the range. Flat soles are mandatory for shooting.

3.4. PREVENT EQUIPMENT FAILURES.

In addition, be aware of arrows that do not stick into the target properly, and hang across the target. They should be removed as soon as it is noticed. Archers on that target should stop shooting as another arrow hitting:

- the hanging arrow will damage it, and may ricochet off the hanging arrow;
- the target might cause the hanging arrow to fall out of the target, which then not score for the game or round in progress.

You should be immediately notified of such an issue, stop shooting, go to the target, score the arrow (if appropriate), retrieve the arrow, then resume shooting.

3.5. RANGE ETIQUETTE.

While any shooting is in progress, the archer should always be aware of the rights and feelings of the rest of the group. Archers come in all types, and while some like to act up on the line, others take their shooting very seriously. Consideration should be given to those who might be upset by off-hand behaviour. Here are some expected attitudes from the archers:

- Don't talk on the line or distract other archers during the shooting of the end;

- only the coach can make comment about an archer who is shooting;
- have an encouraging remark to pass, rather than a sarcastic one;
- do not make unkind or disparaging remarks about your own shooting as this may upset or distract someone;
- if you have problems, step back and signal the coach; don't bother your fellow archers;
- when you have finished shooting, step back from the shooting line to give the other archers a chance to complete their end;
- never touch equipment belonging to someone else without their prior consent;
- leave the other archers' arrows in the target unless asked to remove them;
- respect the other arrows in the target while you are drawing your own;
- be sincere when taking the score; always be fair;
- above all, be a good sport;
- pay attention and collaborate with club officials carrying out their duties;
- make yourself available for some duties, such as taking in targets, collecting score sheets, etc.;
- archers who have an opinion that does not coincide with the coach's one or with some club operations, or club regulations. or … should attend the next appropriate meeting and express their views. They should not bother the other archery class or club members during practice with their concern;
- if asked for advice, don't take it upon yourself to do the job of an official who is qualified to do this work,
- absolutely no alcohol should be consumed on the range. Anyone under the influence of alcohol should be refused permission to shoot;
- smoking is not allowed in the athletes area. Smokers should respect the smoking area of the club / facilities.

Emergency Information Notice.

Type of archery class: _____

Location: _____

Contact's phone number:

Emergency #: _____ Ambulance: _____

Person in charge: _____ Police: _____

Call person: _____ Firemen: _____

Facility: _____ Hospital: _____

Details on site location (information to be provided by phone to emergency services)

_____

_____

_____

_____

_____

_____

INFORMATION - INFORMATION - INFORMATION - INFORMATION

Olympic Solidarity

Olympic Solidarity is the body responsible for managing and administering the share of the television rights of the Olympic Games that is allocated to the National Olympic Committees.

"The aim of Olympic Solidarity is to organize aid to the National Olympic Committees recognized by the International Olympic Committee, in particular those which have the greatest Need of it. This aid takes the form of programmes elaborated jointly by the IOC and the NOC's, with the technical assistance of the International Sport Federations, if necessary."

Rule 8 of the Olympic Charter.

Among the objectives of the programmes adopted by Olympic Solidarity, some fit your needs as a coach and the need of your athletes, such as:

- *Developing the technical sports knowledge of athletes and coaches;*
- *Improving, though scholarships, the technical level of athletes and coaches.*

FITA has posted the current Olympic Solidarity programs on its website at:

http://www.archery.org/fita_committees/develop/develop.html

For application to any Olympic Solidarity program, please contact your National Olympic Committee. You can find the address of your National Olympic Committee at:

http://www.olympic.org/uk/organisation/noc/index_uk.asp

Chapter # 4

Archery Classes and Entry Level Program

A beginner archery program:
Consists of a series of practice sessions, at least one session per week for 10 weeks.

A beginner archery session:
Is a 45-minute to two hours gathering of archers conducted by a coach with the following objectives:

- to discover archery;
- to get the basis of this sport;
- to have a good time with a bow and arrows.

Participants:
Ideally, there is a 1/6 coach/archers ratio

Exercises:
Within a practice session there are a series of exercises to perform. The exercises performed depend on the skill(s) taught in the practice session. The initial exercises in the session are conducted as a group, and the last exercises are individual or pair oriented.

A Standard Teaching Process:
The selected exercises for teaching a skill are performed according to a logical learning process. Often the coach starts with an easy situation to progress toward more challenging ones; for instance:

a) simulations,
b) shots without a target face,
c) shots at a target face,
d) a match, a scoring round or a game.

When this process is often used it is entitled a "Standard Teaching Process." We invite the coaches to develop their own STP.

4.1. Pre-program checklist

Before the first session, collect the following information, it would be helpful later:

- The age range of the archers;
- The length of the program;
- The number of practice sessions scheduled;
- Location(s), dates, and length of the practice sessions;
- Dates and locations of local competitions;
- Equipment required by the archers;
- Equipment needed as the coach;
- Insurance/liability considerations;

4.1.1. Class size

The size of the class is in direct proportion to the ability and number of coaches. One coach can handle up to 10 archers, depending on the stage they are at in the instructional program. Ideally, there is a 1/6 coach/archers ratio.

4.1.2. Knowing the archers

Maintaining simple folders like an Archer Directory is useful for administration. Ask the archers and parents to provide the necessary information. Get postal codes too, so it's easy to mail birthday or holidays cards! When the directory is complete, make photocopies and give one to each family of the archer. Parents appreciate having a copy.

(See the chart "Archery Directory" in next page)

4.1.3. Equipment assignment chart

An Equipment Assignment Chart is recommended, it will include:

- arrow length and size;
- shooting side;
- current developments and problems under work;
- specifications of the used equipment . Show the number of the club equipment.

If an archer moves he/she can take this form with him/her and the new coach will know at what point to continue teaching.

NOTE: (See the chart "Equipment Assignment Chart" in next pages)

4.1.4. Medical information card

Having an Archer Medical Information Card on file for each archer is important for safety. A blank Archer Medical Information Card is provided in the next pages. Photocopy the required number, then ask parents to complete one for their child at the beginning of the program. Review all the cards when parents return them, and ask for any additional information if needed. Knowing these details helps prevent problems and therefore deal with injuries or accidents more effectively if they occur. Assure parents the information will be kept confidential.

Archer Directory

Year: …….....

Name of Archer: (and parents)	Phone Number	Age	Cat.	Style	Address	Notes:
( )						
( )						
( )						
( )						
( )						
( )						
( )						
( )						
( )						
( )						
( )						
( )						
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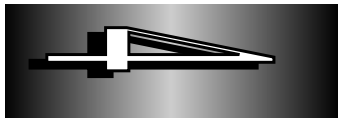
Equipment Assignment Chart

Designation of the class: updated on: _____

Student's name	LH or RH	Draw Length	Arrow Length	Bow Length	Bow Weigth	Assig. Bow #	Draw Weight	Arrow Size	Assig. Arrows	Assig. Tab	Assig. Armguard	Notes



Archer Medical Information

Year: . . . . . .

Last Name:_____ First Name: _____ Date of birth: D____ M _____ Y _____

Age category: _____ Equipment Division: _____

Person to be contacted in case of emergency: Last Name: _____ First Name: _____

Phone day: _____ Evening: _____

Alternative contact: Last Name: _____ First Name: _____

Phone day: _____ Evening: _____

Family Doctor: Last Name: _____ First Name: _____

Phone day: _____ Evening: _____

Health Insurance Number: _____ Contact lenses: _____Y _____N

Relevant Medical History

Medications: _____

Allergies: _____

Previous Injuries: _____

Does the archer carry and know how to administer his or her own medications? ___Y ___N

Other conditions:

**Medical information is confidential. Only authorised individuals should have access to this card.*

4.2. Pre-practice tasks list

There are several things to do before each practice session. The following is a suggested list of things to do:

- secure the shooting range by posting signs, locking doors and inspecting permanent signs as necessary;
- prepare target faces;
- have any scorecards necessary ready with clipboards and pencils;
- have ready special equipment needed for the session, such as elastic bands, video cameras, etc …;
- open the equipment cabinet or storage area;
- have the tackle box and first aid kit ready.

4.2.1. Shooting side choice.

Before giving out equipment, decide whether the archer is right or left-handed. There are two possible criteria to consider when choosing the shooting side, and there has been a long-standing controversy as to which criterion is more pertinent: the hand or the eye? To date, good results have been achieved using either criterion.

Studies conducted in France by the "Institut National du Sport et de l'Éducation Physique" have revealed a difference between high-performance archers and less skilled archers: the high-performance archers have faster hand reaction at a simple visual signal.

Based on this information, the shooting side could be chosen with the most agile and rapid hand. Since this hand is generally the strongest, the archer would be able to control the bow weight better, facilitating the learning of the shooting process. Manual ease is another reason for choosing the shooting side: you probably remember how awkward you felt the first time you handled a bow! This awkwardness increases when a right-hander is asked to shoot left-handed, and reciprocally. Consequently, some archers slow down the entire group, giving them an uncomfortable psychological feeling of being guilty.

- If you chose the hand side for determining the archer's shooting side, be sure the archer uses the proper eye Right eye for those drawing the string with the right hand, and reciprocally. By using the "straight line" aiming method (see Chapter 7) this control is easy to ensure. Use an eye patch if the archer cannot use the proper eye.
- If you choose the shooting side pending the dominant eye, below are three (3) methods for identifying the aiming eye:

4.2.1.1. Method #1:

Extend both arms in front, with the hands turned up and the palms away. Cross both hands so the V between the thumbs and forefingers form a small opening. With both eyes open, align this opening with some object in front. Keeping hands steady, close the left eye. If the object is still visible through the hole, then the right eye is the dominant eye.

To confirm this, the archer slowly brings hands back towards the face, the hole is in front of the dominant eye.

Aiming eye selection through a hole made with hands.

Sometimes this first method does not work because the archer cannot close one eye. The following might be more effective. Provide a piece of cardboard, approximately 15-cm sq., with a small hole in the centre, 1.5 to 2 cm in diameter. Hold this at arm's length and with both eyes open, align the

Aiming eye identification with a pierced plate

opening with an object in front. Slowly draw the cardboard back to the face until it touches the nose. The opening is in front of the dominant eye (see the left illustration).

4.2.1.2. Method #2:

Stand about 10 m from the archer, have him/her form an opening in the crossed hands, like in method #1. Have the archer look at you through the hole. The eye you can see through that hole is the dominant eye.

4.2.1.3. Method #3:

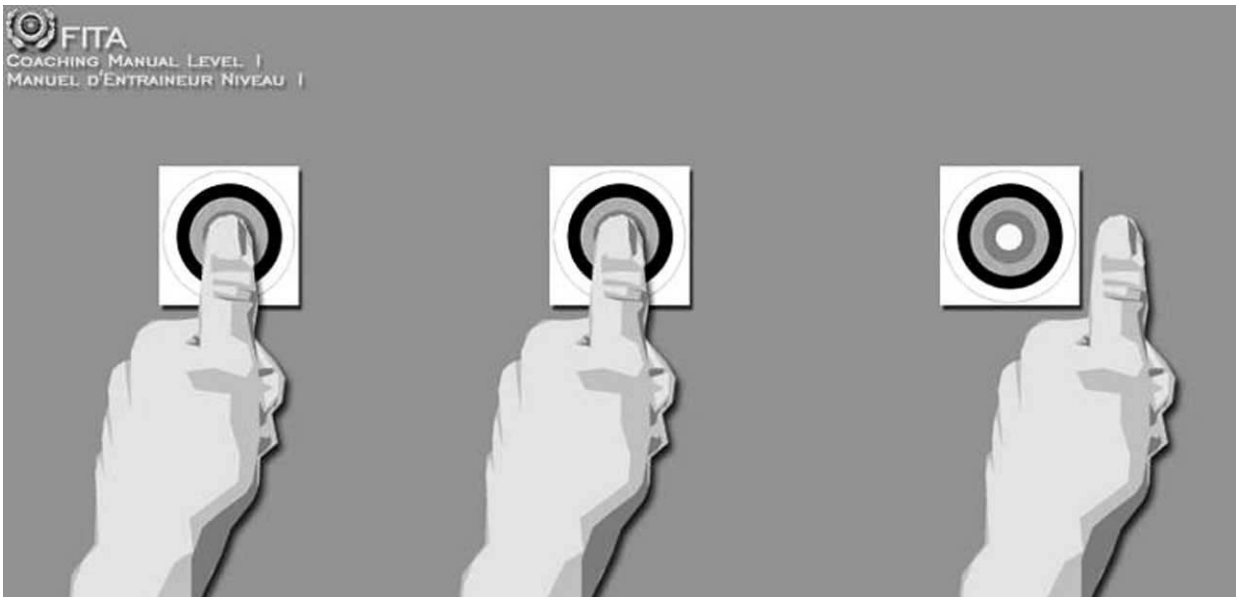
Extend one arm and with both eyes open, point a finger at an object (left illustration). Close the left eye. If your finger stays in line with the object, the right eye is dominant (Central illustration). Reverse procedure and close right eye to prove the left eye is not dominant (right illustration).

In summary, when the right eye is used for aiming, the string is drawn with the right hand, the bow held in the left hand. The reverse is true when the left eye is used for aiming.

Some archers cannot close the "non-dominant" eye, but though it is open during shooting, aiming can be done in the correct manner because of the extra strength and visual control the master eye has over the other eye. Those who do not have a "dominant" eye for shooting may close one eye while aiming. If the archer cannot close an eye an eye patch may be used. If an archer has a very weak eye, the shooting side can be the side of the more able eye. If the archer is physically weak on one side, especially in the arm or shoulder, give priority to the side with greater dexterity, because performing some actions, such as nocking the arrow, are easier and generally the balance will be more solid.

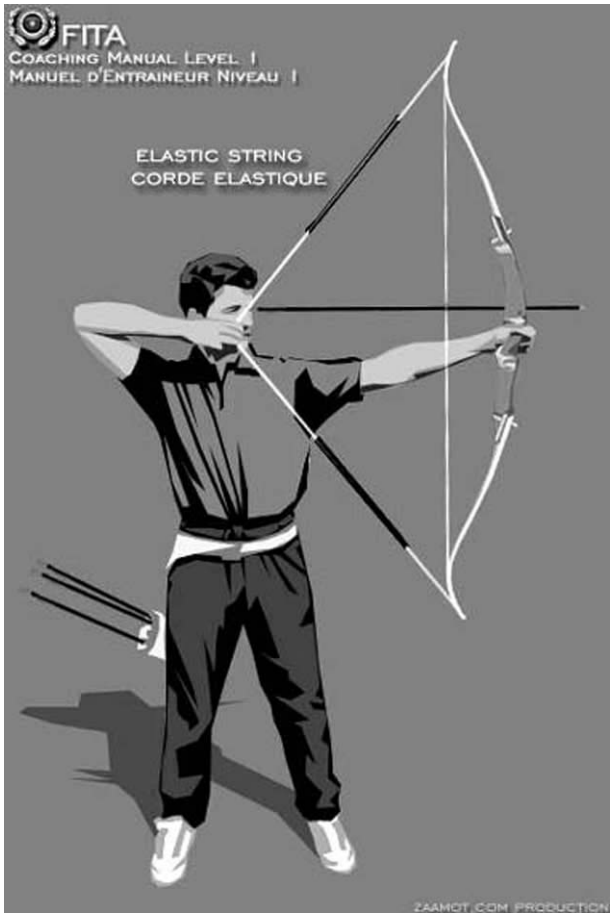
4.2.2. Determining draw length

Use an elastic string over the string bracing the bow, and a very long arrow that can be graduated. The archer pulls the elastic string to full draw, in front of a bare butt, keeping the bow shoulder down and the head straight.



From left to right :Two eyes open
Left eye closed (shown by a right-hand person) Right eye closed (shown by a right-hand person)

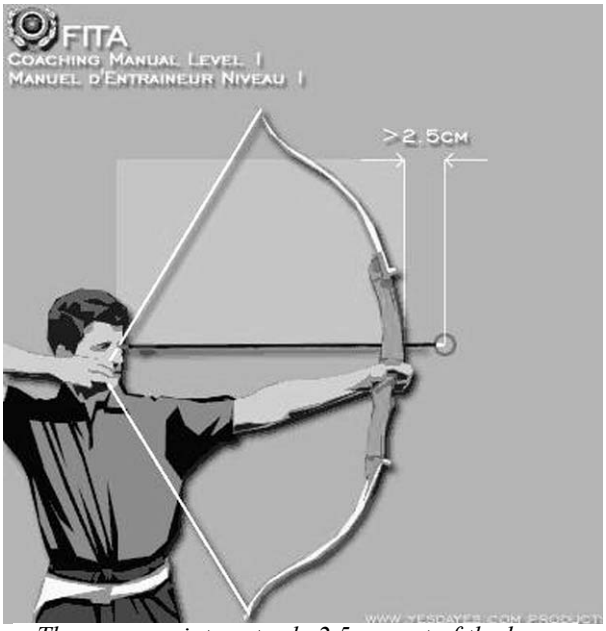
While the archer holds the draw, the coach or an assistant marks the arrow shaft at the back of the bow handle.
The archer's draw length is the distance from the mark put on the arrow shaft to the bottom of the nock groove.



An elastic string is helpful to determine draw length

4.2.3. Determining arrow length

To determine the arrow length for a novice archer, simply add at least 2.5 cm (1") to the draw length (illustration below). Bow length and weight can then be selected



The arrow point protrude 2.5 cm out of the bow.

4.2.4. Choice of equipment.

Please refer to chapter #8 "Facilities - Equipment" for the choice of equipment: Bow length, bow weight and arrow size.

4.3. Structure of a typical session

The parts of a typical archery practice session are:

- set-up;
- greeting;
- warm-up;
- review of previous session;
- skill teaching. This part will be detailed in chapter #7 "Teaching advises to the coach". Teaching includes:
  - technical teaching, e.g.: either skill discovery, or skill revision;
  - skill assimilation. At this step, the coach often uses a set of situations with increasing difficulties;
  - endurance development / evaluation. A game is often introduced to this step.
- back to a more "regular" and controlled shooting situation;
- session evaluation / equipment storage.

4.3.1. Set-up

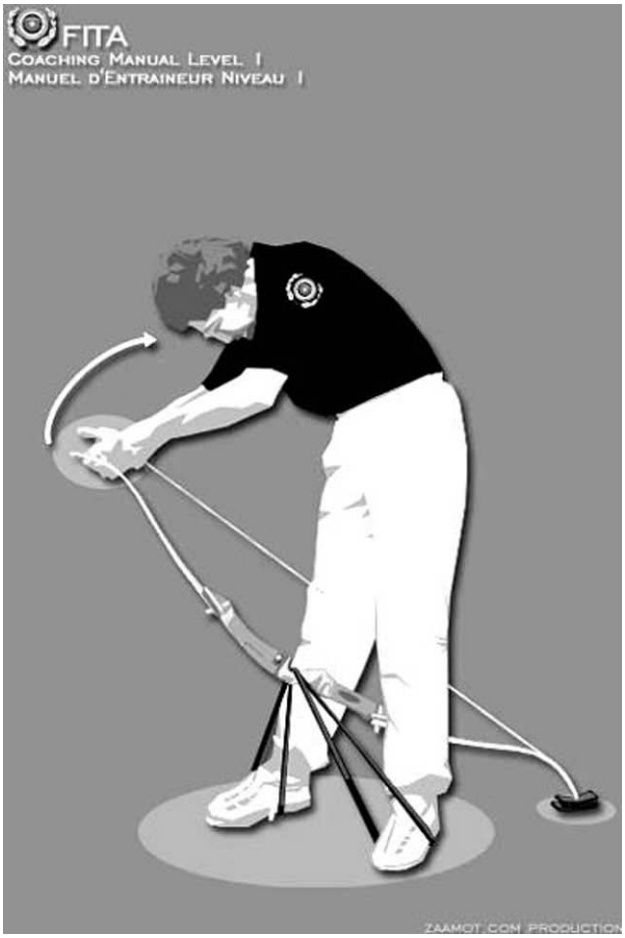
Facility set-up can be done with the help of archers. This gives them the responsibility and the opportu-

nity to become familiar with the club set-up, and a sense of sharing in the preparation of the session. This is an ideal time to develop a sense of belonging and a way to spend time while waiting for latecomers. Archers can prepare the targets, the protection devices (nets), the shooting line, and the waiting zone behind the shooting line. Let the archers set-up the archery equipment because there will be a time when they will have to manage their own equipment. Give them this responsibility starting with the third practice session.

4.3.1.1. Stringing the bow

All the bows are strung before the start of the first two or three practice sessions. Stringing and unstringing of the bow is taught at the third or fourth session when the archers are more familiar with the equipment. Coach candidates should already know how to string a bow. Below we recommend some of the safest methods for the bow and the archer.

A loop stringer is inexpensive and easy to use. It makes the task of stringing the bow almost effortless. Like any other stringing methods, it is necessary to check the exact string positioning before taking the bow stringer pressure off the upper limb tip. Place a small piece of carpet or rubber on hard and rough ground to prevent damage to the lower limb tip. A tip protector on the lower limb would serve this function and even help secure the string.



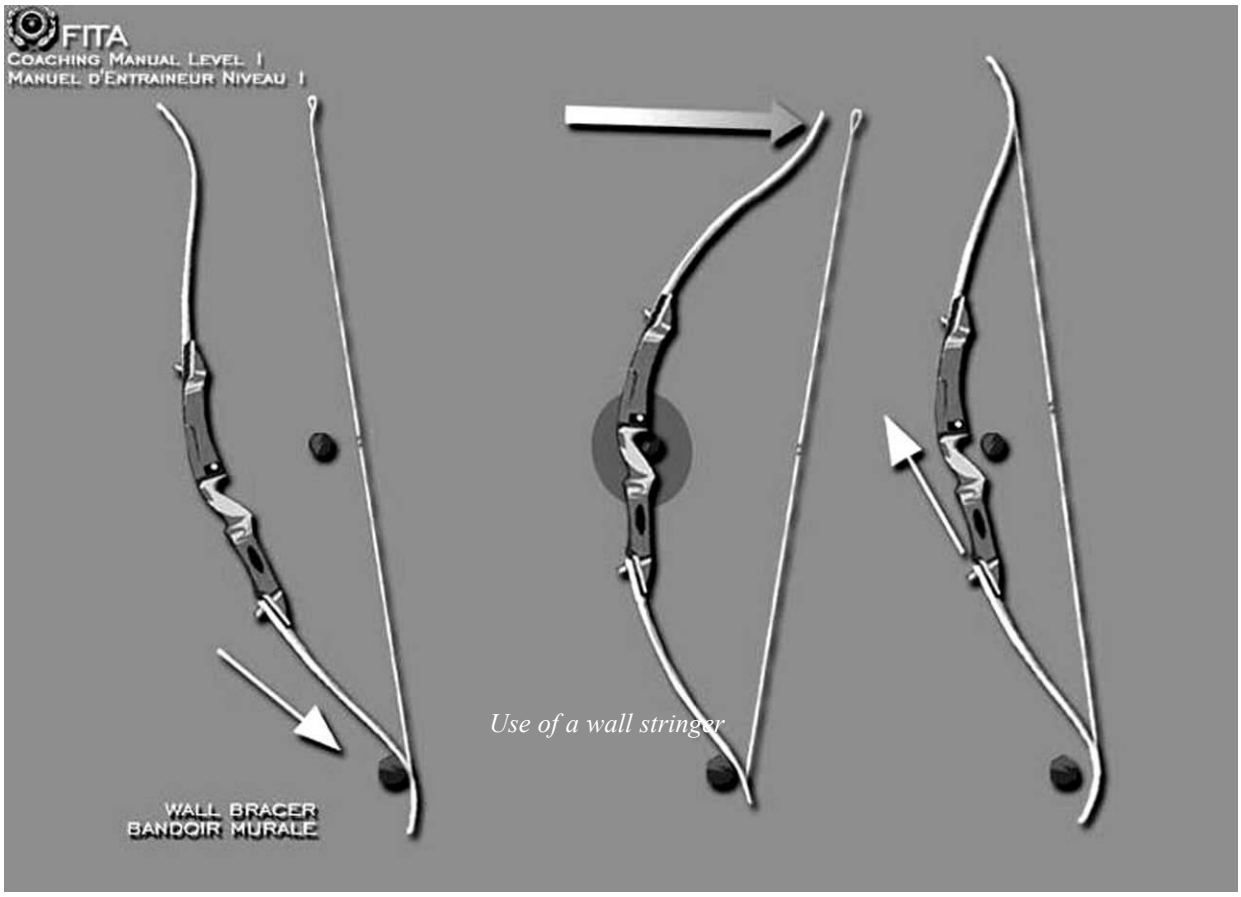
Use of a string loop with 2 feet.

Use of a string loop with 1 foot.

Such a commercial stringer is difficult to be used by novices. It will come friendly with experience.

You also can buy the following stringer from any archery shop, but beginners have a tough time to use it properly. Nevertheless after a while it is a decent tool.

- through motions;
- through stretching;
- with an elastic resistance;
- through shooting.



Use of a wall stringer

4.3.2. Greeting.

Greetings are expressed while archers are arriving, during set-up and just prior to the warm-up. It is a good idea to share a few key introductory words to signal the official start of the session.

4.3.3. Warm-up.

Given the lightweight bows used at the entry level, the warm-up is not yet an important part of the practice session. The warm-up, however, grows in importance when heavier bows are used and performance is searched. Therefore, it is wise to immediately introduce a warm up; we want to create a good habit.

Archers do not put on any part of their equipment, especially their quiver and chest guard (if any), while preparing for warm-up.

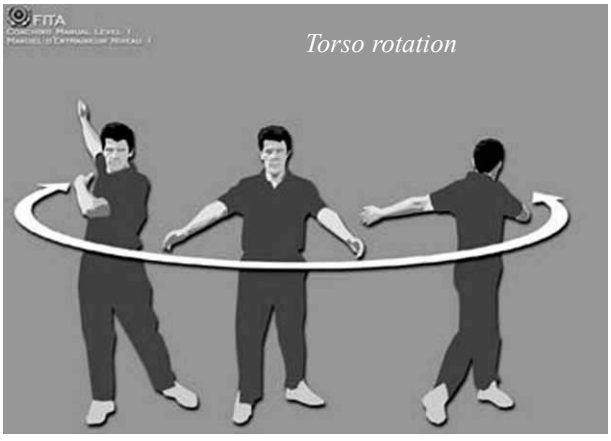
The following is a typical warm-up, one of many that could be presented. This particular example involves four common warm-up components:

4.3.3.1. Movement warm-up

Torso warm up

- First step:

The torso, pelvis and legs do not move. The extended arms are balanced from left to right in the horizontal plane at different heights. Hands are kept relaxed and heavy.



Torso rotation

● Second step:

Maintain the balance at different heights of the arms, but while pivoting the torso and hips in a turning movement. Hands and arms are kept relaxed and heavy, they merely follow along.

● Third step:

Keep the torso rotated for several seconds on one side, then the head turns in the opposite direction three times. The head must be in an up-right position. Repeat on the other side.

Twisted spine

These three steps follow one right after the other, without any pause.

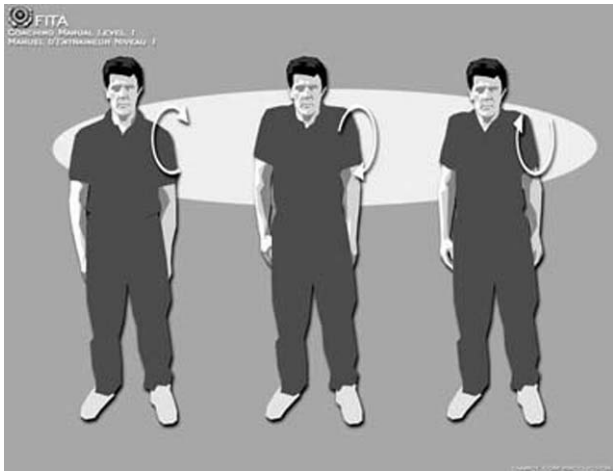
Shoulders warm up

● Circles with shoulders.

Arms along the body, while shoulders describe the biggest circles as possible, in one direction first (clockwise), then the other one (counter clockwise). From now on, it is recommended to associated breathing:

- inhale while rotating the shoulders up;
- exhale on the rotation down.

No need to go fast, just strive to implement the biggest circles as possible.



Shoulders rotation

● Arms pivoting.

The two arms are horizontal at shoulder level with the forearms square to arms: one up, the other one down. Turn the forearms up and down, as shown on illustration below.

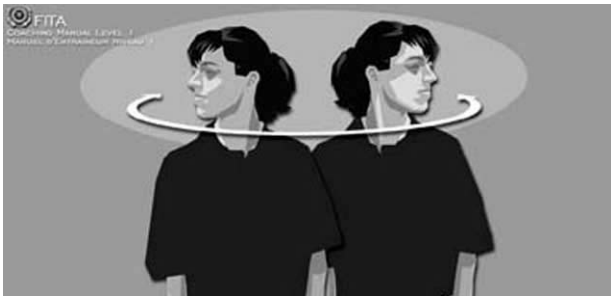
Pivoting arms

Neck warm up

● Turn the head right and left alternatively

Breathe in while turning your head on one side as far as you can.

Breathe out while turning your head on the other side as far as you can.



Turning head

- Roll head:

  a) cant the head on one shoulder,
  b) roll the head down onto the thorax - exhale,
  c) roll the head up onto the other shoulder - inhale,
  d) head goes from one shoulder to the other one. Don't roll your head far backwards, it should pass almost vertically. Inhale until the vertical and start to exhale after,
  e) roll again the head down onto the thorax, upon an exhale, ...and so on…
  Don't go fast, have good feelings of the weight of your head. Change the rotation side after 6 rotations.

Elbow and wrist warm up

- Forearm circles around the elbows

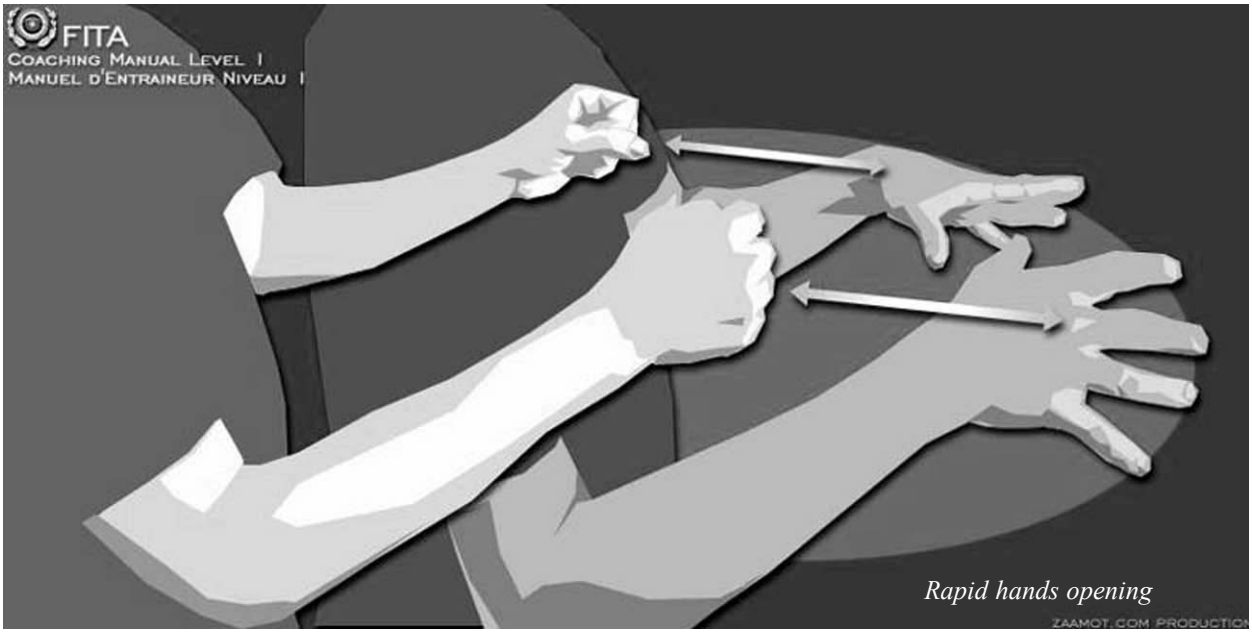
To save time you can simultaneously rotate the wrists.

- Wrists rotations, with hands clasped.

Wrist rotations.

Fingers warm up

"Piano playing", rapid opening/closing of the fingers.



Rapid hands opening

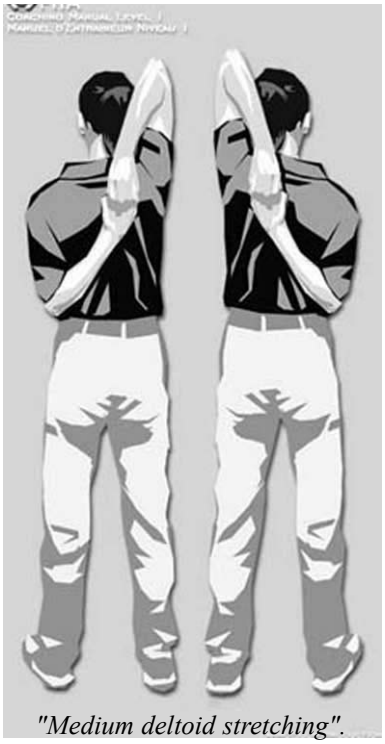
4.3.3.2. Stretching warm up

Stretch only when well warmed-up, because it is safer to stretch warm muscles than cold muscles. Do not force the stretches more than 70 - 80% of what you can do. Stretch during a breath-out and keep relaxed. Hold the stretch during 15 to 30 seconds pending the size of the muscles, without any jerk. We recommend implementing an isometric effort (muscular contraction without any movement) before stretching as per illustration.

Shoulders

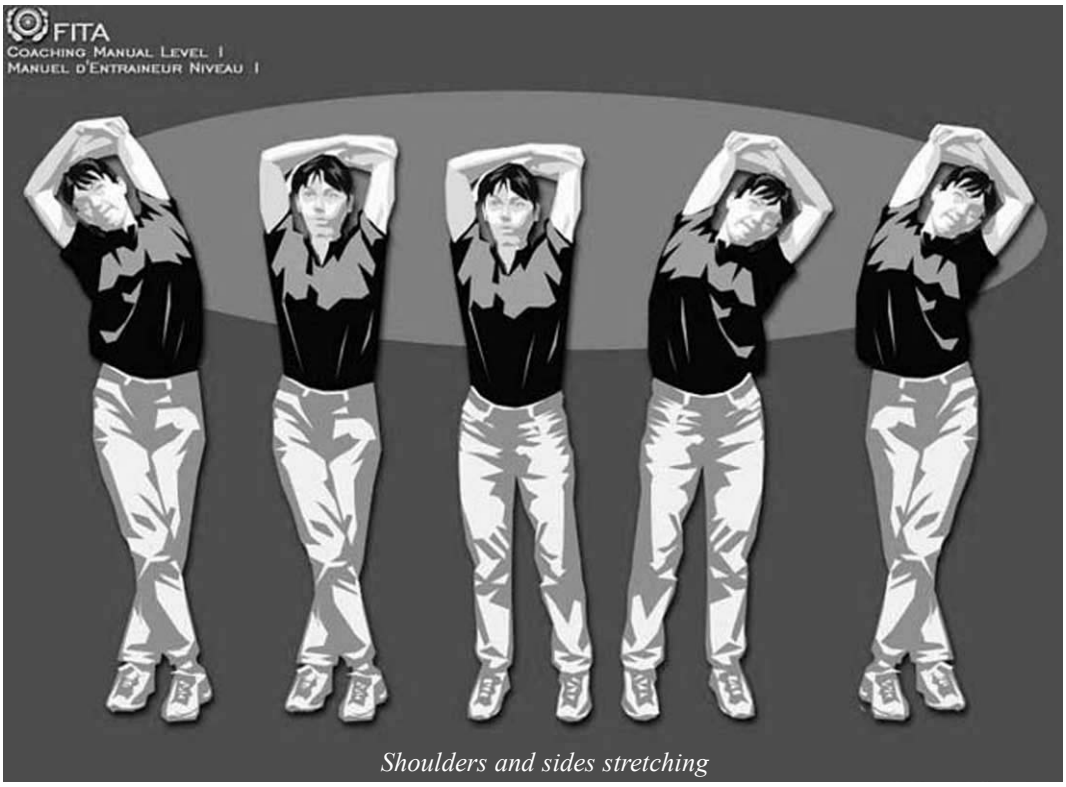
- "Medium Deltoid stretching"

The Yoga name of this posture is "Cow Head.


"Medium deltoid stretching".

- Hands clasped behind back, finger tips toward the neck.

Hands clasped behind the back.



Shoulders and sides stretching

● Shoulders and sides stretching

Push an elbow against the opposite hand for +/- 15 seconds..
Stop the push and cross your legs

Pull the same elbow for +/- 15 seconds.
For a better stretch, push your hips toward the stretched side.

● Back shoulders and back

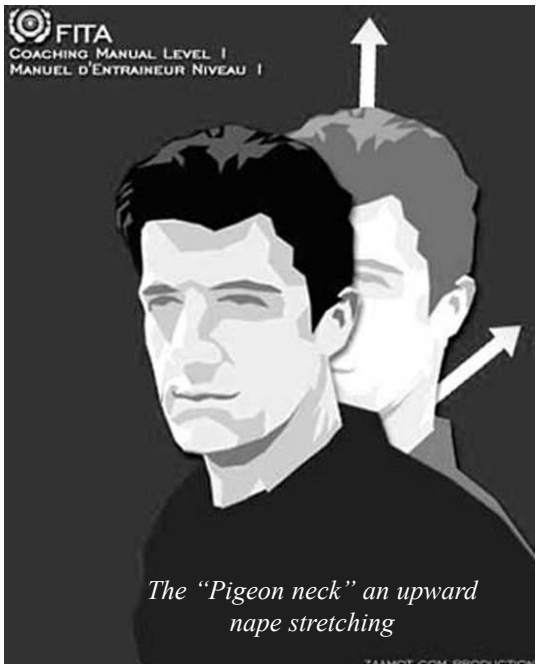
a) Push your elbow against the opposite hand for +/- 15 seconds.
b) Stop your effort and cross your legs with the leg from the opposite stretched side in front.
c) Pull on your elbow while you twist your body, by turning your hips in the opposite way to the stretching. Hold +/- 15 seconds.

Deltoid and back stretc

Neck stretching

● Nape and trapezius

The "Pigeon neck" consists in an upward stretching of the neck while trying to flatten it out and bringing the chin in. Lower the shoulders down. This is a good warm-up exercise for the thorax expansion of the archer.



The "Pigeon neck" an upward nape stretching

● Trapezius

Similar as the previous exercise "Pigeon Neck", except the neck is stretched obliquely.

a) Push your head against the hand for 15 seconds.
b) Stop your effort and lower the opposite shoulder.
c) Just use one or two fingers for stretching, because a too important pull could hurt your muscular fibres and/or tendons. Maintain the stretch for 15 seconds.
d) Work each side.

Trapezius stretching.

● Nape and upper back

1) Push back your head against your hands for about fifteen seconds. Breathe quietly.
2) Stop your effort and move your elbows again each other.
3) Roll your back down. Hold the stretch for 15 seconds. Have long and deep exhale, while bending and stretching your nape and back.

Nape and back stretching.

Torso warm-up

● Vertical overall stretching up

Extend your arms up. Push up as high as you can. Hold about 15 seconds.

● Enlaced elbows

Put your left elbow inside the right one. The left forearm turns around the right one to allow your hands to enlace together.

Enlaced elbows.

Push your elbows forward. Then lean the top of your body forward. Move your elbows as far as you can in any direction. Feel the stretching associated to each elbow position.

4.3.3.3. Warm up with rubber band

Overall shoulder warm up

● Passing front and behind the body - Arms and elastic band extended.

Hold the elastic band a little stretched. Then as it was a stick, move alternately the extended arms in front and behind your body. Inhale while going back, exhale coming front.

Passing front and behind the body.

● Same but obliquely.

● Front and back vertical openings.

a) Hold the band (a little stretched) above your head.
b) Exhale while lowering and stretching the band in front of your body.
c) Continue to lower your arms in front of your body while relaxing the band.
d) Inhale while spreading your arms out to stretch and raise the band above your head.
e) Exhale while lowering and stretching the band behind your back.
f) Continue to lower your arms behind your body while relaxing the band.
g) Inhale while spreading your arms out to stretch and raise the band above your head.
h) And so on…

● Horizontal openings.

a) Stretch your arms horizontally in front of you, with an end of the band in each hand.
b) Exhale while spreading your arms out. The band will stretch until touching the top of your chest.
c) Relax the band while inhaling and bringing your arms in their start position.
d) Exhale while spreading your arms out. The band will stretch until touching the top of your stomach.
e) Relax the band while inhaling and bringing your arms in their start position.
f) Exhale while spreading your arms out. The band will stretch until touching the top of your face.
g) Start over from b), and so on…

● Rolling the shoulders, with rubber band under-foot.

Inhale while rolling your shoulders up. Exhale while rolling your shoulders down.
After 6 rotations in one way, change the way.

Rolling the shoulders.

● Vertical forward/backward development, elastic band under knee.

Stand on one foot, pass a part of the elastic loop under the knee of the other leg. Hold the band with your hands spread apart a little wider than your shoulders.
Then alternately:

a) Stretch up your arms toward the sky - Exhale;
b) Lower your hands in front of your shoulders - Inhale;
c) Stretch up your arms toward the sky - Exhale;
d) Lower your hands behind of your shoulders - Inhale;
e) Start over from a), and so on…

This exercise awakes the balance of your body while preparing your upper body for the efforts to come.

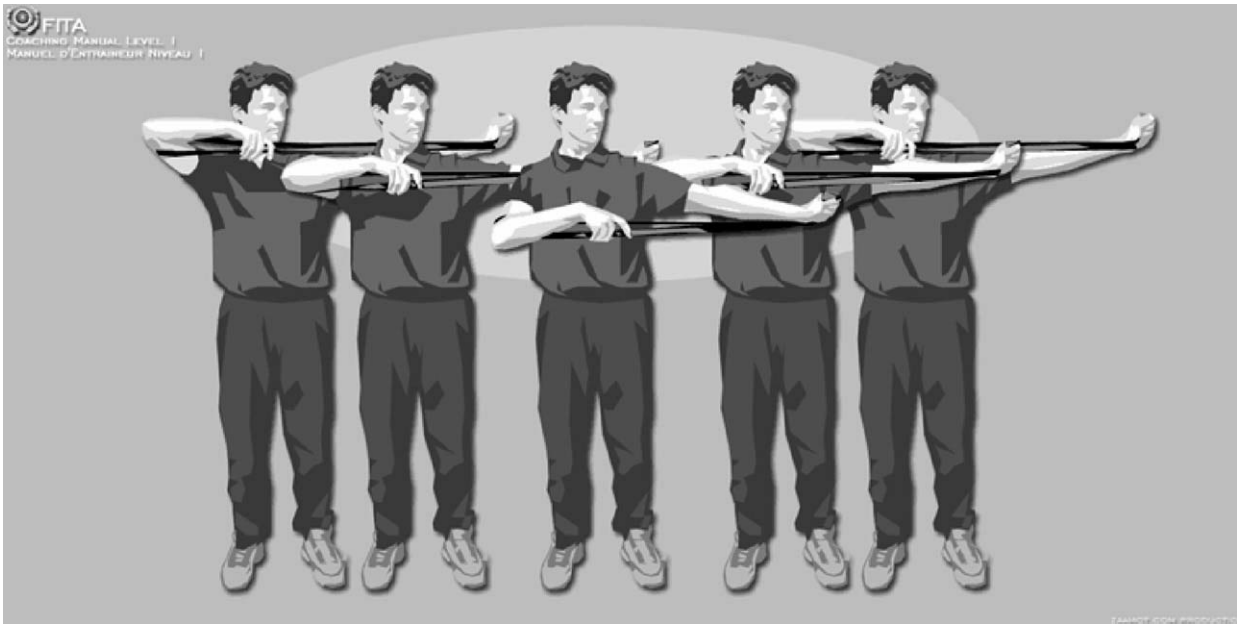
Vertical forward/backward development.

Specific shoulder warm up

● Imitate full draw, with the rubber band around the string elbow and the bow hand.

Have a high pre-draw, then while letting the elastic band sliding through the fingers of your string hand, alternate:

a) a draw from the top while inhaling;
b) a draw decrease down under your shoulders while exhaling;
c) a draw from under your shoulders while inhaling;
d) a draw decrease up above your shoulders while exhaling;
e) Start over from a) and so on….



Band around the string elbow

- Shooting simulation with elastic.

Replace the bow with a rubber band, and then go through the shooting movements. Enforce maintenance of a tone in working muscles after release of the elastic band.

Shooting simulation with a rubber band

Follow-through should always be recalled.

4.3.3.4. Shooting warm-up.

This is the final warm up phase, which is often implemented at a blank buttress.
During this phase review what was taught during the previous practice session.
If you prefer to work again the latest taught skill instead of introducing a new one, you can organise a circuit of cut-out target faces (see the Standard Teaching Process, first page of this chapter).

4.3.4. Review of previous session

During the first warm-up end, share a few key words about the last session. Before the second warm up end, when the archers are on the shooting line, question them to determine what they remember from the last session. They will not have any difficulties replying since expressing key words during the first end has already jogged their memory. Make them express themselves orally since we have a tendency to remember more clearly what we say rather than what we hear.

4.3.5. Teaching

After having explained the content of the session, structure the session in the following manner:

- **technical training**, e.g. the discovery or the reminder of a skill;
- **skill assimilation**. At this step the coach often uses a set of situations with increasing difficulties;
- **endurance development and learning evaluation**. A game is often a part of this step.

Further information on teaching in the chapter #7 "Teaching suggestions"

4.3.6. Recovery

Some coaches find a recovery / cool down useful, making archers shoot at empty butts or shoot a few ends with their eyes closed, in order to make them recover their shooting quality. Other coaches prefer to have the archers leave with the fun feeling instilled during the game. Neither of these alternatives is better than the other, the choice depends on:

- How well the session went, the interest it generated during the endurance development, and learning evaluation stages;
- The archers' behaviour during the game in regard to the taught skill, and the archers' adhercence to performance instructions;
- The archers' degree of concentration/excitement following the game.

4.3.7. Equipment storage and evaluation

The time allocated for equipment storage is important for several reasons:

- It teaches archers to respect the facility and equipment at their disposal;
- It develops a sense of belonging to the association;
- It gives the opportunity to discuss the session in an informal manner;
- It facilitates verbal exchanges between participants outside the session context;
- It teaches archers how much work goes on behind the scenes;
- It allows valuable free time for consultations;
- Give priority to positive feedback.

In summary, plan each practice sessions with each of the above stages. Tailor the teaching stages based on the shooting skill(s) being taught in the session. Always incorporate the Standard Teaching Process (see first page of this chapter) in the exercises used during the practice session.

4.4. Practice session sequencing.

4.4.1. First practice session - Suggestions.

- **Step No. 1:**

Shooting distance is between 4 and 10 m, depending on the physical size of the archers. Below is a chart suggesting the appropriate shooting distances per age groups.
Use an 80-cm target face. Divide archers into workable groups having regard for space, equipment and coaches available.

	5 to 7	8 to 10	11 to 13	14 to 16	Age
4 m	X				
6 m		X			
8 m			X		
10 m				X	

"Recommended shooting distances for first lesson"

- **Step No. 2:**

In each group introduce the coaches & archers, check if all the forms are completed, if not, do it now.

- **Step No. 3:**

Introduce the facilities and the equipment to be used.

- **Step No. 4:**

Place the archers to observe the demonstration, and demonstrate how to shoot. Provide safety rules through out the demonstration. Tell to the archers the meaning of "Let Down!". Explain the difference of shooting with left-handed individuals. Provide the recommendations regarding clothing.

- **Step No. 5:**

For each archer:
- determine the shooting side;
- measure the arrow length required;
- estimate the bow weight and length;
- distribute a strung bow that fits their physical skills.

Bows are numbered so the archer can readily distinguish the bow for the next session.
At this stage a bow is rarely too light, on the contrary it is often too heavy, therefore encourage the use of lightweight bows.
Restate dry firing is forbidden.
Issue six arrows of the length to suit the bow weight being used, preferably crested the same. Review that the arrow must be loaded on the string only when on the shooting line. Issue a quiver and an arm guard of suitable size. Help the archer to adjust the quiver and arm guard.
Determine if a chest guard is required, if so issue one. Check if clothing is suitable, if not fix the clothing and advise for the next session.
Only provide a finger protection when necessary. Archers feel more at ease, especially without a finger tab. Furthermore you will have a better visual control of the finger position of the students.
Do not give a bow sling to a beginner archer, since few of them would use it properly, and it would draw their attention away from more fundamental tasks.
If you have distributed the equipment, ask the archers to lay down their bows, then perform the demonstration, first with the usual shooting side, then with the opposite side.

- **Step No. 6:**

Assign 2 or 3 archers per targets in pairs. Review what "let down" means.
They must each take their turn shooting under supervision. To maintain a sustained shooting rhythm during the first couple of sessions have 1:6 coach archer ratio.
Assist the archers with the first arrow. Watch for overdrawing, change equipment if necessary.
Pay attention to:
- draw/arrow length,
- string clearance, hence positions of the bow hand, elbow and shoulders.

Physical assistance is very often required during the whole sequence. Mimetics can be used as a start. (Mimetics - the act of mimicking the body position and shot without using the bow).
Only intervene to make sure the body is in an upright position, the shoulders are lowered, the archer is relaxed, the draw is well done, and to ensure safety.
Ask them to warn you immediately if they feel any pain from striking the string on either the forearm or chest, or string fingers discomfort.
At your discretion, give them permission to shoot without supervision when they demonstrate a safe shooting style and an adequate grasp of the basics.

- **Step No. 7:**

When the end is over, explain:
- how to leave the shooting line;
- where to put the bow;
- where to wait for the signal to retrieve arrows.

- **Step No. 8:**

Blow whistle to retrieve arrows. Take class to target, cautioning them to watch for arrows in the ground or on floor. Demonstrate correct method of pulling arrows, and where to stand during retrieving. NOBODY SHOULD STAND BEHIND THE ARROWS IN THE TARGET AT ANY TIME

- **Step No. 9:**

After each end when the archers are back on the shooting line, review one technical point quickly using a short demonstration (with an elastic band, it is fine).

- **Step No. 10:**

During each following end, assist those who have special difficulties, and provide individual assistance to no more than two archers at a time.

- **Step No. 11:**

After several ends, about 20 minutes before the end of the session, introduce a game like "Elimination by colour zones" in chapter #9. This game does not necessitate point counting and helps beginners memorise the different colour zones.
Elimination games allow a rest to those who are tired, as well as to observe the "best"

- **Step No. 12:**

After each end of the game, when the archers are back on the shooting line, recall the next step of the game. With each eliminated archer, make them observe, or score, or taking down and store the equipment. Also discuss the "feeling" of the session.

Finally:
Session length is between 45 minutes to two hours, depending on the average maturity of the group.

4.4.2. Second session

Introduction of warming-up is recommended.
Check on finer points of form especially the upper body (head straight, shoulders low, relaxed arms and hands). The archers start to observe their own form, then start to use a mirror. Considerable controlled practice is needed to reinforce the correct form details. Targets are set at 10 m for this ses-

sion.

4.4.3. Following sessions

From this session forward, the archers string their own bows at the start of the session and unstring them at the end of the session.

From the fourth session forward, start to organise real teaching sessions, see chapter #7. Teach the basic shooting skills in the following order:

- Body-pre-setting;
- Hand position;
- Bow raising;
- Bow opening;
- Full draw effort;
- String clearance;
- Bow hand (introduction of the sling);
- Release;
- Follow-through;
- Rear sight position (face/draw-hand position);
- vertical draw hand position;
- String alignment;
- Sight setting (use of the quadrilateral method).
- Release and follow through.

Note:

Some of these basic skills may require many sessions and many different exercises. Build your own plan of teaching themes. In chapter #7, this manual will provide suggestions for teaching each of these basic themes.

Chapter # 5

Common Problems

Your role as a coach is to teach archery basics, not to teach what should be avoided, or worse, what is wrong. For "teaching" what not to do, memory and speaking skills are all that is required.

5.1 Arrow-related faults

The arrow falling from the arrow-rest while drawing:

- The finger below the arrow pushes the arrow up:
- Tension in the string hand - the knuckles being clenched as arrow is drawn, and the back of the hand cupped instead of being perfectly flat:
- Canting the bow so that the top of the bow leans toward the arrow-rest side.

Arrows repeatedly rebounding from the target:

- Letting the string hand creep forward before release:
- Blunted pile or tip on arrow:
- Hitting a binding wire or string on the bale or butt, or other obstruction inside of butt.

5.2 Arrow impact faults

Arrows falling below the target:

- Poorly determined point of aim or sight adjustment:
- Bow arm collapsing:
- Not having a constant reference point (anchor point):
- Dropping the bow arm:
- Reaching forward with the chin to meet the string:
- Nocking the arrow too high on the string:
- The string catching on clothing or arm guard:
- Inconsistent bow hand position:
- Releasing from a point above or in front of your reference point (anchor point):
- Collapsing arms and shoulders reducing the draw length.

Arrows going over the top of the target:

- Poorly determined point of aim or sight adjustment:
- Reference point (anchor point) is too low:
- Raising the bow arm on release:
- The archer pushes too heavily on the bow:
- Nocking the arrow too low on the string:
- The archer produces extra draw length by drawing past their normal reference point (anchor point) before releasing the arrow:
- Holding the bow in an inconsistent way, for instance when too much pressure is applied to the lower end of the grip.

Arrows going right of the target (for right handed archers):

- Pushing the bow arm to the right on release:
- Poorly determined point of aim or sight adjustment:
- Canting or tilting the bow, or head too much:
- Gripping the bow string or holding the bow in an inconsistent way:
- Left hand archer using the wrong eye to aim:
- Not using string to sight alignment (poor string alignment):
- String deviates on release.
- Over stretching the body on drawing (over drawing):
- Use of the biceps when drawing the bow:
- Bow arm elbow collapsing pushing the bow to the right on release.

Arrows going left of the target (for right handed archers):

- Pushing the bow arm to the left on release:
- Poorly determined point of aim or sight adjustment:
- Canting or tilting the bow, or head too much:
- Gripping the bow string, or holding the bow in a wrong way:
- Right hand archer using the wrong eye to aim:
- Not using string to sight alignment (poor string alignment):
- Too much shin build-up in front of the string when using a side anchor (reference point) making the string deviate on release.
- Clothes fouling the string during release:
- Body collapse on release:
- Allowing the arrow shaft to slip off the rest before release:
- "Plucking" or jerking the string away from the face on release.

Sometimes the identified faults are not form related. Try shooting the archer's bow. The bow, or arrows, may be faulty.

5.3 Target panic.

Target panic, or sometimes referred to, as "Gold shyness" is a problem affecting performance during the critical moment. The archer decides to shoot when; a sense of synchronisation in body positioning and stable shooting position coupled with perfect aim is felt.

Sometimes while learning the shooting process the archer shoots before a satisfactory aim is achieved. The coach must intervene at this stage making the archer stabilise the sight before shooting. In extreme cases, the archer shoots even before being in the final shooting position.

Target panic is caused by the archer relying too heavily on visual stimuli, rather than internal attention to determine the shooting decision. The problem is compounded when the archer starts to anticipate external perceptions, thinking in the future, even if this future is only a fraction of a second away (i.e. anticipating the gold is in sight and releasing the shot). To cure target panic, focus the archer's attention on what is happening, not what will happen. Many remedies exist, all requiring a great deal of control and perseverance by the archer. However, one remedy immediately eliminates the problem, change the shooting side. This manoeuvre is easy to accomplish at the initiation stage. Since neurological pathways differ from one side of the body to the other, the archer can eliminate the aiming problem and have better control over the shot. A lighter bow may be necessary to compensate for the physical strength difference between the two sides. The time spent shooting before the side change was not a waste of time, quite the opposite. The study conducted by the Italian Starosa (Matveev L. P.; Fundamentals of Sport Training; Fis Mosca, 1983) revealed while training on one side, skill is developed on the inactive side. Moreover, "healthy" training can only contribute to the development of better execution habits. The Drenkov study revealed the beneficial side effects of bilateral training on performance level. In practice, this solution often meets with resistance before it is adopted and generates a great deal of interest during and even after its application. The use of the opposite side increases the ability of the side that is commonly used, resulting in improved skill.

Benefits from these remedies do not come easily - hard work will be required.

5.4 Common archer problems.

Throughout this manual fundamental shooting basics have been emphasised. Therefore, you have already figured out some common problems:

- Moving the head forward to the string:
- Raising the shoulders - especially the bow shoulder when lifting the bow:
- Having a low string elbow can produce an inconsistent Release or "dead Release":
- Moving the entire body (the centre of gravity) onto the string foot:
- Opening the string fingers slowly (not giving an efficient Release):
- Stopping aiming too soon for releasing:
- Dropping the bow arm too soon after releasing.

As soon as a problem is identified, determine the remedy and develop the skill needed for development. Then select the most appropriate exercise(s) to hone the skill.

Possible and most common problems about the release action and follow trought.

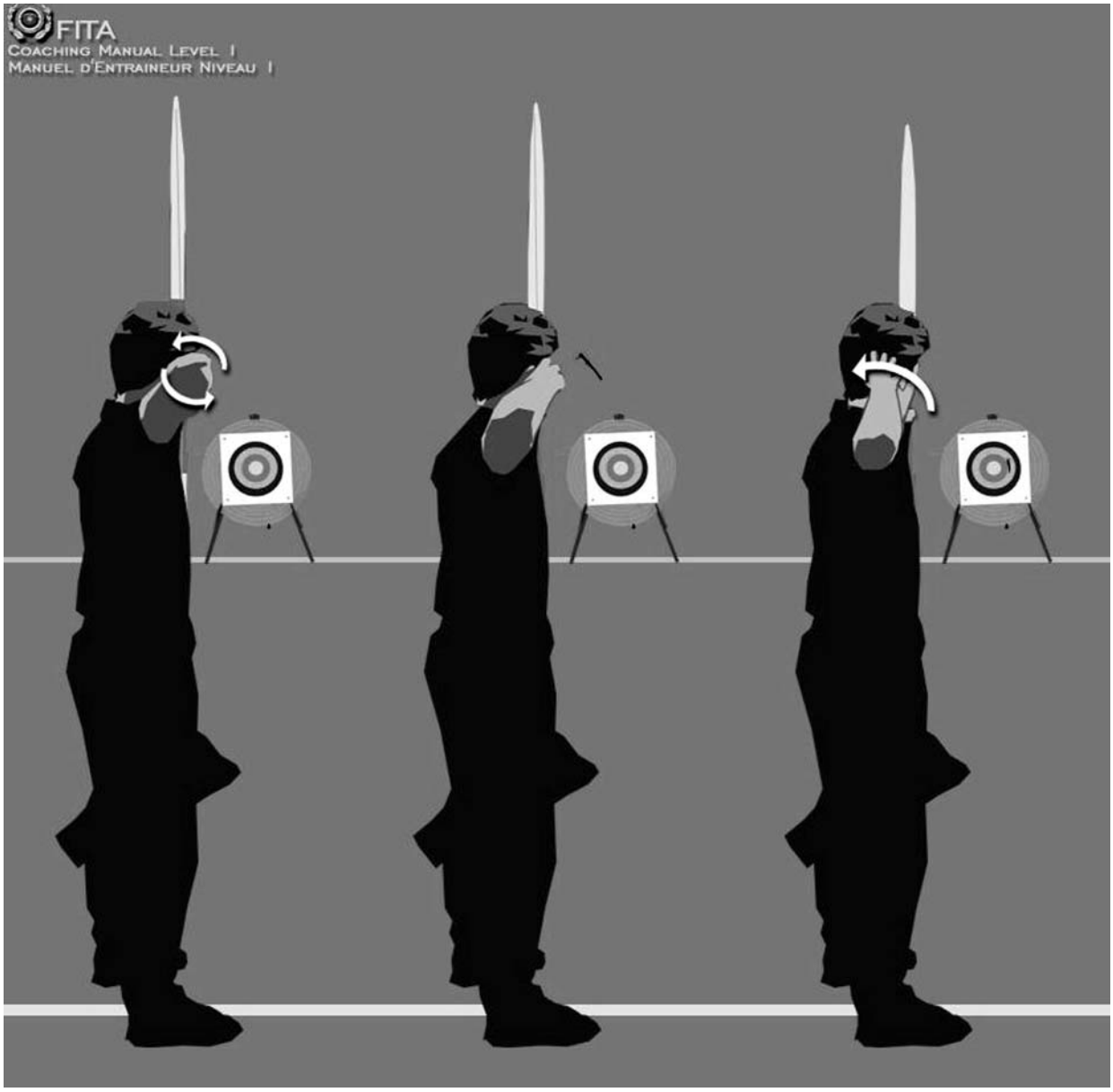
In order to avoid any possible bad habit, we were focus on the most advisable way to shoot properly, but the experience shows that there are two common problems that can appear in this part of the shot, and below are them with some recomendations on how to overcome them.

A string elbow finishing lower than the shoulder could come from:

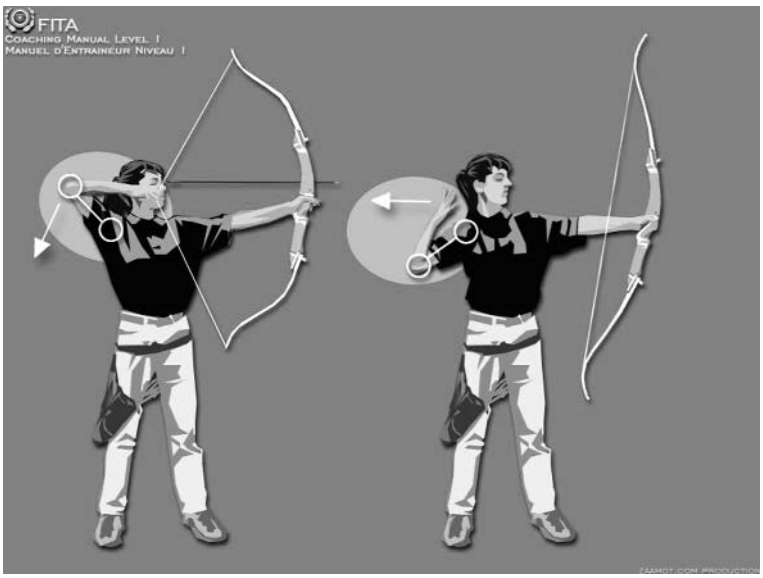
* muscular tension in the armpit , pectoral, … If so you certainly can see at full draw the archer's elbow already moving down.

It could work, but it could also generate vertical deformation canting the body toward the string foot.

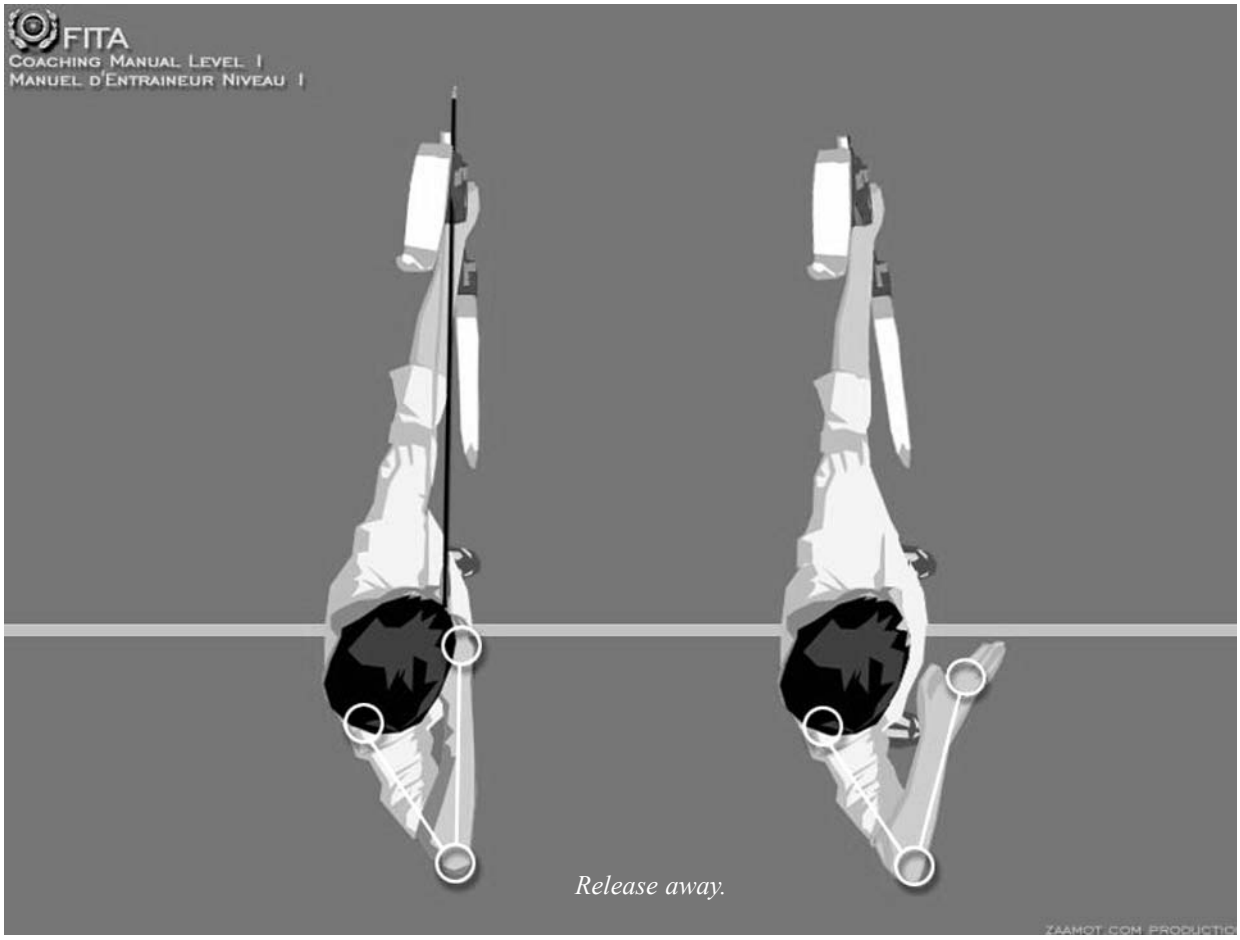
* a relaxation of the string shoulder muscles upon release, causing a change in follow-through - this must be avoided.



Pivoting around the forearm, due to inner arm and forearm muscle's action. The rotation itself is not harmful, but it is also not necessary. It is due to an excessive use of the muscles of the string arm; this technique is not advisable.



Vertical release around the string shoulder. Often caused by use of rhomboid muscles, draw elbow is dropping during the draw.



Release away.

Release away can be due to:

* the opening the angle arm/forearm, due to triceps action;
* muscular tension in the string forearm and wrist - plucking release.

Such a release can generate left-right mistakes but also vertical deviation, hence it is not advisable.

- Rationale:

  The human being is never immobile but in constant search of equilibrium. We must allow it to achieve stability at any moment, even during the brief moment when the string pushes the arrow during release. This can only be accomplished if focussed concentration is maintained, being mentally prepared. Being able to continue visual and motor coordination during release and follow-through is one of the most fundamental archery skills. The archer at full draw already shows this elbow movement.

  The simpler the movement, the easier it is to repeat.

Chapter # 6

The Coach's Role

As a coach, you play a critical role in helping novices enjoy their involvement in sport. To make sport fun for everyone, you need to understand how novices grow and develop, how they communicate with one another, and what motivates them to come back for more. This manual gives you a summary of the skills and knowledge you need to be an effective coach.

Archery is recognised as a good physical and mental exercise. In recent years it has become increasingly popular as a sport for all ages. People participate in archery for all kinds of reasons. They enjoy learning new skills, and testing these skills against others. They like the challenge and excitement related to this sport. Winning is important, but archery allows the simple pleasures people get from being active, being with friends - being part of archery! The approach you take to coaching should reflect these desires. You're on the right track if you concentrate on fun, and teaching the fundamentals.

- Fun - Make it a great experience for all beginners (see the chapter 13 "Games").
- Teaching fundamentals - Focus on the basics. As novices learn and develop their skills, their enjoyment of the sport will grow.

By being prepared and by coaching with care, you can help make coaching a positive and enjoyable experience. You can encourage more people to make sport and recreation a daily part of their lives, and look upon archery as a lifetime sport!

Here is a brief summary of some of the major coaching principles covered in this manual. You could call it the Coach's Creed:

- Be ready, willing, and able to help your novices develop to their full potential, while recognising their differences. They come from different backgrounds, are born with different talents,and grow and develop at different rates.
- Set realistic goals based on each novice's stage of growth and development.
- Lead by example. Teach and demonstrate self-discipline, co-operation, fairness, and respect for officials and opponents.
- Emphasise challenge and fun. Learning new skills and techniques can be fun when introduced through active drills and competitions.
- Advocate variety. Encourage your novices to participate in other sports and activities.
- Be flexible and willing to learn as you develop your skills as a coach. Don't be afraid to make mistakes or to ask for help when you need it.
- Keep things in perspective. Make sure the time commitment required of your novices is reasonable. They are individuals first and archers second!

6.1. Your role as an archery coach

Coaching is for anyone who enjoys archery, cares about people and wishes to share this passion. It is for high school athletes, women and men, parents and grandparents. What does it take to coach? It takes people who are sensitive and caring. People who are organised, who want to work with others, and who will teach from the heart. Coaches are people who love archery and want to pass on their knowledge.

When working with your novices, you should remember that you are a teacher, a leader, and a counsellor.

As a teacher, you:

- Provide simple essential teaching points to help your novices learn;
- Encourage skill development through different teaching and effective learning situations;
- Provide lots of activity contributing to an active lifestyle of the beginners.

As a leader, you:

- Make archery a positive, and fun activity to do!
- Set goals that are challenging but realistic.
- Offer encouragement and support to help your novices be the best they can be;
- Instil the importance of being a good sport and playing fair.
- Respect each individual's rights and wishes, never humiliate a novice or chastise them in front of others.

As a counsellor, you:

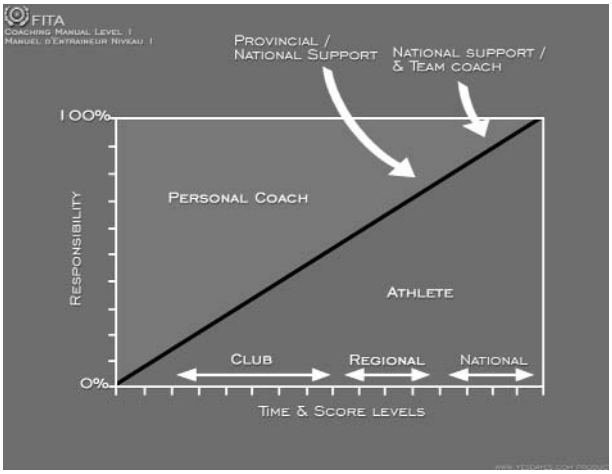
- Listen to your novices' concerns and deal with them as best you can by being supportive;
- Respect the needs and confidentiality of each individual.

As a technical resource, you:

- Should perfectly know the discipline before starting to coach;
- Should not be satisfied with knowing just what you intend to teach novices;
- Make a study of archery's history;
- Have to be aware of new advances in this field.

This manual will be of assistance to all those who teach and are taught the art of shooting the bow. Nevertheless a prior archer education is required.

When you coach, the results are real and immediate. You share the small victories as novices develop skills. You feel it in their energy and enthusiasm. You see it in their smiles. But the results of coaching are also subtle and long term. Through archery, you will help your novices to grow and develop as individuals. The archery skills they learn from you may only be used for a few years. But the aptitudes and the attitudes they develop toward themselves and others will last a lifetime. These benefits do not come easily. There is a clear time commitment involved in being a coach - for planning, practices, and competitions. And there is a real responsibility as you enter the lives of young people. But the effort is worth it. Ask long-time coaches about their involvement in archery, and they will tell you they have gained more from it than they ever "gave up" because of it.



Coach/Athlete Responsible Model

One of your first tasks is to point out the advantages of learning. You must show them that they have "a need to know" and will benefit in direct proportion to the effort they put into it.

The previous graphic depicts the relationship between you (the coach) and your archer over time. When the individual begins archery, you are responsible to provide considerable guidance and direction as the novice acquires sport skills and learns the rules and conduct for competition. As time passes the archer gains experience, his/her responsibilities increase, while yours decrease by comparison.

6.2. Coaching qualities

The qualities necessary to make a success of any instructional program are many and varied. Each of us possesses some or all of these qualities to different degrees, so it is up to you to evaluate your knowledge or ability and add to it where necessary.

6.2.1. Technical knowledge

Know the material you are about to use. Otherwise it will be impossible to teach it to others:

- keep up with current advances;
- don't rely on reputation or past performance.

6.2.2. Personality

Where people must work together, a compatible personality is essential to success. There are many things about an individual's personality to which others respond favourably or unfavourably. Concentrating on and improving one's own specific qualities should develop an acceptable personality. By observing other coaches and weighing their characteristics, we can adopt those that contribute to successful teaching, while avoiding those that do not. However, be yourself. Do not be artificial. Sincerity is of prime importance. Be alert to personal appearance.

6.2.2.1. Sincerity

After the knowledge of the topic, the most important factor is sincerity. At all times be natural, be sincere and enjoy your experiences while presenting your material. That is what you will do the best, and you will find that you will be accepted more readily. Avoid the "put on show." Your audience is more concerned with the material than your presentation.

6.2.2.2. Sincerity of purpose

Sincerity of purpose, punctuality and neatness are high on the scale of the coach's requirements. These aspects contribute considerably to the novice's evaluation of you and reflect in the attention shown during the presentations. You must be natural; sincerity is fundamental.

6.2.2.3. Attitude toward the group

You must strive for additional knowledge and improved teaching abilities. A coach should have an interest in class members and their problems. Be fair in all decisions. Your attitude influences the class morale since the class adopts both attitudes and point-of-view projected by the coach. Remember, each person you meet is in some way superior to you. Be wise and learn from them so you may benefit while teaching others. Humility may not come easy but it is worth well learning.

6.2.2.4. Appreciation

This principle emphasises that your real task is to train people, not just to teach subject matter. You must be aware that novices learn many things other than the material presented. Novices, as a rule, react directly to your attitude. You must, therefore, employ a positive attitude. Refrain from making remarks or giving personal opinions that may contribute to undesirable novice attitude. Learning is not complete until the novice has acquired the correct attitudes and habits of conduct, and applies them correctly.

The following check list summarises the material discussed:

- Treat learners as equals;
- Maintain discipline through respect;
- Know the answers - don't bluff;
- Admit mistakes don't cover them up;
- Discuss, do not argue;
- Expect good results and give credit where due;
- Keep the class alert and on its toes;
- Be fair. Favouritism is device;
- Be courteous, patient and tactful and when the need arises be humble;
- Maintain poise, avoid nervous habits;
- Lead, do not be forceful;
- Consider first impressions;
- Remember, communication is two-way;
- Always have empathy with each situation.

You must also show other qualities, as: communicator, organiser, teacher,… The theory component of coaching education develops these qualities further.

6.2.3. Fair play

Sport gives your novices a chance to experience fair play in action. Here are some things you can do to encourage it:

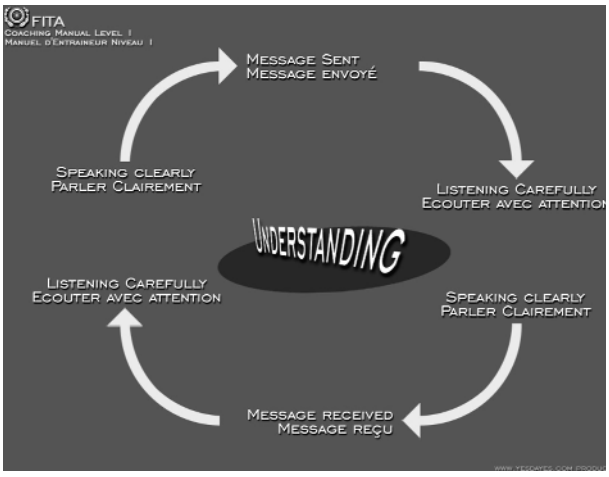
- Recognise and respect individual differences;
- Provide equal opportunity for all to participate;
- Learn and follow the rules of the game;
- Encourage your novices to always do their best;
- Instil a positive attitude toward competition;
- Encourage your novices to be modest in victory and to be "good sports" in defeat;

Make sure that you talk to your novices about what fair play means to them.

6.2.4. Communicating

Communication is a two-way process. Good communication leads to good understanding.

So that you find your instructions both productive and relatively easy to carry out you should be aware of some parts of the above instructional process.



Communication is a two-way process

6.2.4.1. Communicating with your novices

Here are a few simple tips to help you communicate effectively with your novices during practice and competitions:

- Give them an opportunity to speak and ask questions;
- Listen to what they say and how they say it;
- Speak to them using words they understand. Always keep it simple;
- Speak to every novice at every session.

6.2.4.2. Speaking ability and control

The coach's ability to control the group or individual starts with speaking ability. Audibility and clarity and diction are key elements to success. Firm control is very different from forceful and dogmatic insistence, which can only cause hard feelings and lack of co-operation. Be alert to your diction and voice. You can find more under "Communicating."

6.2.4.3. Audibility

You must speak loudly enough to be heard by all the novices. Speak directly toward your group in a voice loud enough for those in the back to hear clearly. Always be aware of those in the farthest corner, noting whether they are able to understand you, nevertheless the high level should not irritate those in the first row.

6.2.4.4. Clarity

Articulate distinctly and take care not to slur your words. If you do have an accent try to keep your phraseology within the scope of those listening to you. Use words that they will understand. The terms used should be the same as those used in the Manual, which the novices will use later to refresh their memories, and for reference. Care must be taken to ensure that you give only the details relevant to the subject under discussion. Do not confuse the issue with facts beyond what is required at that stage of learning. Remember, "Brevity is the key to wit."

6.2.4.5. Speed

For the first lessons, you should be careful to keep a slow speech rate. The 140 words per minute as recognised as the upper retention limit when speaking to a basic group. In later levels, this may be increased when your novices are more conversant with the subject matter. Your new novices need time to assimilate the facts you are giving them.

6.2.4.6. Gestures

If gestures come naturally to you by all means use them but try to avoid overdoing it. The overuse of any mannerism can only cause irritation and spoil the effectiveness of the attention holding movement. Vary your actions, act natural and project yourself to your group.

6.2.4.7. Enthusiastic versus Monotony.

If you are enthusiastic by the topic, your audience will be enthusiastic too, and it will excuses your weaknesses. When speaking to any group you must be careful to keep your tone of voice flexible, avoiding the mechanical sound of the "one note" level of speech. At no time should you read a prepared speech. Have small cards, which have brief notes and headings of each of the sections you are to deal with. This will enable you to maintain a well-developed order for your presentation and prevent you from forgetting one or more sections of your subject. You should try to open your subject with a few concise remarks qualifying the material you intend to present. At the conclusion, you should briefly summarise your presentation, noting the key points, which you hope, will be retained by the novices.

6.2.4.8. Repetitious phrases

Most speakers tend to overuse some pet phrase. Try to avoid excessive use of such things as "fair enough", "by and large", "you know", and many others. Similarly, the speech fillers such as "hum's", "ah's", and "er's" can be quite distracting and unproductive. These useless additions only tend to irritate and distract the novice's attention from the real material being discussed.

6.2.4.9. Humour

Every good speaker knows the value of humour in relaxing his or her audience. All speeches are improved by the skilful use of suitable and tasteful anecdotes relevant to the subject material being discussed. These jokes must be used in a natural easy manner as a tense joke invariably falls flat. Always be ready to laugh at yourself if you make an amusing slip; you are not expected to be perfect.

6.2.5. Time management

When you plan to give a 30-minute talk on a topic make sure that you cover all the relevant material and leave enough time for questions. It is poor planning to finish it 15 minutes early or late. Any good session must have a well-prepared outline to ensure suitable distribution of time over all subjects. Sometimes you can get so absorbed in your

talk that your forget the time. Perhaps you have been sidetracked and have departed from your planned material. Both can cause time problems, which may be difficult to correct when you finally realise what is happening. Novices should know what time the lesson is to end or when a break is due. Any talk afterward is futile.

6.2.6. Selecting a teaching method

It is important that the coach develops a coaching technique commensurate with the novices being coached. If the level is too high or too low the novice will soon loose interest and the coaching session will not be very productive. The learning the basic shooting form is quicker through ongoing correction of the mistakes. When bad form is allowed to be repeated it becomes the accepted form. So it is more difficult to change later. Because of this, it is generally accepted that each stage of the programme should be firmly understood before proceeding on the next stage. Final "Brushing up" of the form can be done later as long as the basics are clear to the novice.

When the novice can feel the skill and get its picture, motivation increases to implement it.

Trial and Error should always be conducted under close supervision until the correct sequence of responses has been learned. Once the novice has learned the correct sequence, it can be entrenched by repetition. Repetition is the most effective way of preventing the archer from forgetting, but its use must be tempered by judgement. Prolonged repetition will produce boredom and apathy. It is better to practice one hour a day for six days, than to practice six hours in one day. This principle should be remembered when training is being conducted. It is important to maintain the level of practice to the requirement of the training. If the level of practice deteriorates to a level that is not commensurate with the training required then the session should be stopped and another undertaken in order to maintain the novices' interest and enthusiasm.

6.2.7. Managing the human resources.

6.2.7.1. Managing the coach/parent/athlete relationship

You are ultimately responsible for most of the novice activities. This role will be easier and more enjoyable if others are recruited to help. Friends, acquaintances, and parents of the novices can be called upon to serve as "assistant coach" or "manager." Here are some suggested roles and responsibilities for these positions:

<u>Assistant Coach (helper)</u>

- Review the practice plans with the coach before each session.
- Assist the coach in practices and competitions.
- Do a safety check of the play area.
- Assist in the maintenance of the novices' equipment.
- Maintain the first aid kit.

<u>Manager (novice's mother or father)</u>

- Look after equipment (if qualified to do so).
- Provide Information regarding practice sessions and schedules.
- Make any necessary telephone calls to novices or parents.
- Take responsibility for funds.

<u>Tips for finding volunteers</u>

- Ask your league scheduler or club president for names of people who could assist when you are getting other information from them prior to your season.
- Do not allow your lessons to be a baby sitting service, do not allow "drop off", get the parents involved.
- Spread the word to neighbours and friends. Can they help? Can they suggest others who enjoy people and have a background in archery?
- Call your local high school and speak to physical education teachers. Explain your needs, and see if they can give you names of persons who might be interested in helping.
- Talk to parents to solicit their involvement.
- It is important as a coach to monitor the coach/parent/athlete relationship during the practice. Often a parent can dominate the relationship and negate some of the progress you've made with the novice. Perhaps getting the parent involved with another novice can help, for example "I noticed you're good at teaching_____ and little Johnny needs help with that____. I could use your help with him",thereby directing him away from his own child.

Tips for keeping volunteers

Once you've found volunteers, it's important to keep them motivated and involved. Here are some ways you can do it:

- Involve them in planning wherever possible;
- Have them do things they find enjoyable;
- Acknowledge and thank them for their contributions;
- Keep an open dialogue with parents;
- As they gain experience allow them to take over some coaching duties from you;
- Encourage them to take a formal coaching course;
- If they don't already shoot, encourage them to learn.

Meeting with novices & parents

Regular meetings encourage communication and help build a positive relationship. Many coaches like to hold three meetings each season: one at the beginning, one at mid-season, and one at the end. Some coaches have meetings with novices and parents together; others like to hold a separate meeting for each group. Sometimes it may be preferable to speak to novices or parents individually.

The age range of your novices and the approach you like to take will determine how you handle meetings and how many you hold. Remember, much can be accomplished in brief sessions before and after practices and competitions. Here are some things you might want to cover if you hold a meeting at the beginning of the season:

- Welcome and introductions;
- Goals and roles;
- Your coaching philosophy;
- Novices' hopes and expectations;
- Schedule for competitions;
- Schedule for practices;
- Plans for social activities;
- Plans for other activities such as fundraising;
- Questions and answers;
- How and when you can be contacted for follow-up.

Parents meeting

A parents meeting at the beginning of the season can be helpful in a number of ways. It provides an opportunity to get to know parents and to discuss plans for the season. It sets the stage for open and effective communication throughout the year. It will give you a chance to explain your coaching philosophy and approach, also to provide an opportunity to deal with any questions or concerns. It is also a good time to recruit volunteers!

Here are some items you could cover at the meeting:

- Welcome and introductions;
- Novice objectives;
- Your coaching philosophy;
- Listen to parents' expectations;
- Ways parents can assist and be involved;
- Schedule for practices, and competitions;
- Arrangements for car-pooling or travel;
- Equipment and other costs, fundraising activities;
- Questions and answers;
- Explanation of rules, safety, etc.;
- Use of newsletters as source of communication;
- How and when you can be contacted for follow-up.

Use this meeting to hand out schedules and circulate a novice's directory. Don't forget to have parents complete a novice's Medical Information Card.

It is important to listen to parents whenever they want to talk to you about their child. It is your role to guide parents in their involvement in the archery. You can do this in a number of ways:

- Encourage them to acquire an understanding and appreciation of the archery through knowledge of basic rules, skills, and strategies;
- Demand the same respect for fair play from them as you do from your novices;
- Discourage and inform those who want to "coach" from the sidelines. Getting messages from others will only confuse your novices. Explain to them how they can participate in your development plan.

Parents should guide their children's involvement in sports, but they should be encouraged to let them make their own final decisions. A child who really doesn't want to participate in archery just now should not be forced into doing so. This will only lessen the chance of the child taking it up later and can even lead to negative feelings about sport in general. From time to time, some parents may have to be reminded that it's just a game!

6.2.8. Respect and make ethics & fair play respected

Archery challenges everyone involved - novices, coaches, officials, and parents - to do their best honestly and fairly. Your conduct as a coach will serve as an example to others. The following Code of Ethics should be your guide.

Coaching code of ethics

- Always act with integrity in performing all duties with your novices, their parents, and your local club.
- Strive to be well prepared so that your coaching duties are always carried out with competence.
- Act at all times in the best interest of the development of your novices as whole persons.
- Maintain the highest standards of personal con duct by respecting the rights and dignity of your novices.
- Accept both the letter and the spirit of the rules.
- Accept and support the role of the officials in providing judgement to ensure that competitions are conducted fairly and according to the established rules.
- Teach your novices to respect the rules and all others, including the judges.
- Treat your fellow coaches with courtesy, good faith, and respect.

You can find the entire FITA Coaching Code of Ethics at: www.archery.org

Fair play

Sport gives your novices a chance to experience fair play in action. Here are some things you can do to encourage it:

- Recognise and respect individual differences;
- Provide equal opportunity for all to participate;
- Give value to Drug Free Sport;
- Learn and follow the rules of the game;
- Encourage your novices to always do their best;
- Instil a positive attitude toward competition;
- Encourage your novices to be modest in victory and to be "good sports" in defeat; and
- Encourage your novices to be generous when calling others arrows, frugal when calling their own.

6.2.9. Experience

Naturally the more experienced you are, the better you will perform in front of the group. In each teaching situation you will find you are learning new phrases, new methods, while becoming more skilled in the use of the time at your disposal. Be aware of becoming too glib. This tends to make the whole process too automatic.

6.2.10. Self evaluation

It's a good idea to "evaluate yourself" from time to time to see how you're doing as a coach. Complete the following checklist early in your season. Do it again midway through and once more at the end of the season.

Some questions to ask yourself regularly.

(See the cart just before) QUESTIONS	Yes	No
Do I make sure novices feel at ease when I am talking to them?		
Do I update my knowledge through clinics, magazines?		
Am I prepared for our sessions?		
Do I do a safety check of the field and equipment, before sessions?		
Do I make sure practice involve lots of activity for each child?		
Do I encourage co.operation?		
Do I make sure novice feel at ease when I am talking to them?		
Do I involve novice in making decisions?		
Do I actively assist novices who are having difficulty?		
Do I promote respect for the officials and the rules?		
Am I an enthusiastic coach?		
Do I try to make sure everyone is enjoying the session?		
Do I increase my inventory of teaching exercices?		
Do I increase my inventory of games?		
Do my archers shoot more?		
Do I increase my inventory of self-development excercices?		

One of the best indications of your success as a coach is the frequency of new-members or dropouts. Ask yourself why novices are dropping out: are practices boring? too competitive? is there a lack of equipment? is your facility unsafe?

If you're a good coach you may suddenly find yourself inundated with new members as happy novices bring their friends and relatives in.
Keep monitoring yourself and if you're not at a level you want to be, plan to make some changes. To help you do this, complete the following statements for each element you would like to change.

I would like to improve_____

_____

_____

_____

I can do this by

_____

_____

_____

My deadline for improvement is

_____

Chapter # 7

Teaching suggestions for the coach

People learn by observation, example, transfer, guidance, trial and error, and repetition.

The learning of new skills involves teaching proper basic form, not correcting minor initial faults. Correction of faults is done after basics are learned.

Primary tasks at the entry level are:

- simplify the novice's initiation to archery;
- make the novice understand what to do and what needs to be focussed on;
- give feedback on the current execution quality.

This feedback gives the archer the necessary information on what should be done, and how it differs to what is being done. The ability to compare leads to learning to execute the skill properly.

Putting this into practice requires being aware of the archery skills and their key elements, presented in this chapter. Also, you need to know how to:

- demonstrate the skills;
- create learning situations;
- provide effective feedback.

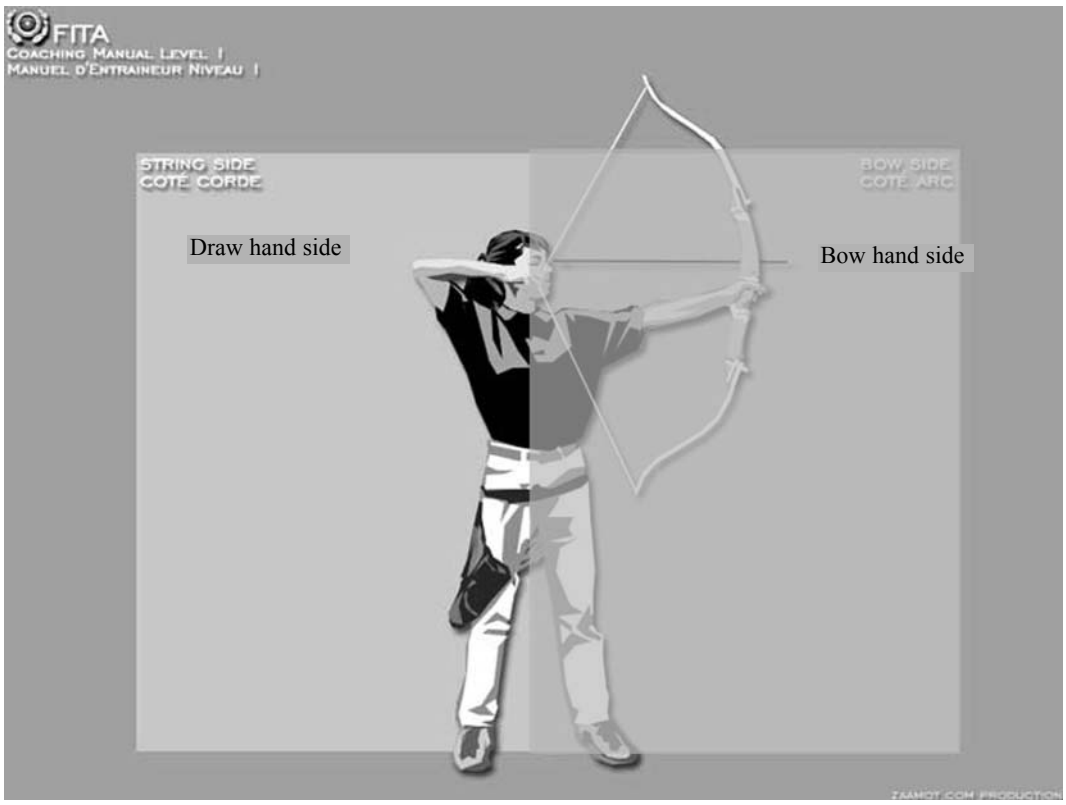
The coaching theory courses teach four phases of technical skill teaching. Applied to archery, they are:

- skills and their key elements;
- demonstration - organisation and presentation;
- practice planning;
- feedback and observation.

We will detail each of these phases over the following chapters.

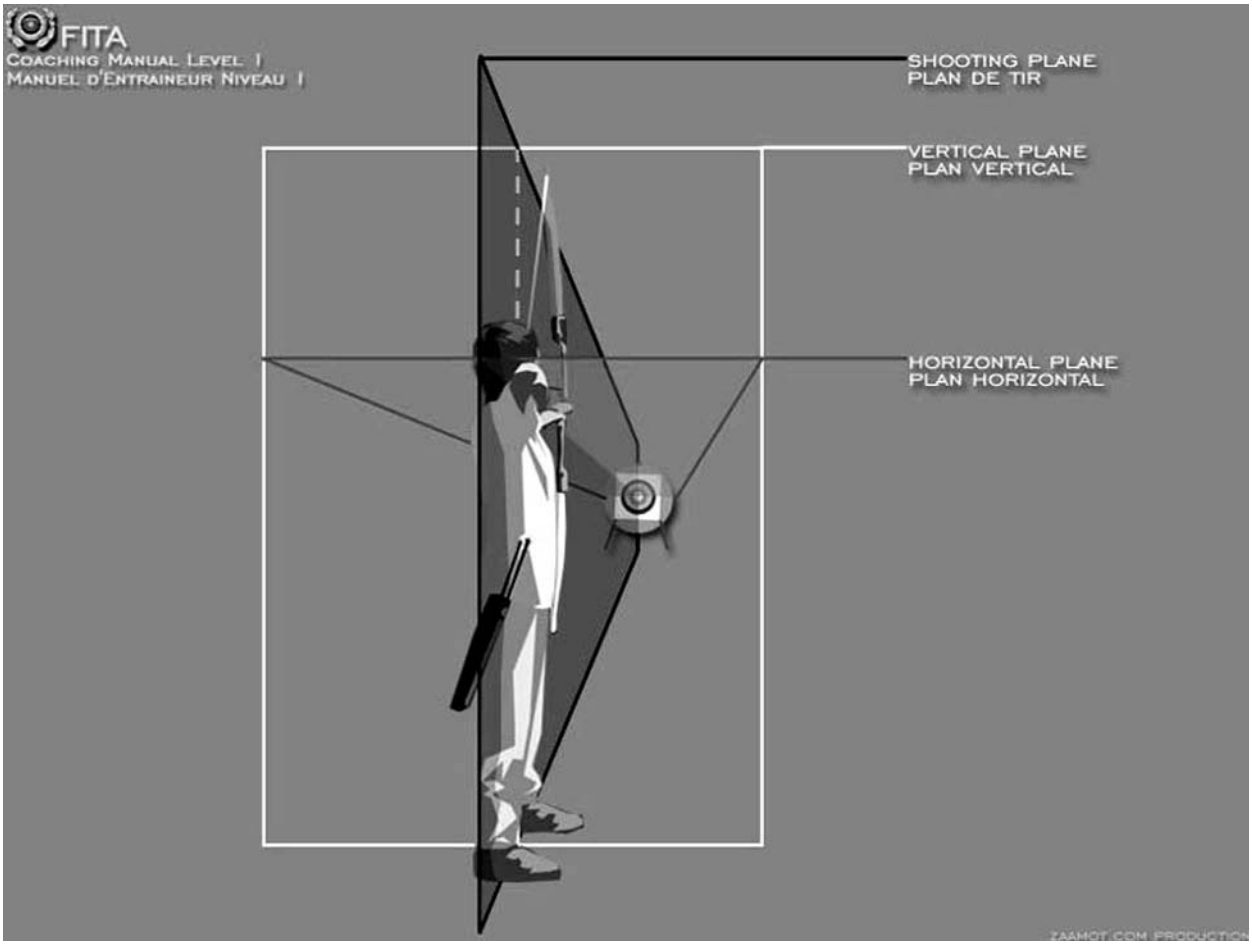
In the remaining pages of this manual, to be precise for both right-handers and left-handers, we give a name to each side of the archer's body. This is to precisely identify the explanation for right and left-handed archers. The left side of the right-hander, right side of the left-hander, is called the bow side, and the other is the string side. Thus, we refer to the bow leg, the string ear, etc.

For similar reasons, we refer to the three planes as:



String side / bow side.

- Shooting: the plane in which the arrow flies;
- Horizontal: the plane parallel to the ground, including the nock;
- Vertical or sagital: the plane perpendicular to the ground, along the shooting line.



The reference planes, taking 70% of weight on the balls of the feet.

7.1. Complementary Technical Knowledge

7.1.1. Listing basic skills.

Based on current archery knowledge, the main basic skills are:

- accurately repeating an action sequence and positions;
- stabilising and regulating an effort during this sequence, in a consistent rhythm.
- performing several actions simultaneously;
- co-ordinating action and sight.

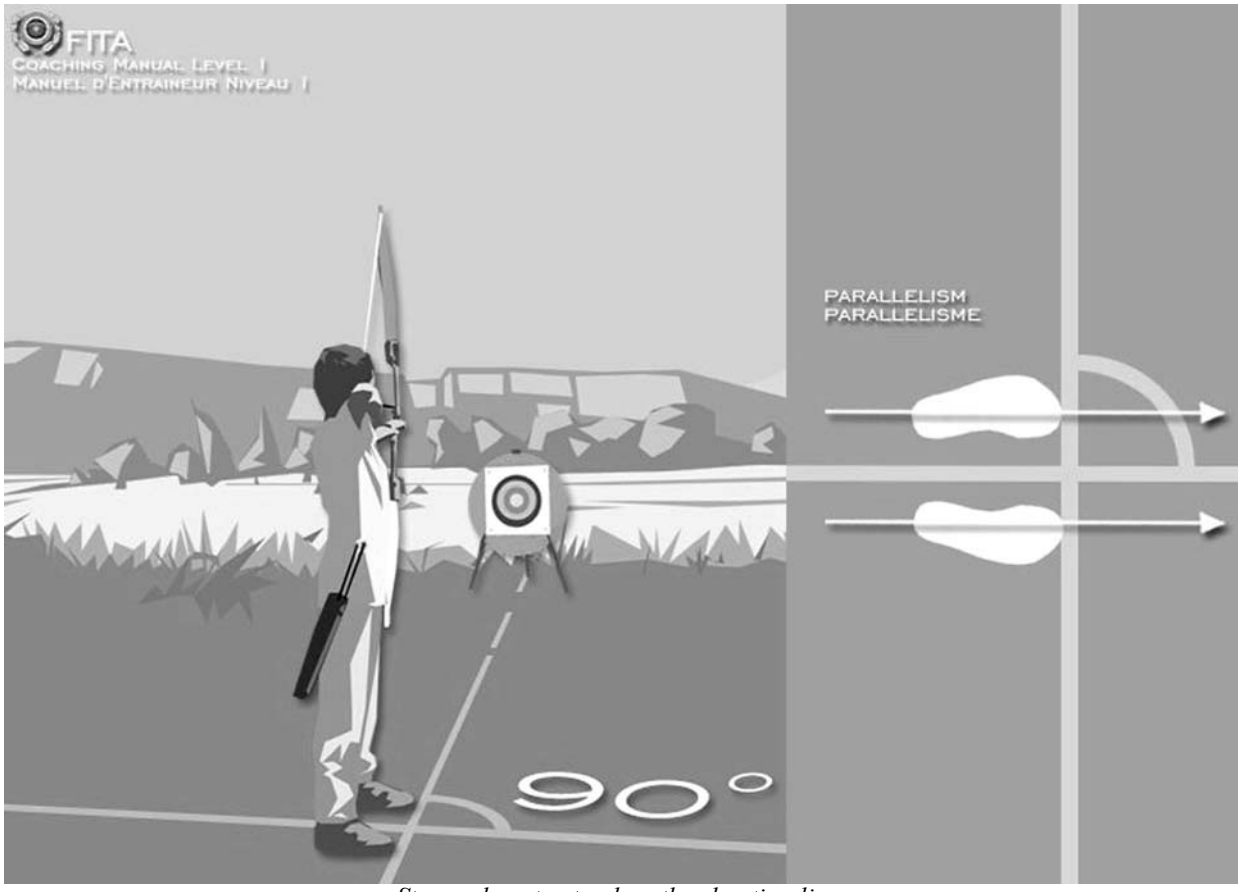
What is needed to perform these skills is:

- good co-ordination and feeling;
- sufficient strength and body balance;
- good coordination between aiming and release.

7.1.2. Choosing Technical elements

The technical elements and their key points are explained below. What is important for the coach is to allow each archer to repeat these elements accurately. Individualising key elements occurs when the archer has mastered the basics. This is a level-two coach task.

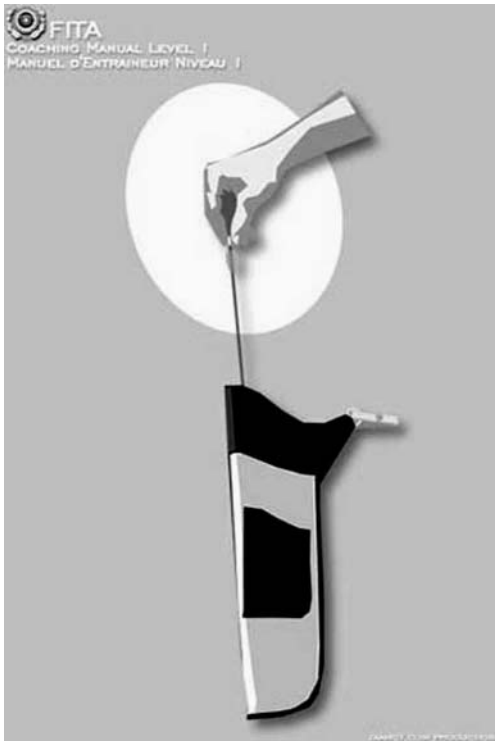
The elements are presented in the order in which they are normally performed. The shooting process starts from the stance, and progress as presented below.



Stance, how to stand on the shooting line.

7.1.2.1. Stance

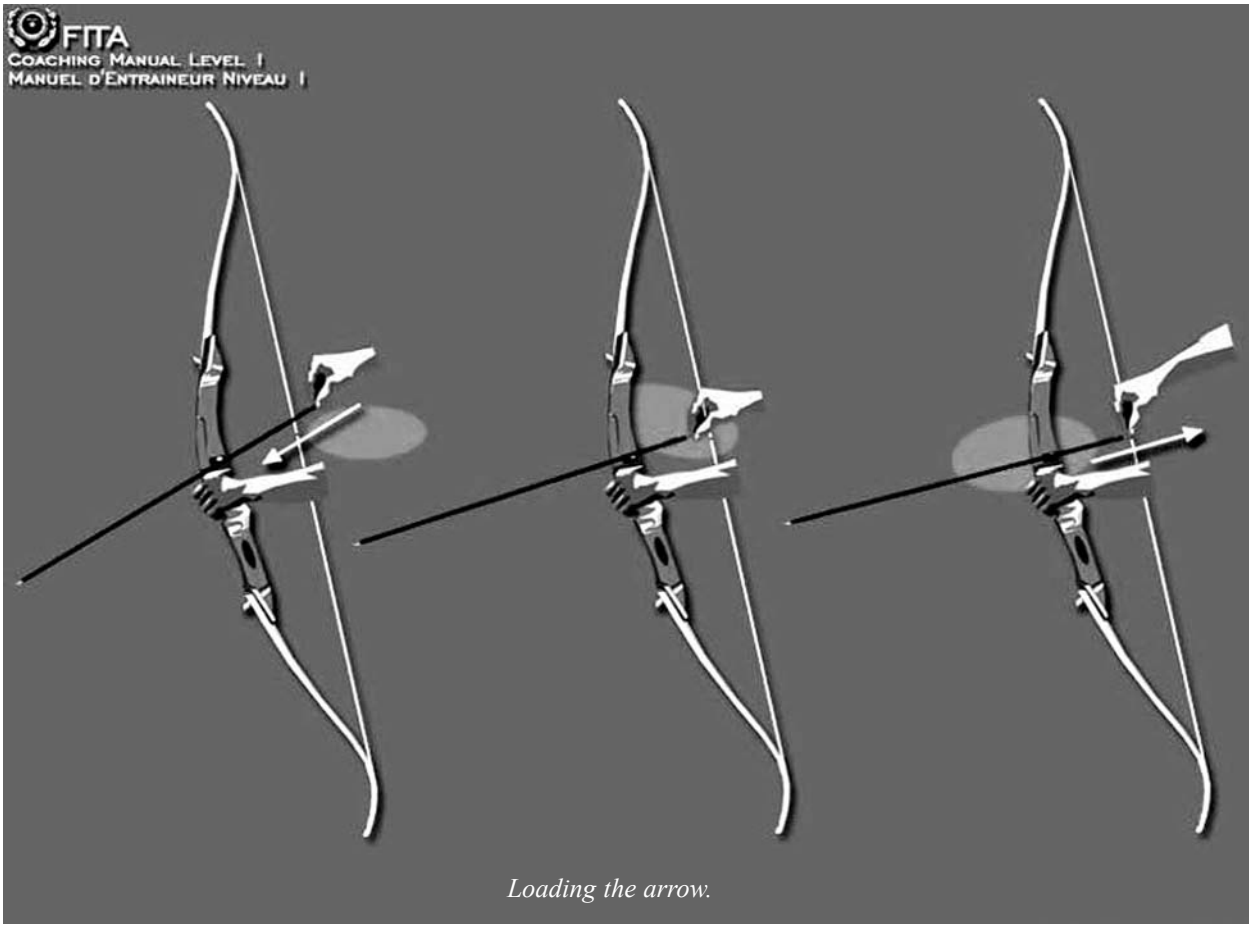
- Type: Preliminary action**.**
- Objective: Consistency and spatial relationship to the target, achieving optimal stability.
- Form: Feet parallel on the shooting axis, positioned at approximately shoul der width.
- Rationale: Gives archers the opportunity to repeat actions easily and accurately. Provides sound support for pull and push efforts in the flight plane. Gives consistent direction to the body in the flight plane. Makes observation easier. Avoids back problems.



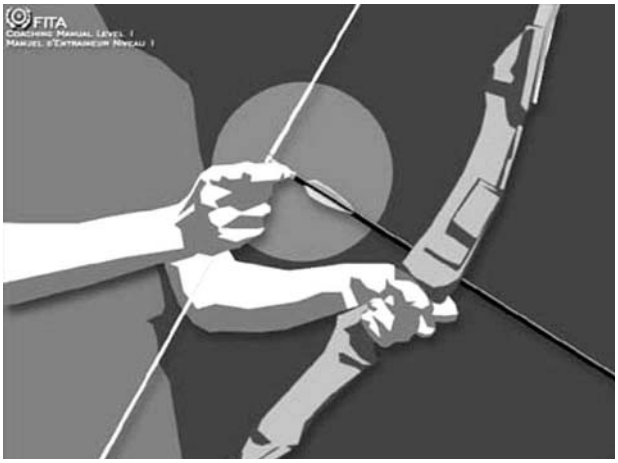
How to draw an arrow out of the quiver

7.1.2.2. Nocking the arrow

- Type: Preliminary action
- Objective: Identical placement on the bow. The action must be performed in a safe manner to protect the archer, other archers, and equipment.
- Form: Hold the arrow by the nock, place the arrow on the rest, correctly turn the arrow, nock it.



Loading the arrow.



Nocking the arrow

Finger pressure damaging the arrow-rest.

- Rationale: Taking hold of the arrow in front of the vanes becomes more difficult to nock, and the fletching could be damaged if the hand slips during nocking. The arrow rest does not endure strong vertical pressure. If nocking is done incorrectly, it could damage the arrow rest.

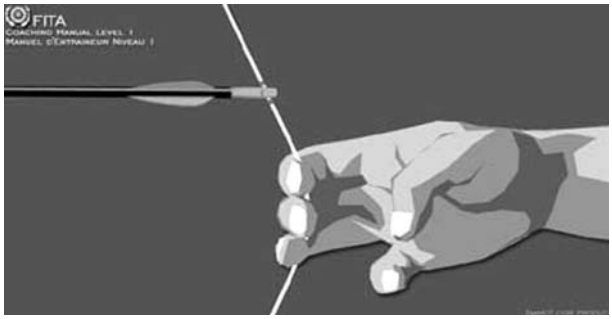
Arrows with four vanes are also successfully used at entry level.

7.1.2.3. Bow handling

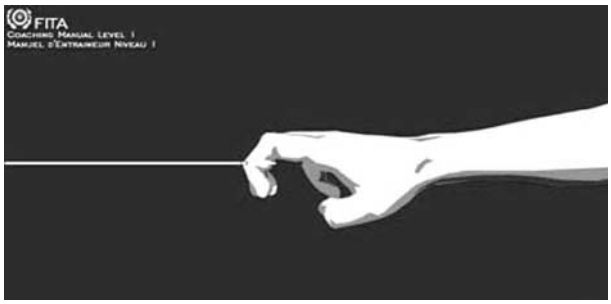
a) String Hook

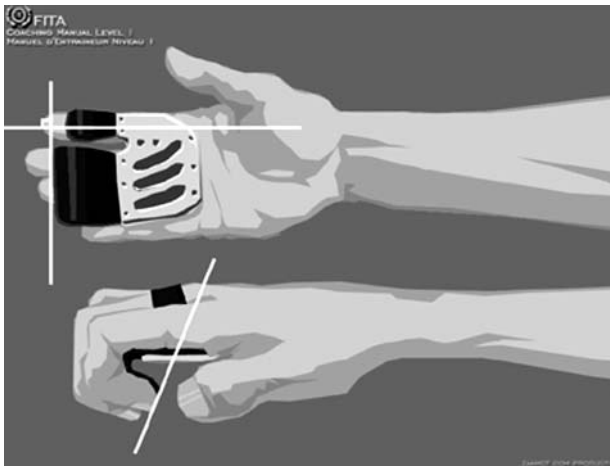
- Type: Preliminary action
- Objective: Consistent finger positioning on the string, about the arrow.
- Form: The fingers hook the string between the two upper joints. The palm of the hand is relaxed and the

back of the hand is flat. Three fingers are used and positioned beneath the arrow. The space between the nock and the forefin ger is about two to three fingers, depending on facial bone structure & size of string fingers. The three fingers share the workload equally. Afterwards, the back of the hand remains as vertical as possible, not curled-up, with the wrist as flat as possible. The interior of the forearm remains relaxed. Consequently, the hand is in the same axis, or vertical plane as the forearm and arrow.



String grip for first sessions: Straight line method.





With a proper string hook the back of the hand and the wrist are flat.

- Rationale: The more relaxed the archer is, the better he/she can learn, and the less likely to twist the string. This "depth" of the grip allows the muscles of the string hand, arm and forearm to relax. The string releases cleanly from the fingers. Eliminates the need to repeat facial anchor points at full draw (see triangle and quadrilateral methods described further) and simplifies the geometry from a quadrilateral to a straight line (see further in this chapter). Eliminates the need to worry about producing vertical finger pressure on the arrow.

b) Bow hand and elbow

- Type: Preliminary action
- Objective: Consistent bow hand contact with sufficient string clearance during the shot.
- Form: Fingers are relaxed, a bit folded, they do not grip, or choke the bow. The wrist is flexed. The "V" between forefinger and thumb is centred on the forearm axis. The bow pushes on the centre of the "V" made by the thumb axis and the life line. The main pressure zone is at about one to 2.5 cm lower than the "V" point formed by the thumb and the forefinger. The other side of the palm from the life line should not press on the centre of the grip. The bow forearm is straight but not stretched. The bow elbow is fixed, not bent. The elbow point must be turned toward left for right hand archers, not toward the ground.

Correct bow-hand: Contact zone and canting.

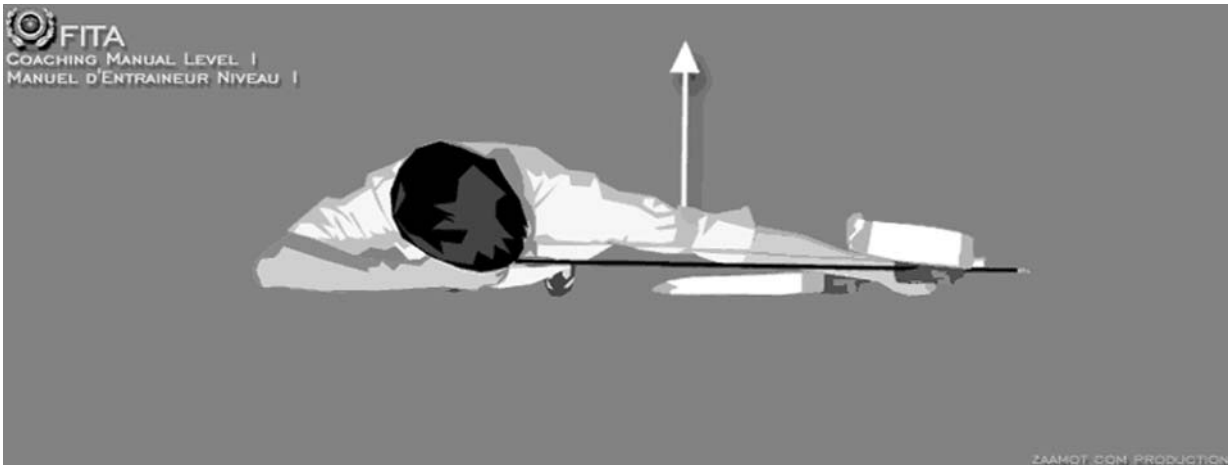
A well aligned bow hand.

Relaxed bow fingers.

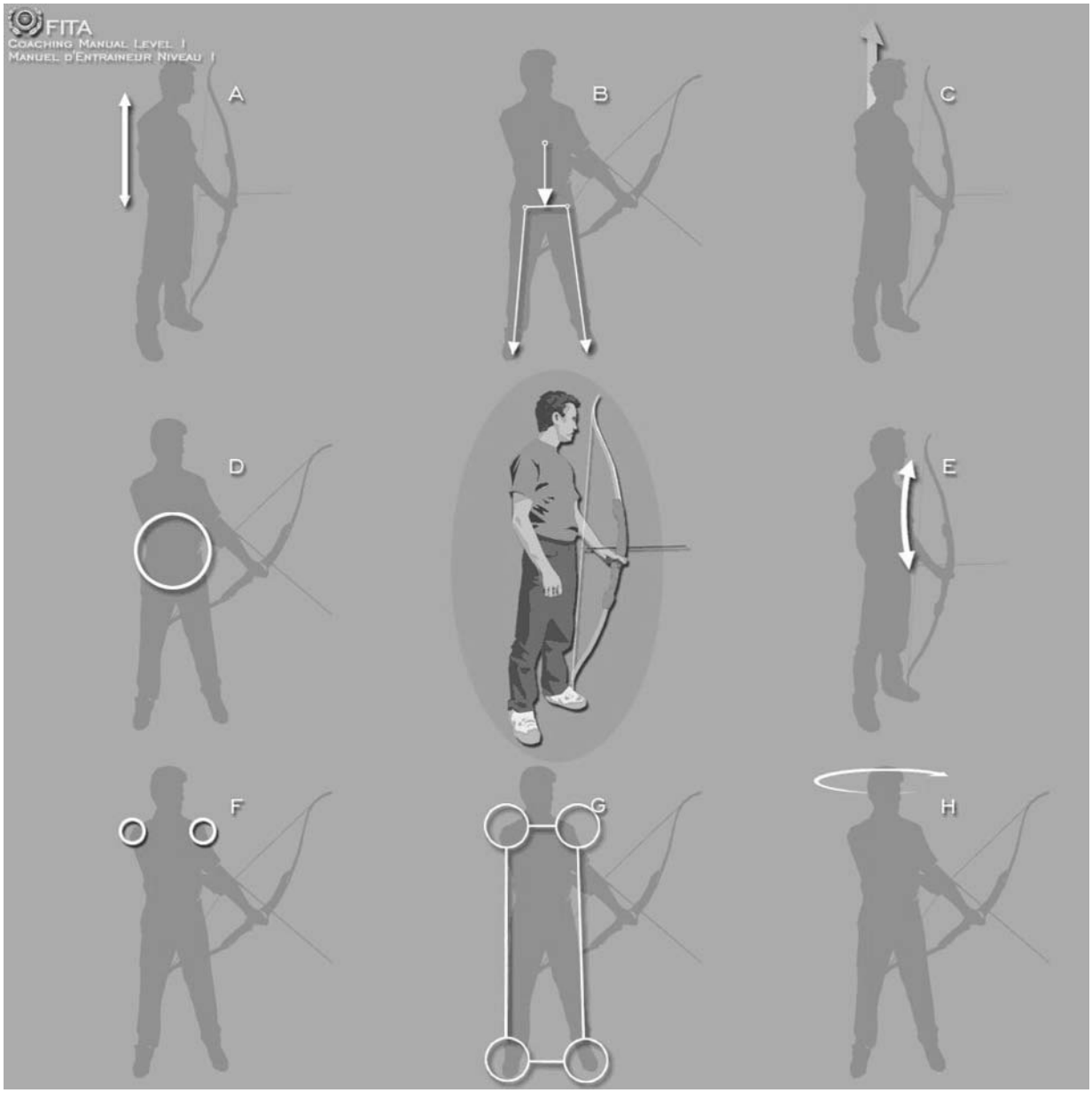
- Rationale: The bow hand position requires very little muscle contraction promoting relaxation. The use of a sling is not recommended dur ing the first sessions. It only draws the archer's attention on its use rather than the essential skills being taught at this stage. The more relaxed the archer is, the better he/she can perceive, and is less likely to produce a counter axis pressure on the bow.

7.1.2.4. Body Pre-setting.

- Type: Preliminary action
- Objective: Provide an identical, stable foundation permitting a similar repetition of upper body actions, as well as optimal general balance.
  It should also allow re-positioning the aiming eye at the same stable spot in the space. We can imagine the aiming eye at the top of a pyramid (we call it "Big pyramid, since to avoid confusion with the "Top pyramid" that will be introduced later).
- Form: While gripping the string and the bow (see the 2 previous steps), most of the archers are bent over. To move from a bent position to an upright one, that will be a good base to engage the execution process of the shot, there are several alternatives. Below are some of them:



Bow elbow pointed out = good string clearance



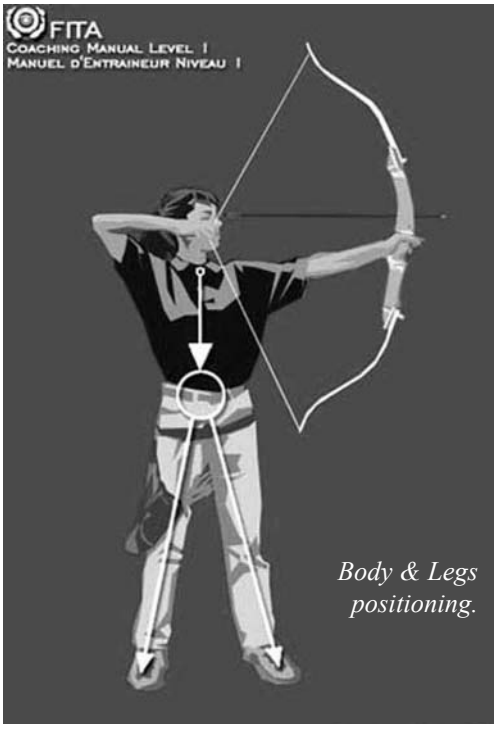
<u>Body presetting can include the following:</u>

A. Flat and straight back -
B. Body weight spread on both feet
C. Stretched up head
D: Low Center of Gravity and powerful belly
E. Flat chest - keep ribs down
F. Low shoulders
G. The entire body in the shooting plane: Shoulders above hips and feet
H. Head turn toward the target: nose and chin pointed to the target.

<u>a) Legs</u>

- Form: Up-side-down "V" symmetrical to the vertical axis going through the summit. Weight is placed equally on both feet.
- Rationale: The body weight is approximately distributed equally on both legs. Because body weight is slightly forward (toward toes), the front/back swaying is reduced. As shown in the above illustration, the string leg participates in the production of the push while the bow leg contributes to the pull. In reality, the two efforts cancel each other at the waist leaving only a slight abduction and a little down ward pressure, providing a solid

foundation for upper body work and a good stability. For the shooting process, the pelvis is usually "tilted" (flat lower back), thus only the upper body requires positioning.



Body & Legs positioning.

b) The Upper Body

- Type: Preliminary action
- Objective: Initially the torso, shoulder, and head are positioned close to their final position.
- Form: Turn or tilt the pelvis backwards (flat lower back), the spine is stretched up with the shoulders in the same plane as the hips. The shoulders are lowered and chest is flattened. A slight stretching in the trapezius is often felt. Turn head toward the target (whilst maintaining the stretching up action) until nose being directed toward the target.
- Rationale: Stretching-up the head and spine assures an erect vertical stance. Tilting the pelvis, flattening the chest and the lowering the shoulders lower the centre of gravity, making the body more stable; furthermore it transfers energy from the upper body to the lower body, making the archer more relaxed. Shoulders and the head are close to their final position, thus minimising movement during the draw.

7.1.2.5. Raising the bow.

- Type: Preliminary action
- Objective: Perform the preliminary movements with as little unnecessary motion and initial positioning disruption as possible. This initial positioning must allow for an effective draw.
- Form: Synchronised rising of the two hands towards the target until the bow arm is outstretched.

Raising the bow.

Throughout the process long:

- the bow shoulder must stay as low as possible;
- the upper body (shoulders, chest and centre of gravity) maintain their lowered position;
- the arrow must be moved up in the shooting plane;
- the head and spine are still extended.
- the pelvis remains tilted (if this position is chosen).

Toward the end of the raising:
- both hands are moved up at the same level;
- the arrow is parallel to the ground.

At the end of the raising:
- the arrow is at the nose/eyes level;
- the string shoulder is lower than the arrow axis;
- the string wrist is in line with the string forearm.
- a slight backward inclination of the torso toward the string foot is acceptable, but a straight body is recommended.

- Rationale: Simplicity of the movement is easy to repeat. It is a safe pre-position to the draw, even if an arrow slides out from the beginner's fingers. The elements already in place are hardly disturbed, and are finalised following the action. The forces exerted on the upper limbs facilitate the low positioning of the shoulders. The body's inclination toward the string foot counter balances the weight of the bow moves the archer's centre of gravity towards the target (the use of bows with light mass weight will reduce this inclination).

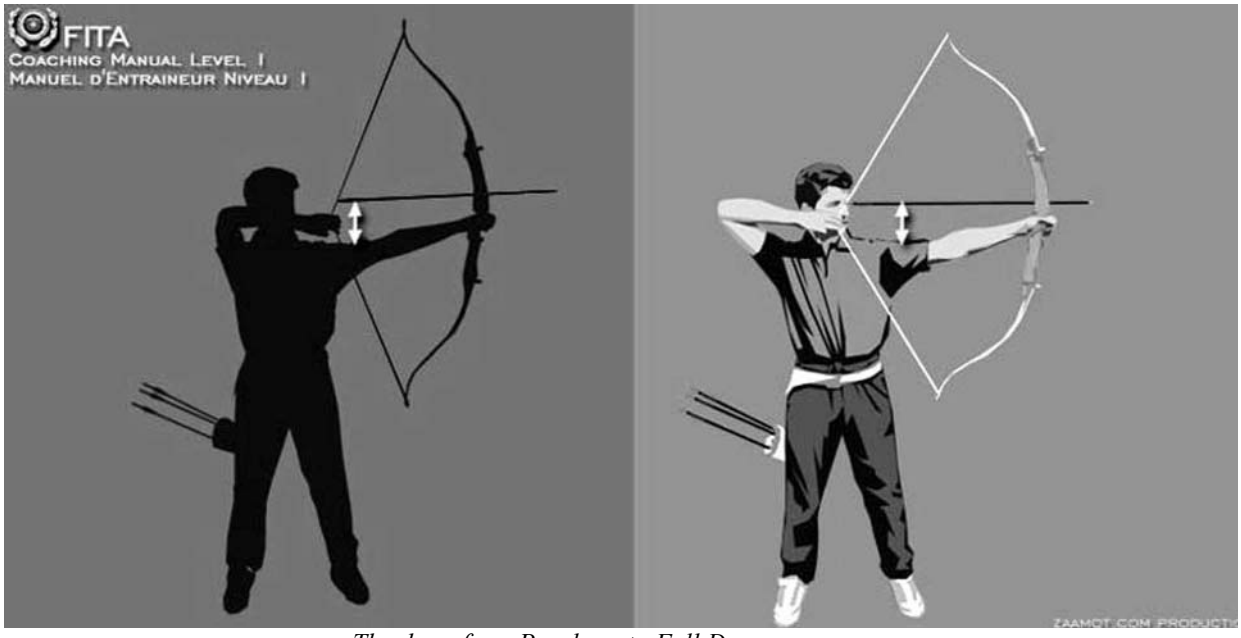
7.1.2.6. Pre-Draw:

A large number archers have a short stop at the end of the bow raising, we called this stop "Pre-Draw".

- Type: Preliminary action
- Objective: This step allows to refine the pre-setting of the arrow in the shooting plane, as well as some parts of the upper body. Hence it refines the pre-position of the shoulders and blades, but also head, chest, body verticality, height of the bow, …
- Form: No visible change to the "end of rising" described above.

7.1.2.7. Draw.

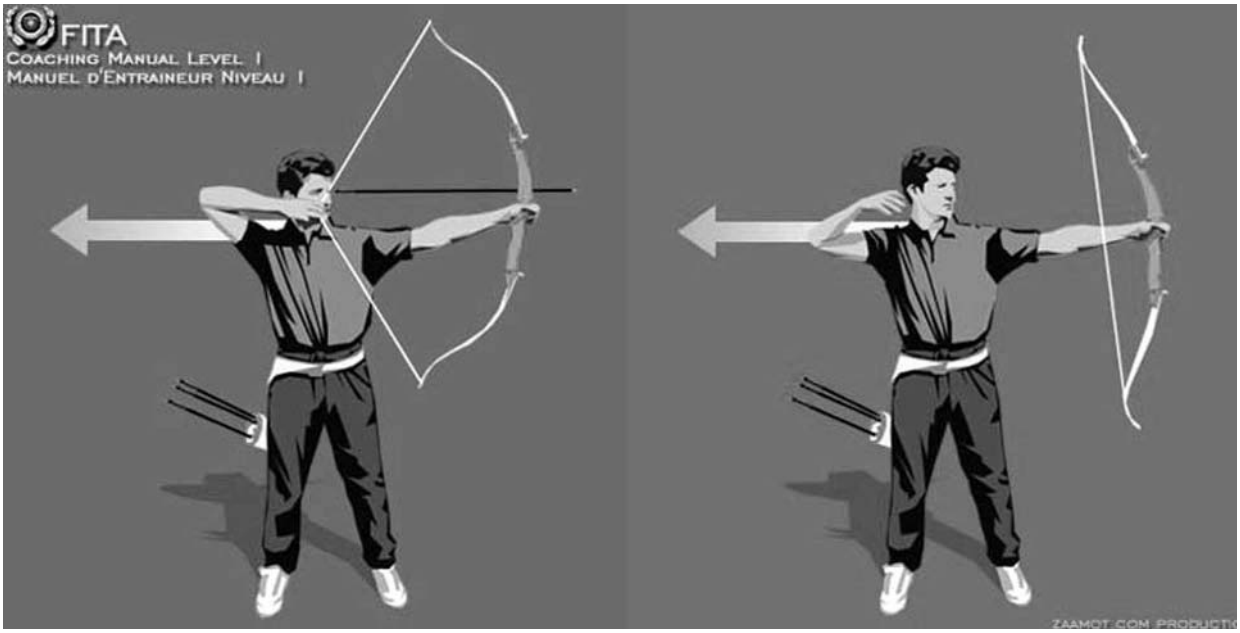
- Type: Force generating movements.
- Objective: Draw the bow without disturbing the pre-set position achieved through the preliminary elements. This draw action lasts until after the shot.
- Form: Always stay in control. Momentum movements are minimal, or non-existent. Desired movements diminish in speed as they near the face, but do not stop! The torso is almost immobile. If no pre-draw has been achieved, only a slight rotation of the chest exists, leading the shoulders from the shooting plane. The body is vertical or remains at a slight incli nation. The shoulders remain lowered.



The draw from Pre-draw to Full Draw.

The head remains in place and extended up; it should not move toward the string during the last few centimetres of drawing. The arrow always remains parallel to the ground. The string moves straight to the face within the shooting plane.

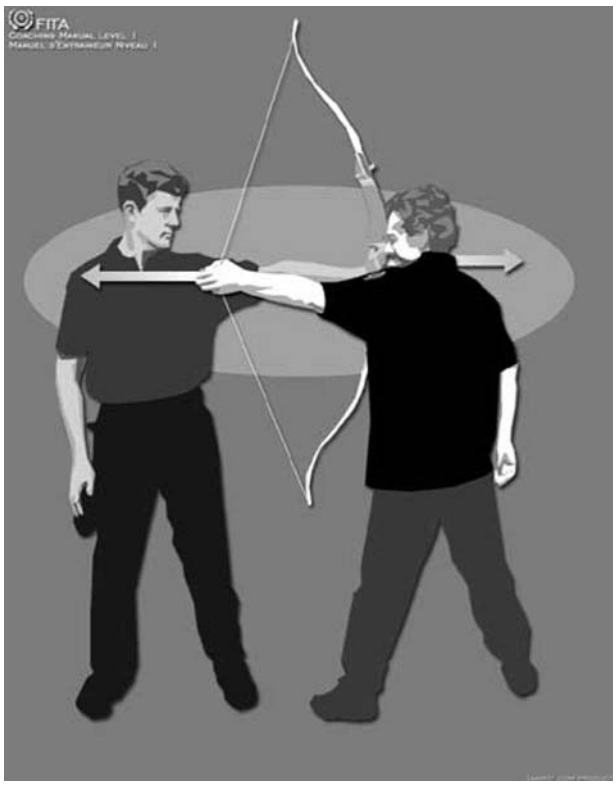
control to be maintained. Because the beginning of the draw is faster, the archer saves energy.



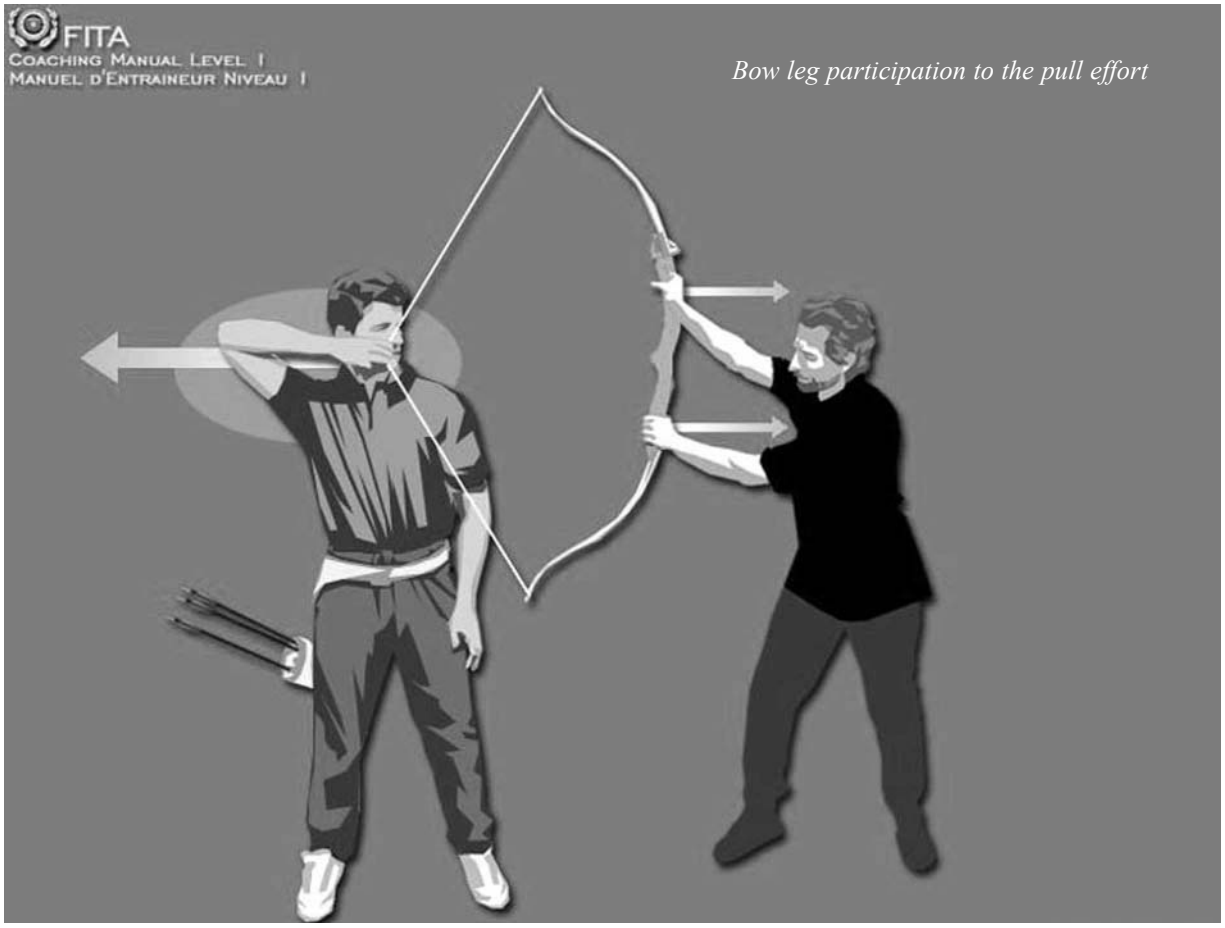
The continuous draw activity starts once the bow is raised, and ends when the arrow is flying.

A balance between the production of traction and repulsion (pull & push) forces must be introduced during the draw. As the following illustration demonstrates, the pull and push efforts are supported by the legs.

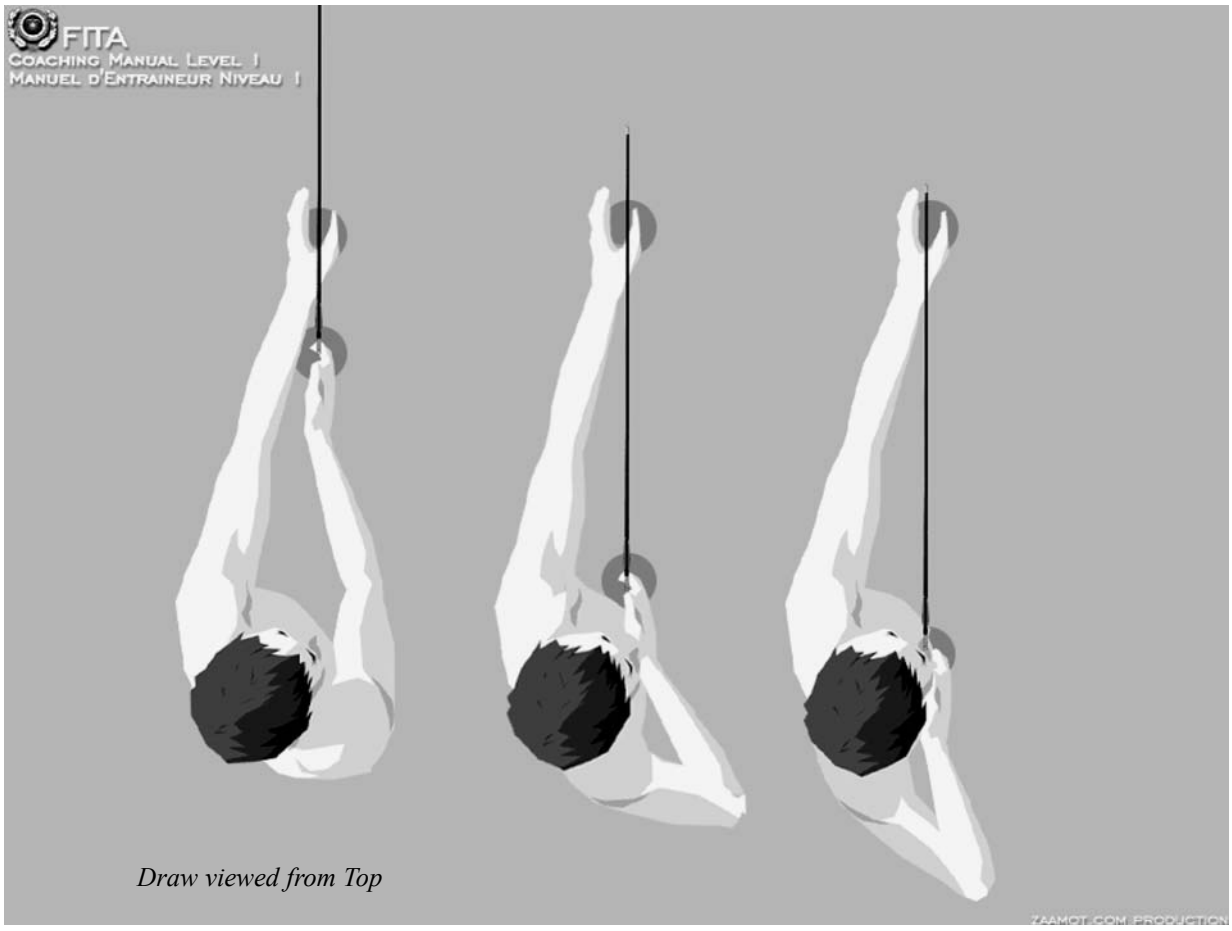
- Rationale: Easy to duplicate because the foundation is hardly disturbed and the movement is simple, control is easily achieved. Striving for symmetry will avoid the balance being upset. The production of effort is not centralised, but dispersed. It facilitates achieving symmetry, reduces local fatigue effects, and minimises the risk of injury. The major muscles are used to generate this production. Full drawing effort is attained as soon as the speed of the draw decreases on approaching the face, allowing the



String leg participation to the push effort.



Bow leg participation to the pull effort



Draw viewed from Top

7.1.2.8. Facial reference.

The name of this element may sound new, but the former word "anchor" was inappropriate because anchor means something static, whilst shooting a bow is a continuous "movement" (opening); furthermore in the straight line aiming method, there is no "anchor". Currently several titles are considered, among them: "Rear sight position", "Reference point", …They all refer to the spatial positioning of the arrow's nock with the aiming eye.

- Type: Preliminary action
- Objective: Repeat, with accuracy and simplicity, the orientation of the arrow to the aiming eye.
- Forms: There are three geometrical forms generated by the various facial marks: straight line, triangle and quadrilateral.

a) Straight line *(The simplest form - recommended for the first sessions).*
Aiming along the shaft of the arrow. At full draw, the shaft is on the aiming axis (line from the eye to the target), with the nock at about 2.5 cm in front of the aiming eye. To allow a comfortable aiming, the string fingers should grip the string two to three fingers space below the nock (four to 5 cm).

- Rationale: Simplify three actions to be learned:
  - Accurate positioning of the arrow nock (touching the face area of the traditional anchor);
  - Control of aiming eye position (string alignment);
  - Aiming.

Only one action remains, a simple visual alignment. This allows the archer to:

- be consistent with ease and precision, thus obtaining encouraging results;
- better understand the movement that begins with the draw and concludes after the propulsion of the arrow, reducing the temptation to stop between drawing and aiming.

This form, called "Apache" or "shaft aiming," achieves satisfactory results with archers when the target is at a 10 m distance. Depending on body size, and bow tension used, this method is used at distances to 20 m. When dealing with small children, it is sometimes necessary to choose shorter distances:

* 8 m for 11 to 13 years old;
* 6 m for 8 to 10 years old;
* or to use the triangle method (see below) for the youngest, to increase the arrow ballistic.

With the shaft aiming method, any difference of draw, or any slight creeping has a lower effect than in the triangle method (point aiming method).

b) Triangle *(The intermediate and less accurate form).*
The "triangle" is a simpler geometrical design than the "quadrilateral." However, a simpler geometrical design does not mean easier to repeat and learn. This form is the most difficult, (and less accurate) form to master in archery. The arrow is positioned by two reference points:
- arrow point, by visual placement on the target;
- arrow nock, through contact of the string hand on the face.

In the Straight Line Aiming Method the arrow is visually positioned while the aiming eye position is ensured.

To ensure the triangle reproduction, the archer has to:

- maintain a constant draw;
- place his/her eye by string alignment.

The archer's string fingers are at a constant distance from the nock. The fingers are usually just below the nock, and are always placed at the same spot on the archer's face, for example the tip of the forefinger touching the corner of the lips with the its top laying just under the cheek bone.

- Rationale:

  This method highlights all the difficulties, and pleasures, of archery. The difficulty with this method is that we aim with the arrow point which is:

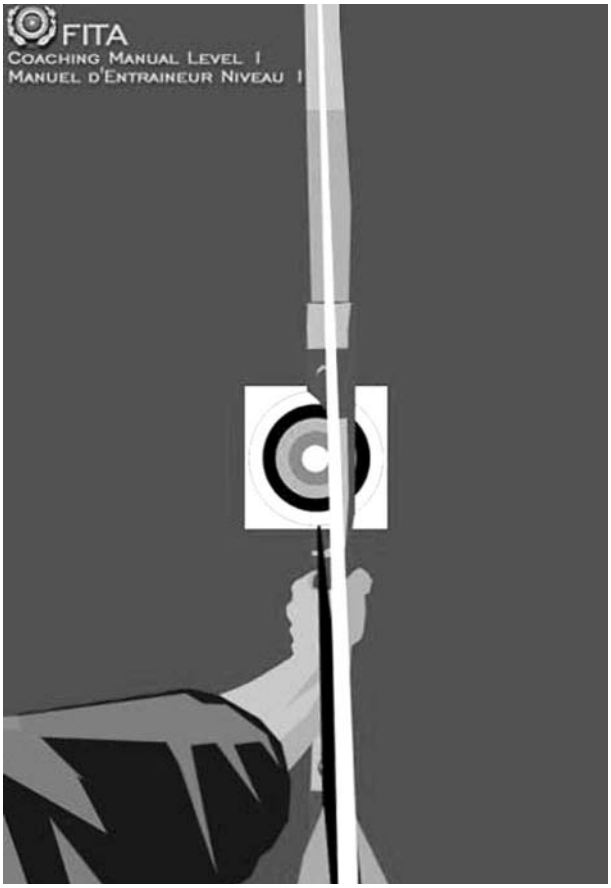
  - quite large, making an inaccurate aiming mark;
  - not as stable as a fixed sight pin - especially for a beginner archer.

  It is also difficult to get a constant string-finger mark on the jaw. However, it is of practical and teaching interest since it is similar to the original archery form. It is important to teach it to archers because it could be the kind of archery he/she will enjoy. This form is usually taught after the straight-line, but before the use of the quadrilateral. The archer then discovers the ballistic effects of an arrow's trajectory and the importance of reproducing the nock position and aligning the bow string. Once these technical elements have been learned, the quadrilateral form can be considered.

c) Quadrilateral *(The most common and accurate form)*.

The arrow is positioned by two reference points:

- the arrow point, by visual placement of a sight on the target. Hence sight should be introduced when teaching this method;
- the arrow nock, through tactile placement of the string hand on the face.



String alignment is required with the triangle (and quadrilateral) method.

Facial marks for the use of the triangle aiming method.

Furthermore, to ensure the repetition of the quadrilateral, the archer must maintain:
- the bow in the vertical plane, or constantly canted the same amount;
- maintain a constant draw;
- place the eye by string alignment.

Realise how tough it is for the archer to repeat all these tasks with consistency, and you will understand why we do not suggest teaching this methods to the novices during the first sessions! The "cigarette" string grip type, also entitled "Mediterranean" string grip, is the most common with the method. The forefinger is just above the nock, while the middle finger and the ring finger are below. Usually the string hand is below the lower maxilla (under jaw), and the string in contact with the middle, or beside, the chin and the nose.

Linking the three form of facial marks in an entry level program.

We have just covered 3 forms related to the 3 types of facial marks existing in target archery. Since the most accurate one (quadrilateral) is not the simplest one to learn and teach, we can think as follows.

Question #1: What is more simple form than a quadrilateral form (with 4 sides and 4 angles)?
Answer #1: A triangle (with 3 sides and 3 angles).
Question #2: What is more simple form than triangle (with 3 sides and 3 angles)?
Answer #2: A simple straight line (no angle, just a line).

From there we can consider teaching archery from the simplest form (straight line) to the more complex one (quadrilateral), which is a logical education progression with obvious benefits.

Teaching from the simplest form has another advantage, since the novice will experiment at least two types of archery: without sight and with sight; allowing him/her to choose which type of archery he/she prefers.

Tips for linking the 3 methods:
* Teach the archer with the straight line method at a very short distance, something like as follow:
  - 10 meters for adults;
  - 8 meters for people under 14;
  - 6 meters for those under 11;
  - 4 meters for those under 8 years old.

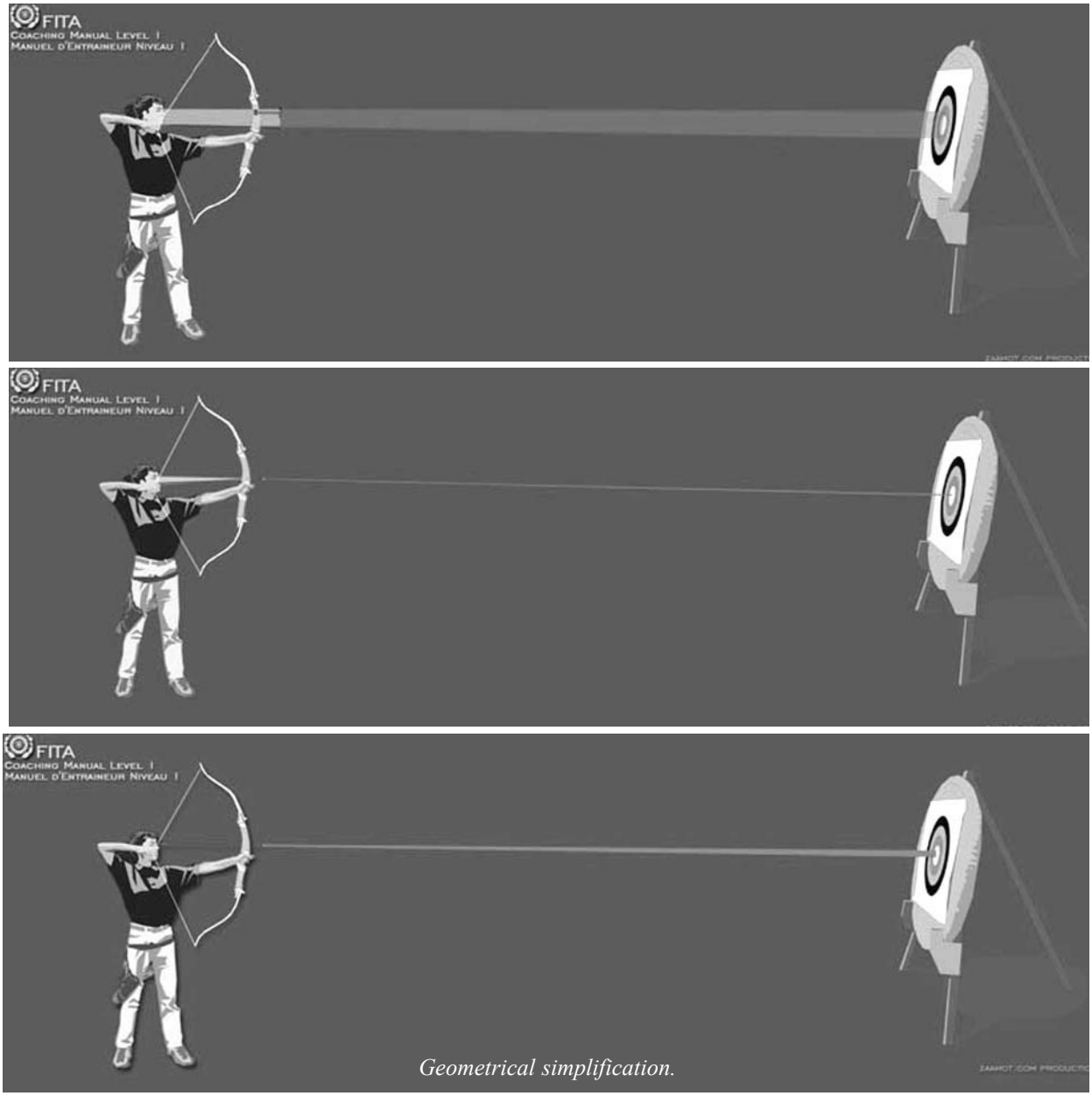
These shooting distances should be adapted to the physical size of the person; the age only reference is not enough.

The straight line method reduces the number of unusual marks such as: string against the chin, string-hand below the lower maxilla, cheek bone or against the jaw, ... allowing for the archer's attention to focus on learning the real fundamentals.

* When the archer's score improves (for example, 140 points for 18 arrows shot at an 80 cm target face), increase distance by 5 m, and so on until 30 m.
* Keep the straight line method for distances at which the archer can still aim somewhere in the top part of the target face. If the shooting distance requires the archer to aim above the face, switch to the triangle method.

* When the archer's scores improves by an average of 25 points at the 20 m or 25 m distance (pending the novice's skill), increase the shooting distance by 5 m, and still use the triangle method for at least one session, before teaching the quadrilateral method.

Facial marks for the use of the quadrilateral method, string alignment is also required.



Geometrical simplification.

* It is often during the learning of the quadrilateral method that the archer selects his/her own shooting method:

- returning to triangle (without sight);
- going on with quadrilateral (with sight).

7.1.2.9. Full draw (the hold)

- Type: Force generating movements
- Objective: body and equipment stability for effective aiming. Holding the bow at full draw without collapsing from the bow's weight.
- Form: the torso is immobile. The body is in an up-right position, the chest and shoulders exerting a constant pressure towards the ground while seeking to spread out the shoulders. Spine and head are erect. A balance must be found between the push and pull forces. These efforts are supported by the legs, causing a slight compression of the abdominal area. The constants are:

- the spacing between the arrow and the bow shoulder, in the horizontal plane;

- the distance between the chin and bow shoulder;

- the height difference between the arrow and the bow shoulder;

- the height of the shoulders;

- the bow's vertical position;

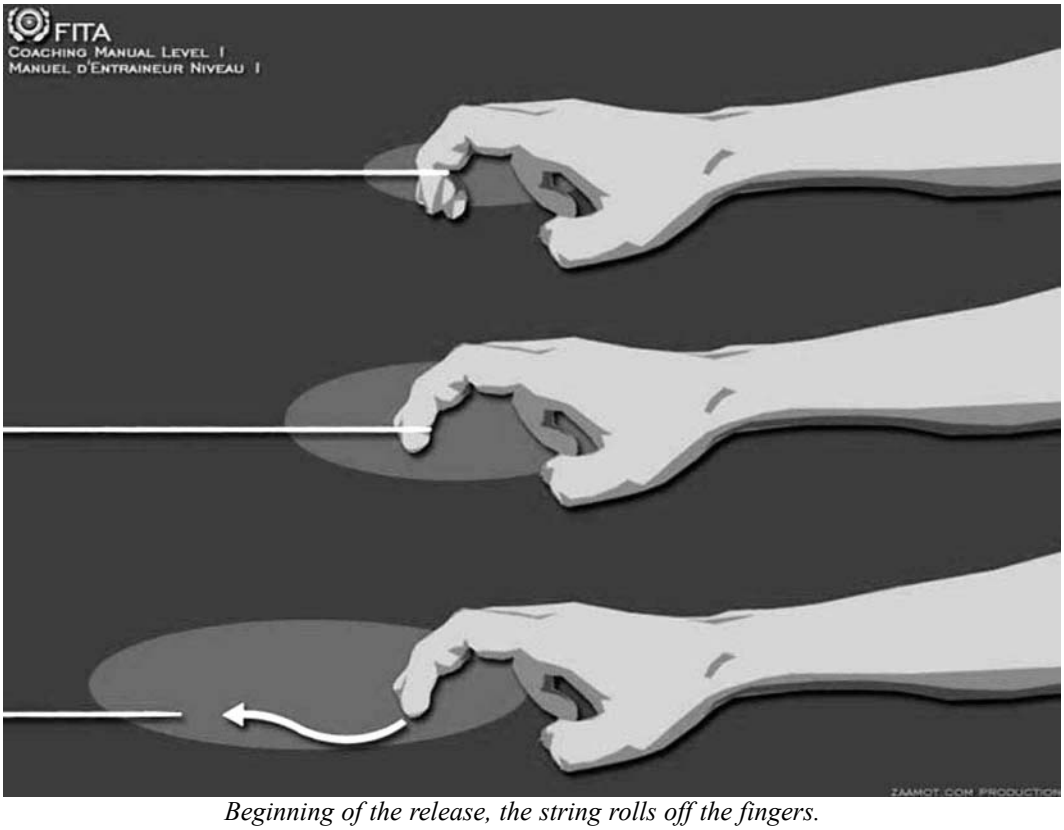
- the torso, and the head.

● Rationale: Reduces the spring effect of the bow, may cause the archer to collapse. Draws-in the chest, facilitating string displacement. Avoids asymmetrical form. The production effort is not centralised, but dispersed, facilitating symmetrical form, reduce local fatigue effects, and minimises the risk of injury. Moreover, major muscles are trained to generate this production. Stretching the spine helping to stay erect and vertical. Flattening the chest and lowering the shoulders lower the center of gravity, making the body more stable. The combination of the above actions contributes to maintaining the draw length and helps to keep the head, and the aiming eye at a constant level. A weak muscle is likely to collapse under the spring effect. This is why muscle tone is necessary.

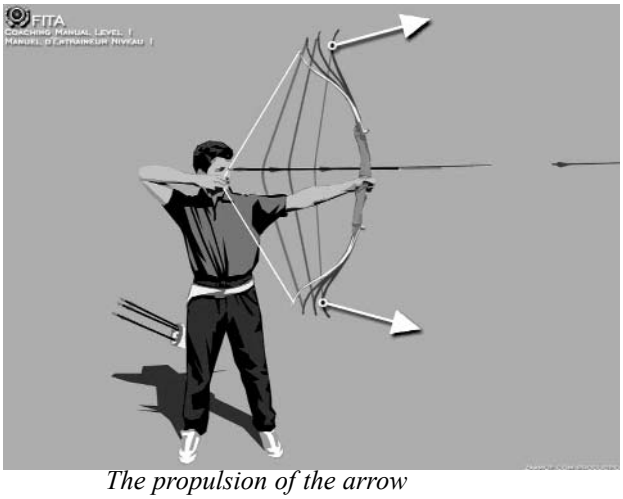
7.1.2.10. Critical moment (release), and the follow-through

- Type: Critical moment
- Element : The release
- Objective: Continue all on-going activities, but release of the string.
- Form: The shot must take the observer by surprise, no telltale signs of the impending shot must be seen. The body, face and "gaze" remain impassive before, during, and slightly after the action. The string hand and arm follow the shoulder motion. The string hand stops at a vertical axis passing by and usual ly against the string ear. The area where the string hand ends is called the "back end." The string arm ends in the shoulders axis.

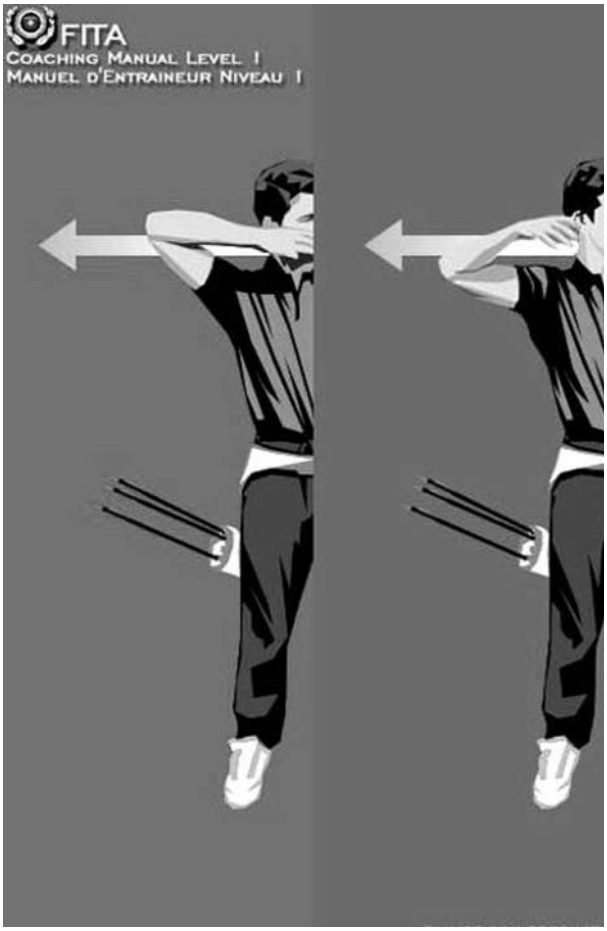
There are different release shapes, depending on the type of muscular action at full draw.

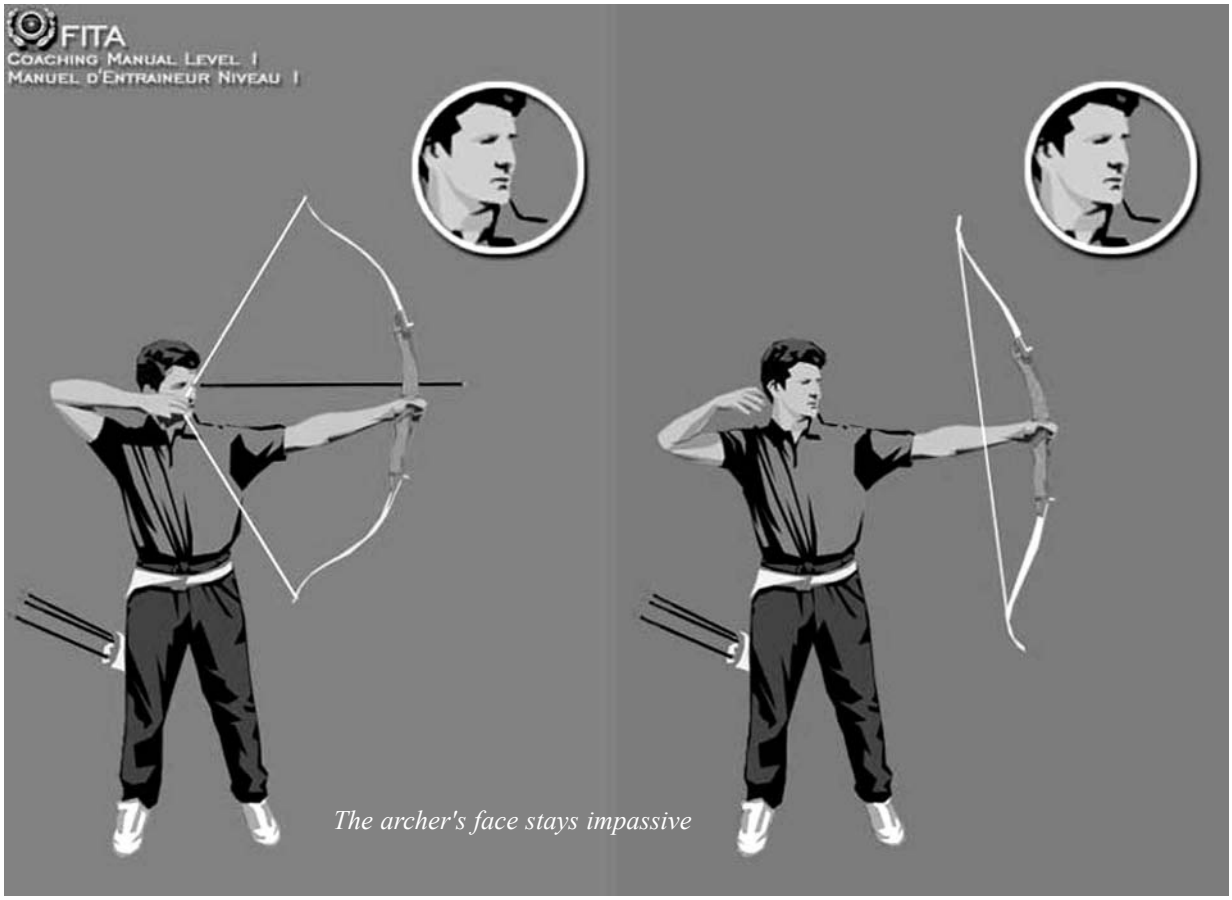


Beginning of the release, the string rolls off the fingers.



The propulsion of the arrow





The archer's face stays impassive

7.1.3. Breathing

When shooting, breathing control is considered important. Let's study breathing as it interacts with the shooting process.

Most of the archers inhale while introducing a motion, for example for:

- moving to the shooting line;
- taking an arrow from the quiver;
- gripping the string/bow;
- raising the bow

Accurate tasks are characterised by the holding of a breath, for a few seconds, then followed immediately with an exhale. For example, the archer:

- holds, then exhales while placing feet on shooting line;
- holds, then exhales while loading arrow on the bow/string;
- holds, then exhales while placing string-finger and bow-hand;
- exhales partly while pulling the bow by natural compression of the thorax.

Hence the archer's breathing sequence could be something like:

- Breathe in while moving to the shooting line;
- Breathe out while placing feet on shooting line;
- Breathe in while taking an arrow from the quiver;
- Breathe out while loading arrow on the bow/string;
- Breathe in while gripping the string/bow;
- Breathe out while placing string-finger and bow-hand;
- Breathe in while raising the bow;
- Breathe out slightly while drawing;
- Hold the breath while aiming and releasing;
- Breathe out once the shot is over.

Continuity in breathing during the release

The importance of the continuity of breathing just before, during, the release and the follow-through cannot be overemphasised. As we know the archer should change as little as possible his/her activities for releasing; ideally only the muscular intensity of fingers flexors should decrease. Maintaining the same breathing attitude from aiming to the end of the follow-through helps the perfect pursuit of all the archer's activities . Especially the archer's orientation adjustments, while the arrow is being "guided" by the string and the bow.

Most of the archers hold a breath during aiming until approximately one second after release. If the archer exhales just before, or during the release, it should be considered as a change in the archer; probably a change in mental activity.

Such a change should be avoided.

Controlling breathing

Do not be surprised if during the first sessions on breathing sequence your archers face the following difficulties:

- observing ventilation without modifying it;
- concentrating on ventilation and the steps of the shooting process at the same time.

Often the beginner archer says: "My shots are better when I leave my breathing alone." If this happens, do not alarmed, if it were easy it would not be a skill to be taught. Repeated observation, awareness, concentration, and feeling of the breathing movements ensure the skill is customised in the shooting process.

Chapter # 8

Tips for your demonstration organisation and presentation

People learn by observation, examples, knowledge transfer, advice emphasised by mimicking, trial and error and repetition. Observation is an effective method of learning, and is the one used first. Demonstration allows the archer to observe. However, when demonstrating exactly what to do use the same equipment as the archers, and respect the archery safety regulations. Observation implies both seeing and hearing. For it to be effective, the archers must be able to see what is being demonstrated and hear what is being said.

8.1. Prior knowledge

Let the archers express their knowledge about the skill being emphasised during the practice session. Allow questions before a demonstration. Do not be supprised at the knowledge the beginners have. Beginner archers have perceptions of the sport or even prior experience. Giving the archer the opportunity to express his/her perceptions has advantages:

- if incorrect, the oportunity to correct them, to better express your ideas, and teach with greater efficiency;
- if incomplete, fill in the missing blanks;
- archers anticipate, giving them motivation and avoiding the monotomy of a single speaker;
- you may hear certain comments that present the exercise more efficiently;
- if they are correct, the advantages are the same as above and the work has already been done by others!

No method is perfect. This one is no exception. Some archers may monopolise the conversation too often and/or talk too long. Limit comments to the subjects discussed. Use this educational tool because the dynamics of analysis and exchange outweigh the difficulties.

8.2. Teaching aids

Below are some suggestions for demonstrations and practice:
The attention of beginner archers is often distracted by the release of the demonstartor's arrow. Furthermore, some archers often judge credibility based on where the arrow hits the target. We suggest you demonstrate:

Shooting simulation with an elatsic band, toward an assistant.

- by either shooting without target faces, into an emty butt, or directly into a net;
- by either choosing not to shoot any arrows, using dry-shot mechanisms, or an elastic band;
- by looking at the archers during the demonstration to see if they are observing the essintial points;
- by hiding some parts of the demonstrator's body not involved in the key point of the demonstration.

Visual focus on a key element.

Since teaching aids help archers better understand and feel future performance, it is important that they be similar as possible tro those used during pratice. Moreover, these aids can not differ too greatly from the actual shooting context so that too much time is not wasted on progressively reconstructing it. Consistent with this idea, let's take the exercise on push effort as an example. to understand the string leg's participation we could create the following situations by using three different teaching aids. Even if they are similar they can be perceived differently by the archer:

- The archer is being pushed by an individual, forcing the archer to counter with his/her string leg, demonstrate how this applies to archery.

Human assistance only "I have to resist when I am being pushed".

- An individual pushes on the archer's bow forcing the archer to resist with his/her string leg. Demonstrate that the string leg would act in a similar fashion if the bow was being used.

Human and riser assistance " I have to resist when my bow pushes me".

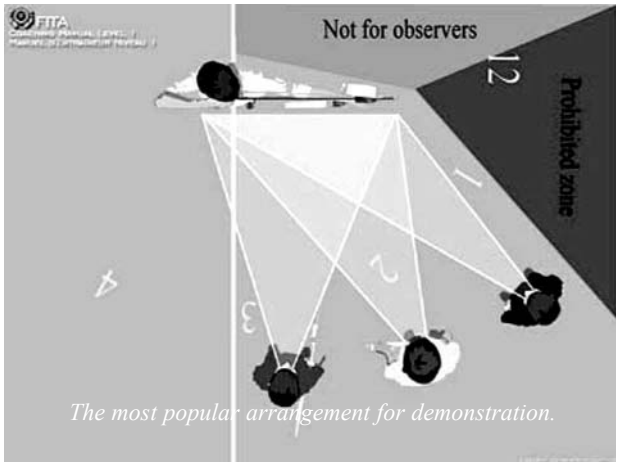
- When the archer's bow is drawn, the bow pushes against the archer, forcing the archer to counter with his/her string leg.

Human and bow assistance.
"When my bow is drawn, I have to resist".

Notice how the different teaching aids that are above can help perceive situations differently. Refer to "Practice sessions ideas" in Chapter # 10 for more examples of teaching aids.

8.3. Effective archer viewing arrangement

For safety reasons, prohibit archers from walking beyond the shooting line when someone is in the process of shooting. However, we break this rule during demonstrations because the "3/4 front" view (or 2 o'clock - see illustration below) is the best observation angle.



The most popular arrangement for demonstration.

This is why demonstrations are done at short distances from the target, 3m to 10m; so we eliminate the risk to the archers in the 3/4 front view and give the instructor the oportunity to shoot while watching if students are paying attention to the essential point of the exercise.

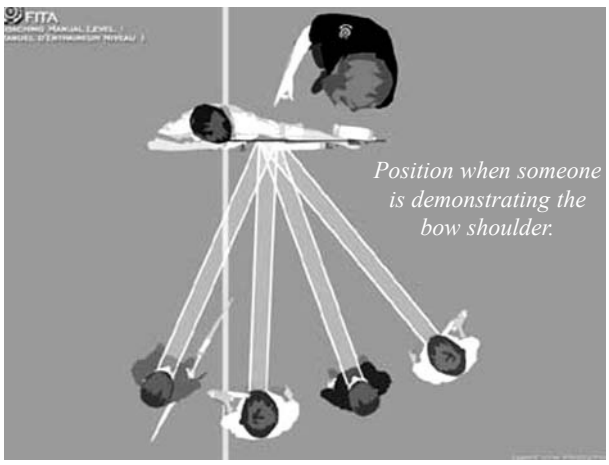
NOTE
Observation from 10 or 11 o'clock is not safe since students are on the arrow side of the bow and they cannot see very well.

8.4.Instructions (During a demonstration)

Instructions are essential to the learning process and group activities:

- Speak loudly enough to be heard by everyone, and use understandable language;
- use positive language, explaining what should be done (not avoided), what should be felt,....
- Use a consistent wording (same wording as in the archers manual - if any), so the archers can consult it later to become familiar with the terminology;
- only provide relevant instructions, avoid those not related to the archer's needs;
- the most productive instructions go with expressive gesture. When the archer can feel the action, and note the results, he/she is more motivated to do it better;
- from the first practice session, learn each archer's name, instructions are received better.

If the demonstration is performed by someone else, be in one of the following illustrated positions to point out main areas of interest, or those deserving special attention, withou blocking the archers' view:

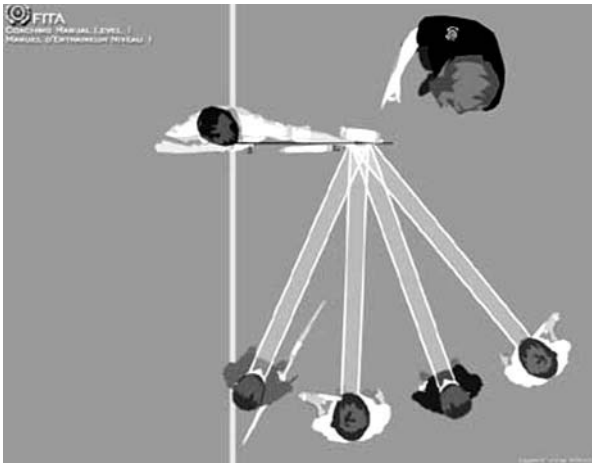


Position when someone is demonstrating the bow shoulder.

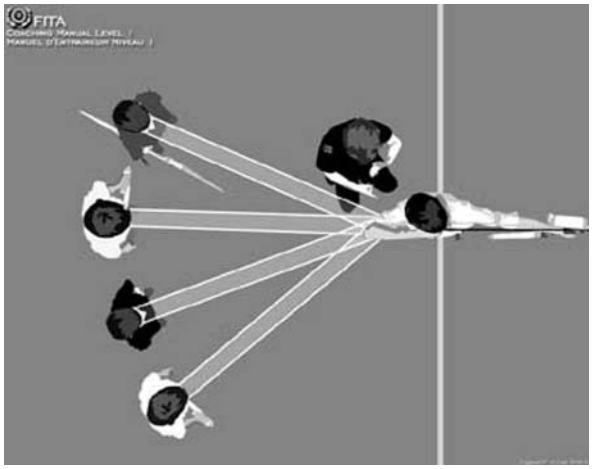
If you perform the demonstration, instructions are given before, during, and after the demonstration.

Position when someone is demonstrating string hand and face.

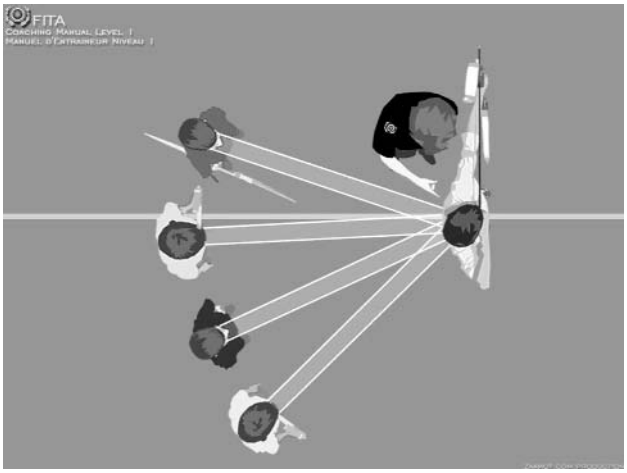
Position when someone is demonstrating alignment.



Position when someone is demonstrating bow hand.



Position when someone is demonstrating alignment.



Position for observing the work of the back.

FITA Publications

Generic Information Publications:

FITA Information.
This newsletter is published in both FITA official languages (French and English) when enough information is available. FITA information is available from the FITA Website at:
Http://www.archery.org/fita_publications/fita_ publications.html

FITA Arrow Magazine.
This newsletter provides presentations and reports on some FITA activities and Member Associations. It is in English only and is also available from:
Http://www.archery.org/fita_publications/fita_ publications.html

FITA Code of Ethics.
Is available from the FITA Website at:
Http://www.archery.org/fita_publications/fita_ code_of_ethics.pdf

The Target /La Cible
Published once a year in both FITA Official Languages, this is illustrated and nice looking magazine and reports on the FITA activities of the year.

Technical Publications:

FITA Organisers Manuals.
There are three manuals intending to help organisers do their jobs. They do not replace the FITA rulebook; they do not claim to be complete. In case of doubt refer to the rulebook and current interpretations.

- Organisers Manual of the Outdoor Target Archery Championships - version 1.2
  is available from the FITA Website at:
  Http://www.archery.org/fita_publications/wc1_2.pdf

- Field Organisers Manual version 1.0
  is available from the FITA Website at:
  Http://www.archery.org/fita_publications/field_organisers.pdf

- Organisers Manual for the Olympic Games version 1997
  Is available from the FITA website at:
  Http://www.archery.org/fita_publications/olymgam.pdf

FITA Media Guide / Dossier de Presse FITA
Published in both FITA Official Languages, is available form the FITA Website at:
Http://www.archery.org/fita_publications/mediaguide_revised_2002 .pdf
Hard-copies of the Media Guide can also be ordered from the FITA Office. Just call 0041-21 614 3050

FITA Constitution and Rules / Constitution et Reglements de la FITA
Published in both Official languages after each FITA Congress (every second year), this book presents all the FITA regulations.
Http://www.archery.org/rule_book/rul_book.html

Judges Manual version 1.0
This document intends to help judges doing their jobs, it does not replace the FITA rulebook, and it does not claim to be complete. In case of doubt refer to the rulebook and the current interpretations.
Http://www.archery.org/fita_publications/judges_guidebook.pdf

FITA Judge Newsletter
It is a newsletter and an ongoing education tool as well for the judges. It is available from the FITA Website at:
Http://www.archery.org/fita_publications/fita_ publications.html

Chapter # 9

Tips for practice planning.

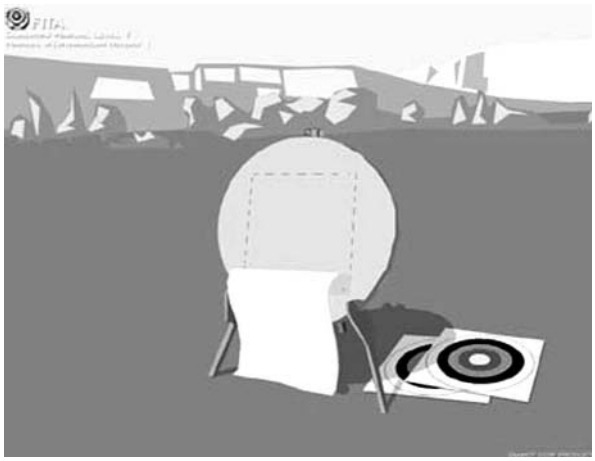
9.1. Tips for preparing the practice site.

Shooting distance

For the first practice sessions, the shooting distance ranges from 4m to 10m depending on the archer's age, current ability and task difficulty.

Target

Target faces are not used during the teaching period, only an arrow- stopping device. An exception is made for certain exercises dealing with aiming. An 80cm face, or a specific game face is used at the end of the session. Outline the target faces' shape before the practice session, and affix those needed for the first shots. Archers like to do this. If you do not plan on shooting at target faces from the first arrows, (see illustration below). Circle the target face location on the buttresses to facilitate repositioning. Avoid using staples and nails. Use large rivets or target pins fabricated out of heavy wire that are easy to pull out.



Prepared buttress.

Archers position on the shooting line.

Separate archers by giving them at least 80cm of space. Indoors, one target for every two archers offers good practice conditions. Three archers per target are adequate for outdoor practice. Place all left-handed archers on the right hand end of the line (as viewed from the rear) so that they face you. Stand around the middle of the shooting line. All shooting is done from the shooting line. The archers' feet must straddle the shooting line; their bodies must be over the shooting line.

Teaching tools.

It would be difficult to list all the usable archery teaching tools since their usefulness varies depending on the theme and teaching method used. However, always have the following tools close at hand:

- a mirror, to show archers their form during execution, or their position in comparison to the demonstration; and
- a bow strung with an elastic string to give the archers a chance to execute an action with greater ease. They could even release the string without harming the bow.

9.2. Tips for maximum effectiveness.

Shooting lines.

Promote shooting in one line to minimize the time allocated for practice. If several lines are needed, give some responsibility to those who are not shooting. For example, pair them off and ask one of them to hold the mirror so that the other can see his/her reflection, then change roles. Try not to organise two distinct lines since this would involve too much downtime between lines. If three lines are required, consider having another shooting time.

Equipment rotation.

Where equipment is limited, it can be shared with one or two others shooting at different times, forming line A, B and possibly C. Even though this situation is to be avoided, it happens. An example of this is when there are not enough arrows. Two archers alternate while using the same set of arrows. In this case, it's preferable for the shooter to retrieve the arrows, giving them the opportunity to see the arrow grouping first-hand, while allowing the other archer the chance to prepare to shoot. However, it's preferable for all the archers to shoot before retrieving the arrows. Equipment is passed to the other archer who then shoots. Then everyone goes to the targets together. This system avoids excessive downtime.

Range set up.

ing them down.

Shooting line movement.

Keep shooting line movement to a minimum. Try to regroup the exercises near the targets, and all shots at the designated distances. Lines marked on the ground guarantee easy, quick and safety conscious archer alignment. Mark a second line 3m to 5m behind the shooting line, creating a secure zone. Ask the archers to stay behind it when they have finished shooting.

Equipment moving.

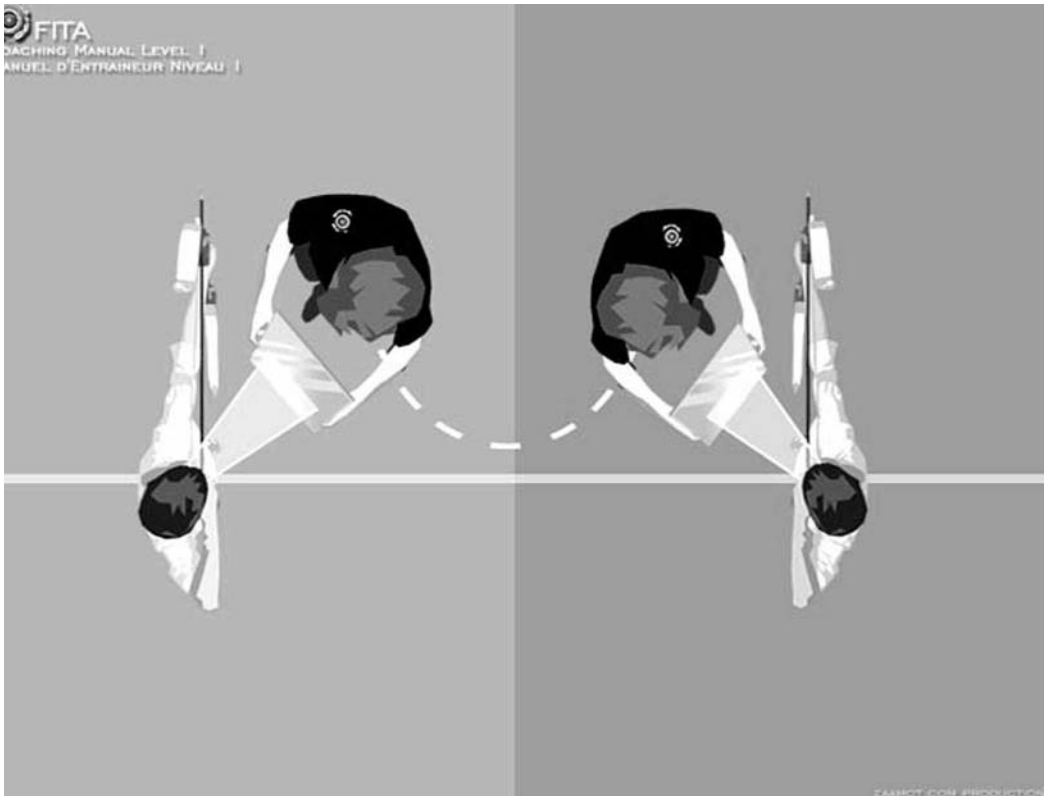
Bow stands are placed behind the shooting line. When shooting at a shorter distance than usual, ask the archers to lay their bows on the floor 3m behind them. The archer's bow is placed on a rack behind the shooting line or on the floor after finishing. Target faces should not be handled too often because of the time lost in putting them up and tak-

Archer groupings.

Groupings depend on the type of exercise introduced. There are, however, a few basic groupings:

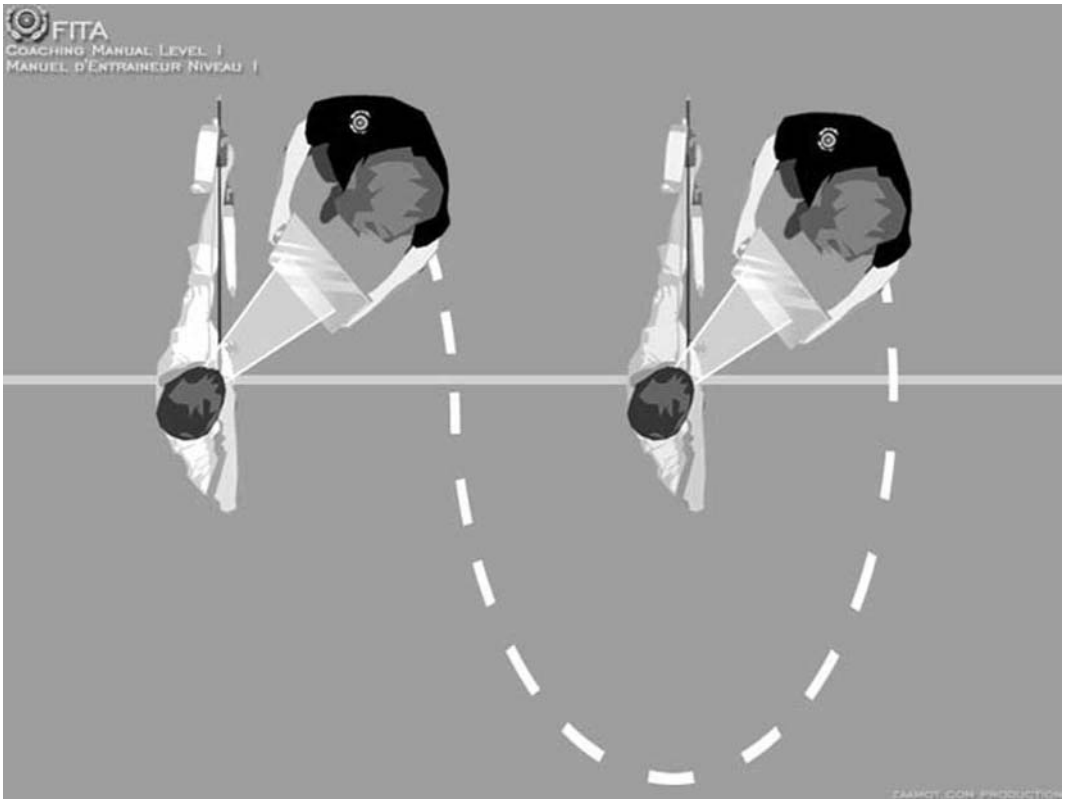
- by similar height, for exercises to be performed in pairs. The archers can work at their height, executing in their normal positions;
- by level of performance or development, for the archer exchanges to be at the same level, thus understandable for both of them.
- by age, if the two above criteria allow it;
- local social sensitivities should also be taken into consideration.

If using a portable mirror, work with the grouping illustrated below. It allows two archers to alternate. One archer shoots and arrow while watching in the mirror whilst the other gets ready to shoot.



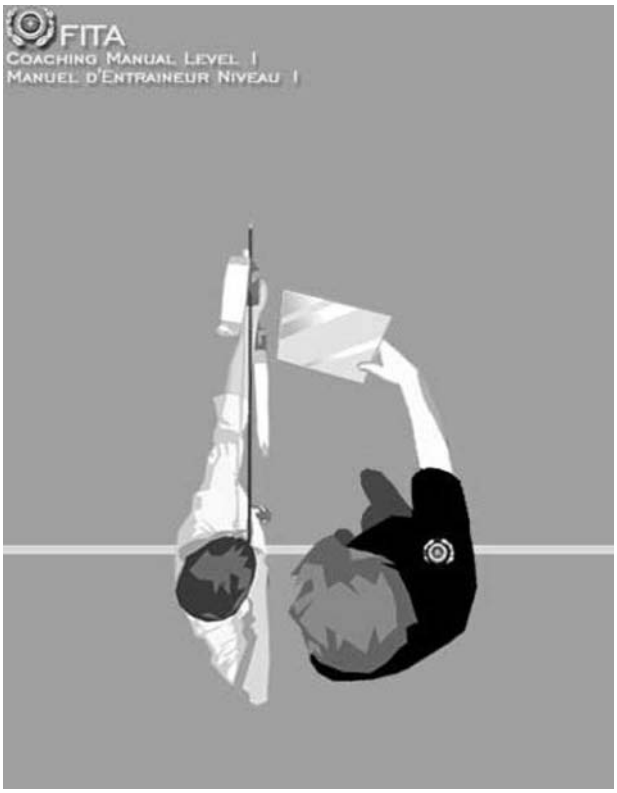
Mirrorwork with a left handed and right handed archer.

If grouping a left-hander with a right-hander is not possible, additional travel, as shown in the following illustration is required.



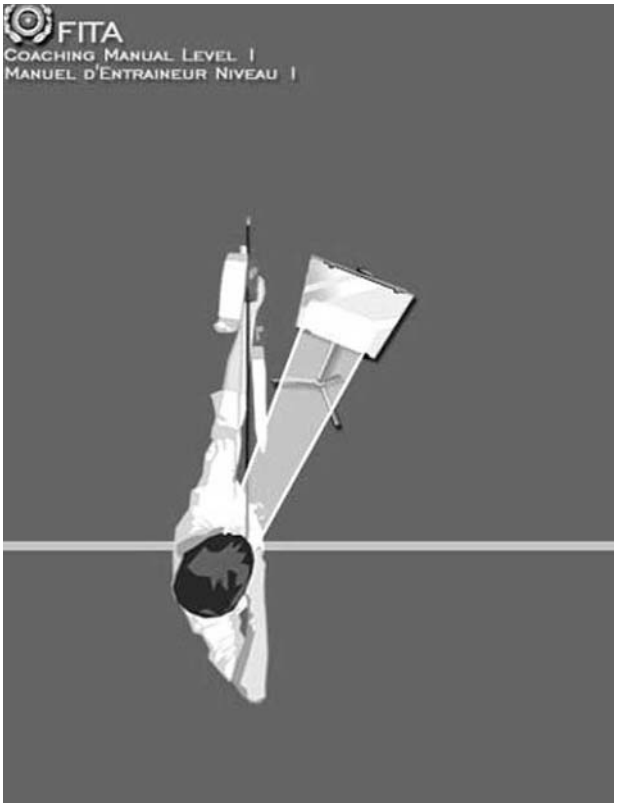
Mirror work with two right-handed archers.

How to observe and make the archer observe himself/herself, with a mirror is illustrated below.



Observe and make the archer observe themself with a mirror.

With a mirror on a stand the archer can observe themselves.



An archer working by himself with a mirror on a stand.

9.3. Tips for your verbal communication.

Why?

Verbal communication has various objectives:

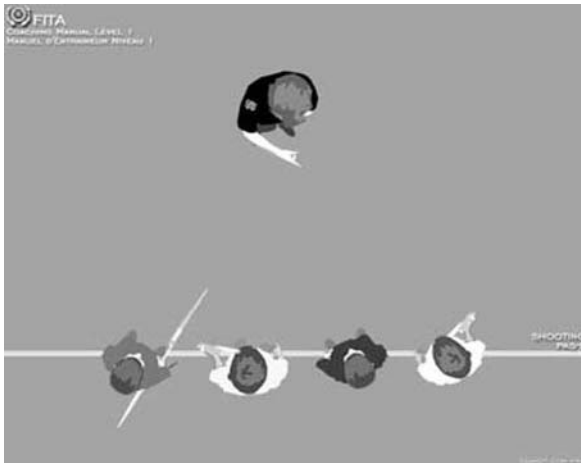
- giving group or individualised instructions about the on-going exercise, or the next one;
- giving individualised or group feedback to the last exercise, or the on-going one;
- regulating archer behaviour about discipline, and safety.

From where, when and how?

The periods to communicate verbally are: between ends just before or after shooting; during an end while shooting is being performed; going to and from the targets; and after the last end of shooting.

Before shooting.

Wait until the archers have returned from the targets. When they reached the shooting line and picked up their equipment, position yourself as



Position for instructing archers on the shooting line.

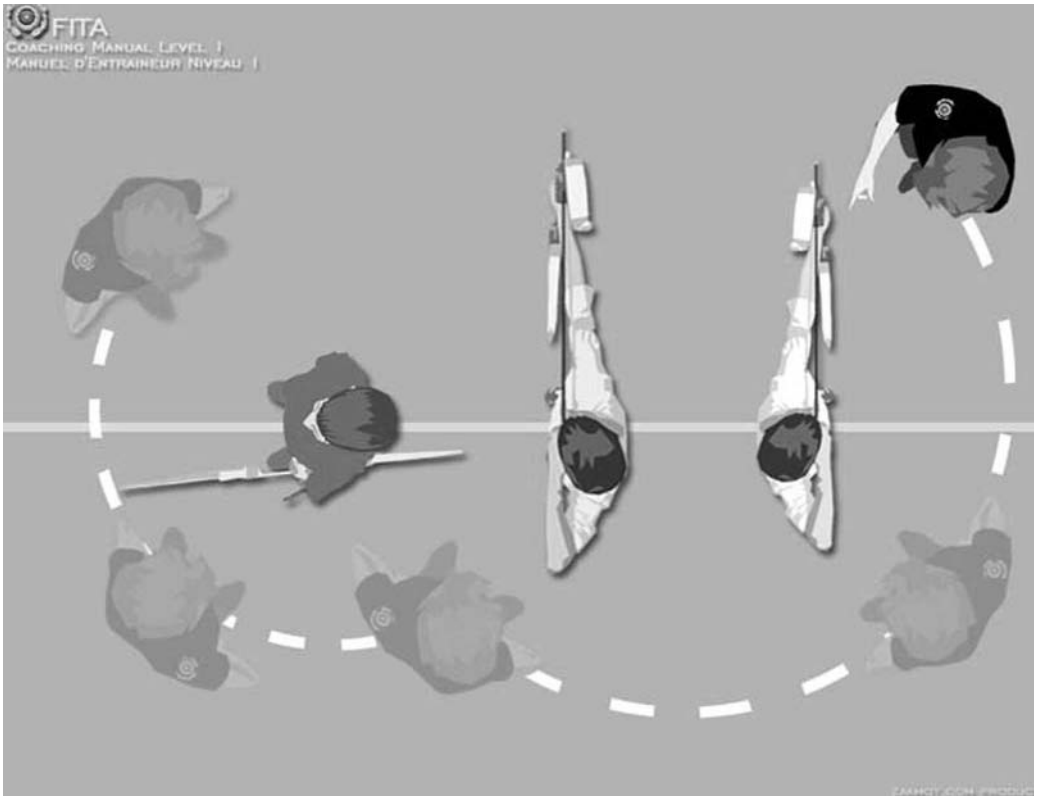
illustrated below.

Look into the eyes of as many archers as possible to keep their attention. If necessary, get the attention of the archers who are not paying attention by calling their names. This is the time and place for group instructions about the next shots. Following the instructions, while most archers are preparing themselves to shoot, step forward toward an archer and give more individualised instructions.

During shooting.

An obstructed view of what the archers are doing is essential to give good advice. This is why we recommend moving and teaching from the following illustrated locations.

By positioning yourself on the sides, you can observe right-handed and left-handed archers alternately and at a useful angle. This advice is only appropriate to standard situations. In some instances, such as during force alignment exercises, a back view would be preferable.



Observing positions during shooting.

From these locations, repeat or give more precise instructions by using key words. Avoid using long sentences. You could even give individualised or collective feedback on the quality of execution. Verbal communication becomes more effective when many archers are at rest, such as between two arrows.

By moving along the shooting line, approaching each archer in turn, more individualised observations can be made. This is the time to give specific instructions or feedback to archers in need.

After shooting.

This is the ideal time to give feedback because the archers remember what they just accomplished and benefit from additional information. Group feedback is more effective before they retrieve their arrows, while individualised feedback id more beneficial as the archer is leaving the shooting line.

Going to and from the targets

Since this phase is long, individualised instruction or feedback can be done. Take full advantage of these periods to give instructions to specific individuals, as this does not disrupt the others.

Summarise instructions just before shooting, and summarise feedback after shooting. Let the archers express their feelings about their execution and sensations. Afterwards, reinforce all positive comments and those relevant to understanding the skill to be developed, and add any key information that has not been mentioned.

If safety is at risk, intervene quickly. Without intervention, the quality of instructions, the attention of other archers, and the overall work group dynamics suffer. Keep cool; do not hesitate to keep those with unsatisfactory behaviour from shooting some ends. Use the rowdy ones for demonstrations.

9.4. Tips for your feedback and observation.

In archery, three types of feedback are used:

- Visual; direct or indirect (mirror or video), giving the archer the opportunity to visually compare his/her execution versus the one demonstrated.
- Verbal; relies on observations, and the archer's ability to comprehend instructions integrating them at the motor level. The archer thinks in terms of what was felt during the execution and what should have been felt based on the feedback. The practice of mimicking often accompanies verbal feedback;
- Proprioreceptive; Is made active by stimulation and is a sensory nerve ending receptive to such stimuli. This sense can be put to good use by the coach by using touch or very light pressure on a location they would like the archer to fully concentrate on. The feedback would then be much focussed to that particular location. It is used to make it easier for the athlete to experience either control points (at a level of sensation) or inaccuracy of execution of any movement.

Observation is required before any feedback is given. In the last section we studied some aspects of feedback; in this section we discuss observation as one of the most fundamental coaching skills for archery.

Goal.

If faults in execution occur, feedback must be used to teach the proper execution of the skill by making the archer understand how he/she should perform compared with how he/she is performing the skill now. How the archer is performing is not as important as how it should be performed, and what he/she is feeling.

Observation plan.

Using our knowledge of the skill and its key elements we can define observation by answering the following simple questions: What? How? From where? How much?

Observe what?

Observe the key elements of the skill being performed.

Observe how? Which observation strategies?

Go from the general to the specific, first paying attention to the entire sequence. Observe:

- overall execution;
- repetition of preliminary movements and positions;
- likelihood these preliminary movements and positioning produce the proper alignment of forces;
- the ease, nature, and precision of the forces generating movements (steps of the draw);
- the alignment forces and their likelihood of producing an efficient release;
- visual and physical follow-through during the release;
- body movements during the release, being a continuance of the force generating movements (full draw efforts) reveals information on these efforts.

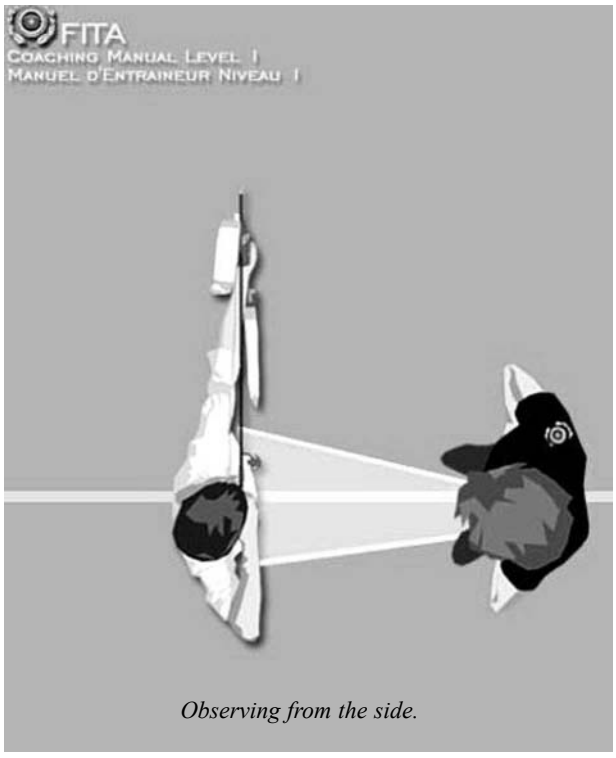
Only afterwards can observation of detail be of interest.

Observe from where?

Where to observe depends on what is being observed. In relation to the archer, position yourself::

- a minimum of 3m for overall observations;
- at approximately 2m to observe the basis of the various sequence stages; and
- At no more than a metre for detail analysis.

Illustrated below are a few choice locations of where to stand and what they allow to be observed.



Observing from the side.

Allows two skils to be observed:

- setting-up and maintaining alignment of forces whilst drawing and at full draw; and
- follow-through.

Observing from 2m to 3m behind the archer, in the shooting plane.

The key elements are:

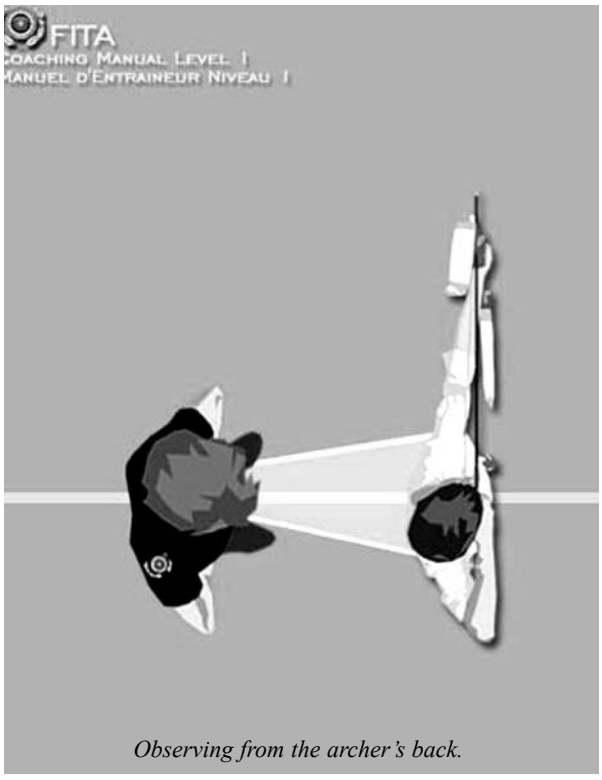
- string elbow movements;
- alignment of string forearm with the arrow, in the shooting plane;
- head stability, especially during the last few centimetres of drawing, also at full draw and release;
- erect stance and bow cant in the shooting plane, and the maintaining of these at full draw and release;
- backward motion of the string arm during release and its final position;
- movement of the string fingers during release.

Allows two skills to observed:

- setting-up and maintaining alignment forces during the draw, full-draw, and follow-through; and
- preserving an erect stance.

The key elements are:

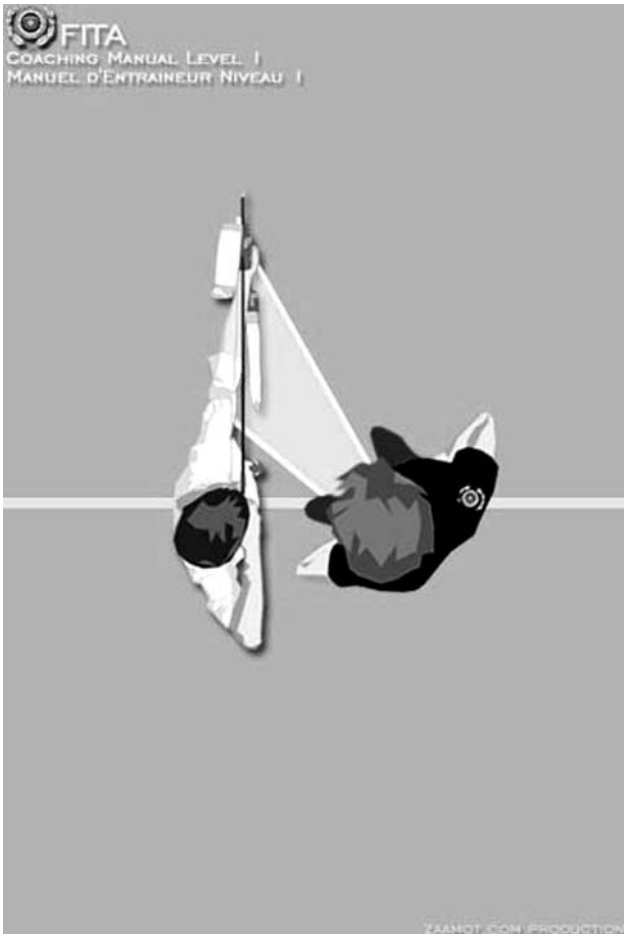
- consistency of the draw (no creeping);
- string forearm alignment during the draw, and the preservation of alignment at full draw and release;
- shoulder alignment during the draw, and the preservation of alignment at full draw and release;
- consistency in height variance between the bow shoulder and the arrow at full-draw;
- head stability, especially during the last few centimetres of drawing, at full-draw, and during the release;
- keeping the bow arm horizontal during the release;
- erect stance and the preservation of this erect stance at full-draw and during the release;
- backward motion of the string arm during the release and its final position;
- amplitude of the bow arm forward motion and its front final position; and
- bow fingers movement during the release.



Observing from the archer's back.

Allows setting-up and maintaining alignment of forces during the draw, at full-draw, and follow-through, to be observed. The key elements are:

- consistency of the draw, no creeping of the.arrow point at full draw;
- string forearm alignment with the arrow, in the horizontal plane;
- shoulder alignment during the draw and the preservation of this alignment at full-draw and release;
- consistency in height variance between the bow shoulder and the arrow at full-draw;
- head stability, especially during the lest few centimetres of drawing, also at full-draw and release;
- stable or vertical bow arm movements during the release;
- erect stance in the shooting plane and the preservation of this erect stance at full-draw and release;
- backward motion of the string arm during the release and its final position; and
- bow arm's forward motion during release and its final position.



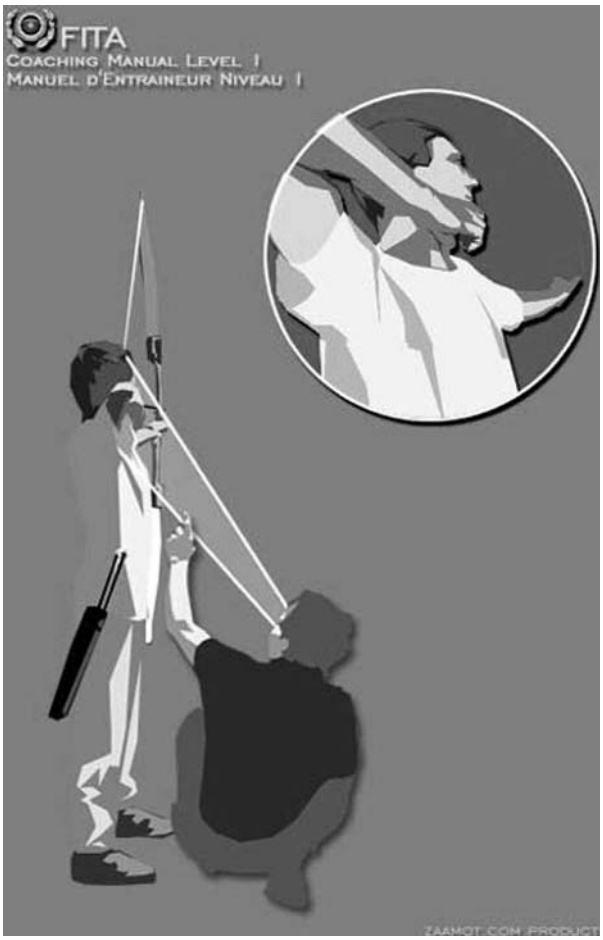
Observing from beside the archer.

Allows two skills to be observed:

- quality of bow arm flow; and
- unobstructed string displacement.

The key elements are:

- consistent distance between the bow shoulder and arrow at full-draw;
- stability or lateral bow arm movement during the release;
- bow fingers movement during the release
- preservation of an "unlocked" bow elbow;
- string clearance;
- bow arm forward motion during release; and
- Bow arm final position.

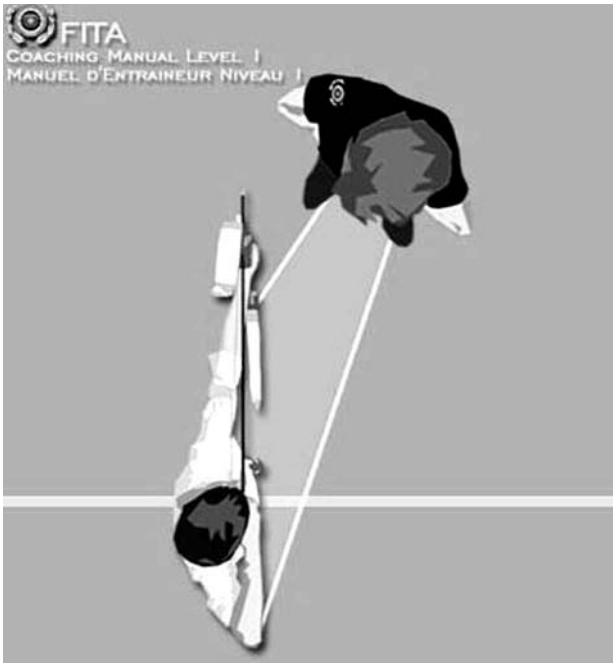


Observing from a squatting position at the archer's feet.

This position allows the consistent alignment of forces during the draw, at full-draw, and follow-through to be observed. The key elements are:

- string forearm alignment with the arrow;
- consistent distance between the bow shoulder and the arrow at full-draw;
- stability or lateral bow arm movements during the release:

- backward motion axis, or string hand finger spread during the release;
- preservation of an "unlocked" bow elbow;
- string displacement; and
- bow arm's forward motion during the release and its final position.



Observing from beside the bow.

Allows two skills to be observed:

- quality of visual continuity; and
- preservation of alignment forces during the draw, at full-draw, and follow-through.

The key elements are:

- consistent distance between the bow shoulder and arrow at full-draw;
- shoulder alignment orientation when drawing, and the preservation of this orientation at full-draw and release;
- head stability, at full-draw and release;
- backward motion axis or string hand finger spread during release, and its final position; and
- Facial movements, especially during the release.

How many observations?

The number of shots to be observed before giving feedback depends on the circumstances. Two examples are:

- If the execution is dangerous for the archer, other archers or the equipment, an immediate intervention is advised, usually taking the form of a let down order. The significance of this order must be known to all beginners before they shoot their first arrow; and
- If a skill is not being executed well observe the next arrow. If the same type of execution is performed comment with simple key words, and then continue observing. If the execution is still faulty intervene by using one of the methods presented further in this chapter.

TIPS FOR TEACHING THE TECHNICAL SKILLS.

Over the previous chapters your technical and theory knowledge of archery has probably been improved. Part "A" of this chapter also provided some tips for organising your class. Part "B" will provide tips for teaching the various technical skills.

You remember that the parts of a typical archery practice session (see chapter #4 in 4.3 are:

- set-up;
- greeting;
- warm-up;
- review of previous session;
- skill teaching including:
  - technical reaching, e.g.: either skills discovery, or skill revision;
  - Skill assimilation. At this step, the coach often uses a set of situations with increasing difficulties;
  - endurance development/evaluation. A game is often introduced to this step.
- back to more "regular" and controlled shooting situation;
- Session evaluation/equipment storage.

Now we will develop the part entitled "Skill teaching" as announced in chapter #4 in 4.3..

The first step of technical training is the discovery (understanding and observation) of a skill.
The final step or goal related to the learning of one technical skill id the proper and consistent implementation while aiming.
It is up to the coach to propose a process including steps that will allow the students to move from the first step to the above goal.

9.5. Tips for your teaching process.

1st step:

The novice observes what should be done - skill discovery.

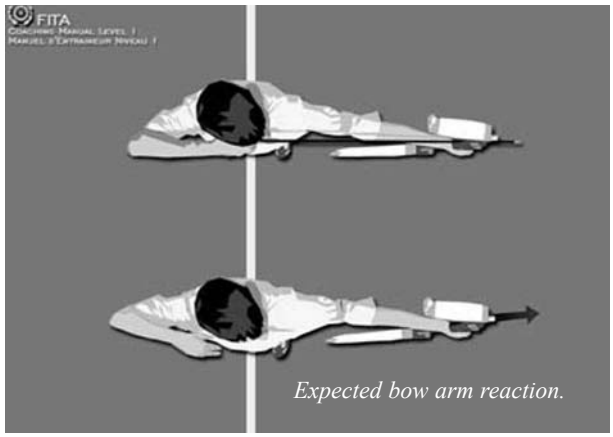
During a demonstration the archers observe what is being demonstrated. Start wit a simplified version of the skill. The demonstration must be shown in simplified conditions, as for instance:

- during the draw, and at full-draw, the muscles of the back and back shoulders are engaged. For the string side, most of the coaches encourage continuous use of the activated muscles, causing the string hand to move back during the release.
- let us suppose that to make the archer's learning easier, you decide to teach the same thing for the bow side developing a symmetrical motion for the bow and string side.
- Now your task is to make the archers discover and practice this muscle activity on the bow side. To accomplish this we suggest that you isolate the bow arm activity by working in pairs on the following exercise.

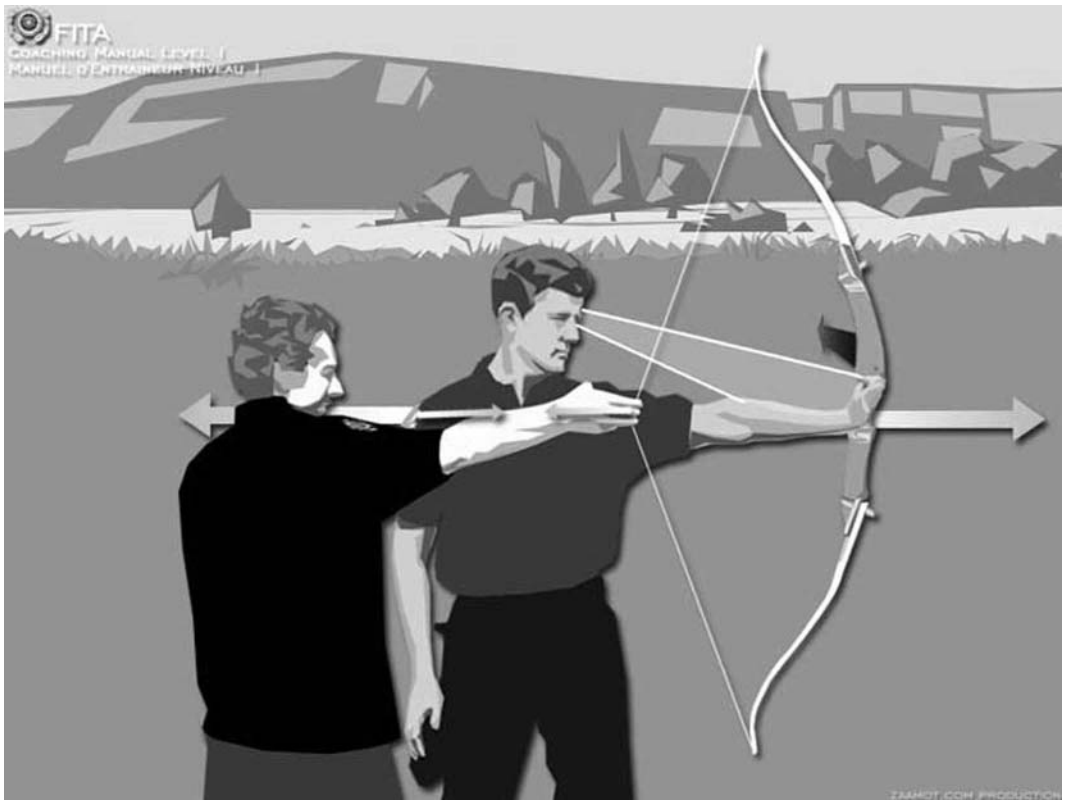
Equipment: Usual shooting equipment.

Instructions: Practice at a distance of tree to four metres from the target. The partner pulling the string stands against the bow side of the archer, and places a hand on the string shoulder to help the archer counter the bow's resistance. The archer raises the bow to no more than shoulder level. The partner pulls the string lightly, until 1/3 of the draw and guides the arrow for a centred shot. If necessary give the partner instructions.

The partner should draw just a bit toward the archer's chest, NOT higher, to avoid punching the archers' face upon release. The archer holding the bow always looks at the bow arm, especially during the release. The archer must have confidence in the partner and follow his/her instructions. The archer relaxes the bow hand, arm and shoulder.



Expected bow arm reaction.



Discovery through a situation where the bow arm is "disassociated".
Note: the assistant holds the archer with his left hand (we can see this a little) on his string shoulder to balance the archers body.

Observation:
The bow arm moves towards the back of the archer after the release. This is due to the continuous action of the posterior muscles of the bow shoulder. This action must not be interrupted by the action of release that is guided by the partner. The bow arm and even the whole body move slightly forward. This is due to the continuous push effort produced during the draw by all the whole body form the bow arm to the string leg.

The above first step is the technical teaching, e.g.: either skill discovery.
The following steps of this teaching process are skill assimilation. At this step, the coach often uses a set of situations with increasing difficulty.

2nd step:

The novice observes his/her own implementation.

This is the first step of the skill assimilation process. The skill discovered in the previous part must be stabilised and incorporated into the archer's complete and regular shooting process. To do this effectively the archer must concentrate on observing and feeling while performing the skill in small steps through exercises.

Observing oneself.

The archer performs the action alone, 3m to 4m from the target. The archer draws the string slightly, to 1/3 draw. The string elbow is kept at the arrow level. The archer observes by always looking at the bow arm as in the previous exercise. If it is difficult for the archer to let the bow arm react, assist by using your hands.

Implementationat reduced draw, watching the bow arm.

The archer performs the exercise again, increasing the draw progressively, and not stopping the drawing motion to release. The archer observes by always looking at the bow arm, always observing himself (or herself).

Release DURING the draw, before full-draw.

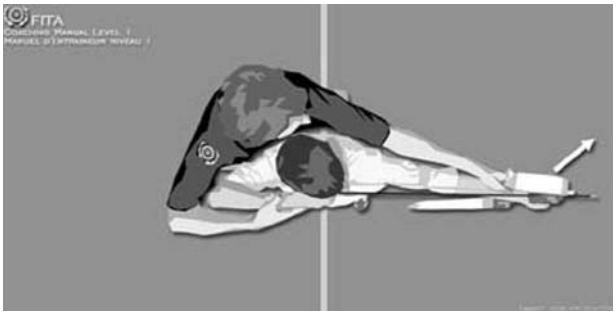
At full draw, as soon as the string nears the face, the archer releases while letting the action (contraction of the muscles) continue its course, which moves the bow arm towards the back. The archer observes his/her bow arm during the entire shooting sequence, including the release.

Watching one's implementation in regular shooting form (full-draw).

Because the archer is working on his how arm reaction, he should watch his bow arm DURING the release.

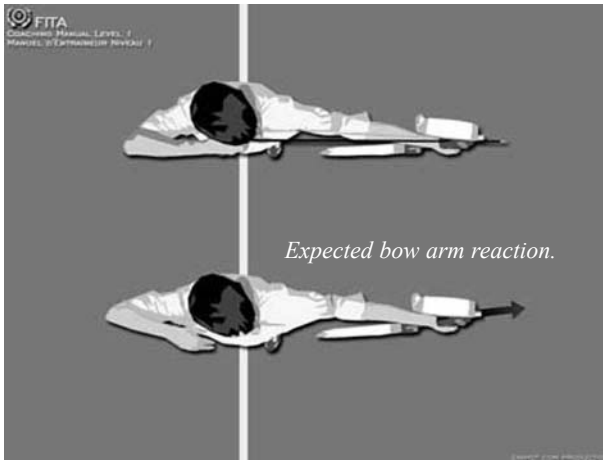
Note: for some skills a mirror is required to allow the novice to observe his/her own implementation, for instance: follow-through, release and facial marks.

A video can be used, but unless the archer has a direct viewing of his image it will not give a direct association of what the novice can see and feel.



In case of difficulty,the coach can assist the beginner at any step of the process.

Implementationwith eyes closed for a better feeling.



3rd step:

The novice feels his/her own implementation.

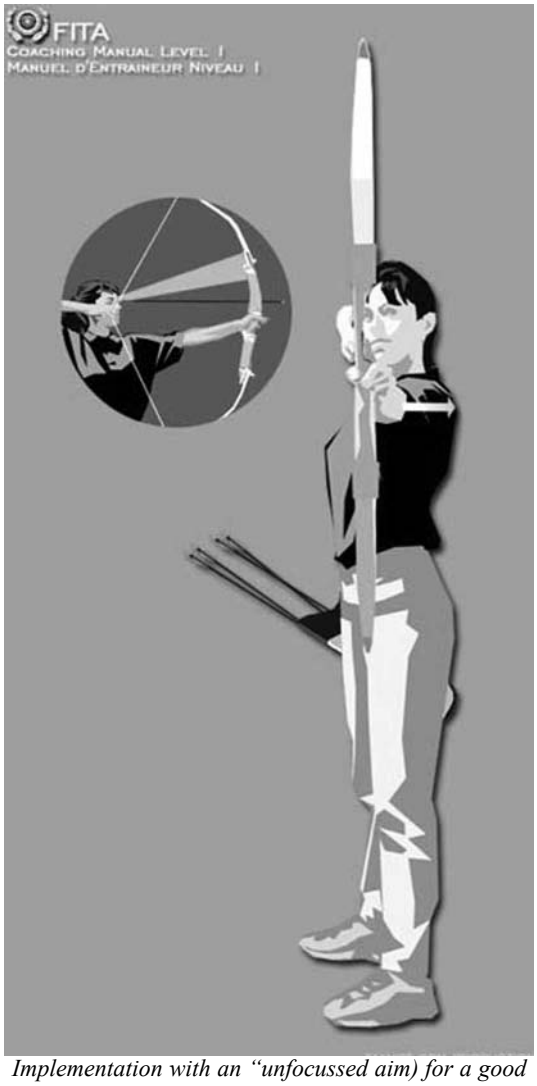
The archer should feel the consistency of a tonus in the working muscles before and after the shot.
With the eyes closed the proprioreceptive feedback is more effective.

As result the bow arm is moving forward and toward the archer's back (left, for a right-handed archer) upon release.

4th step:

Implimentation with a rough visual activity: Wathcing noting in particular.

Same exercise as above, except this time without closing the eyes. The archer stares into space at the base of the bow's upper limb. The archer feels the muscle action with visual stimuli.

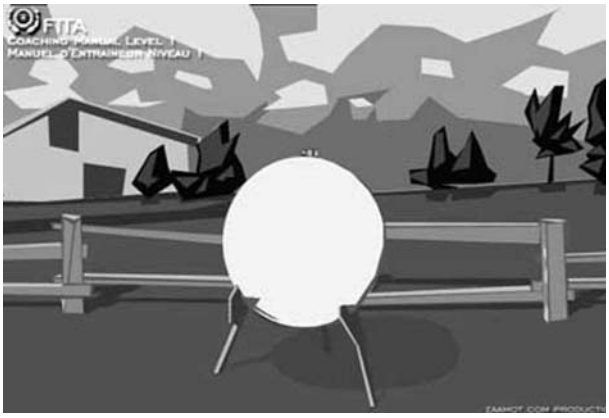


Implementation with an "unfocussed aim) for a good feeling. The archer's attention is still mainly on the skill at hand.

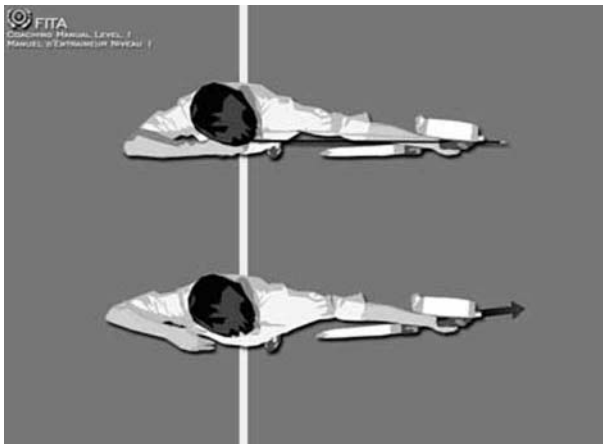
5th step:

Implementation with a simple visual activity and ensuring a rough shooting orientation: Looking at a blank butt.

The shooting distance goes from five metres to the normal shooting distance. The buttress must not have a target face on it. The archer looks at the empty buttress without trying to aim at any part of the butt. The archer just observes the sight motions without any attempt in reducing and/or stabilising these motions. The archer can even keep both eyes largely open.



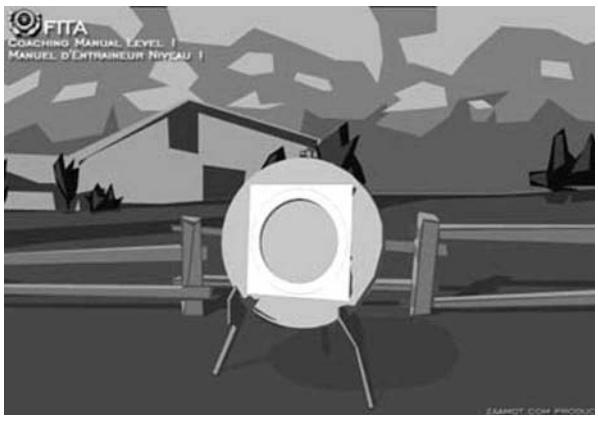
Implementation while giving a rough direction to the shot: Shooting at a blank butt. The archer's attention is still mainly on the skill at hand



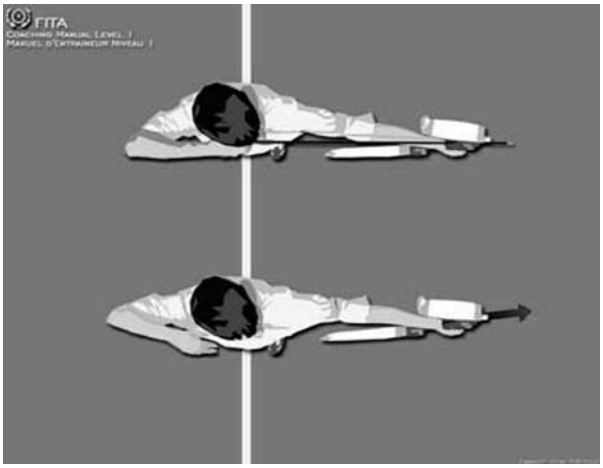
6th step:

Implementation with an increasing aiming task: Shooting at something progressively smaller.

A) For instance, start by shooting at a large cut-out 80cm target face; allowing the archer to implement the skill through an easy aiming task.

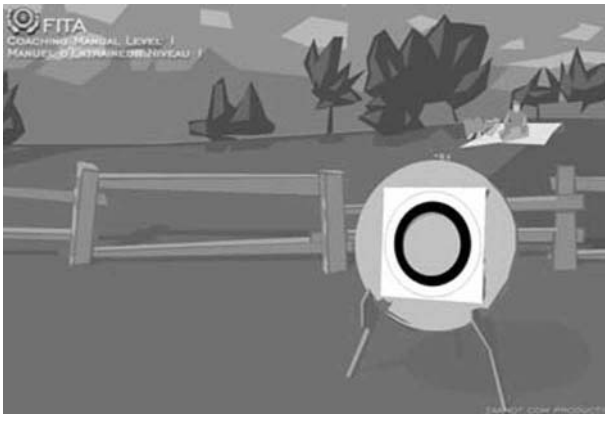


Shooting at a large cut-out face is a good start for adapting a skill to the aiming situation. A large part of the archer's attention is still on the skill at hand, while a small part is on the direction of the shot.



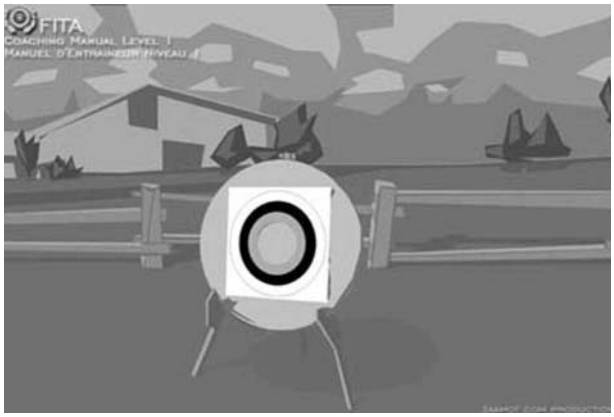
Because the aiming task becomes more difficult, the archer must divide his/her attention between proper skill implementation and visual attention.

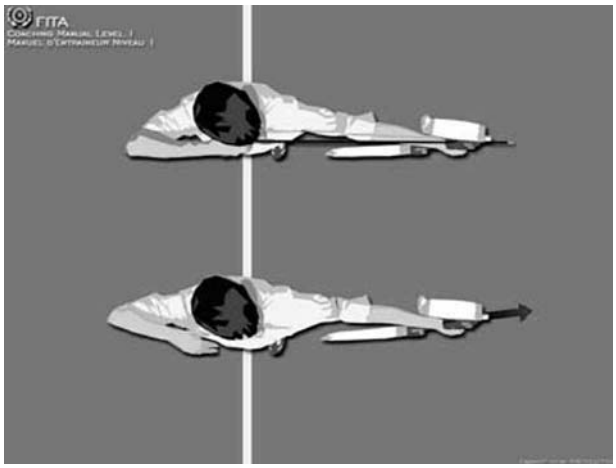
B) Progress by shooting at an 80cm target face with the 7-8-9 and 10 rings cut-out. The aiming zone is still big but starts to require a higher level of visual attention.



A target face with the 7-8-9 and 10 zones cut-out.

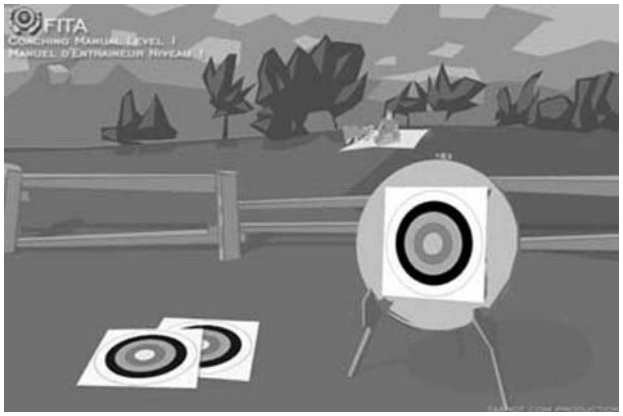
C) Progress by shooting at an 80cm target face without the 8-9 and 10 rings, this requiring real accuracy in the archer's aiming task.





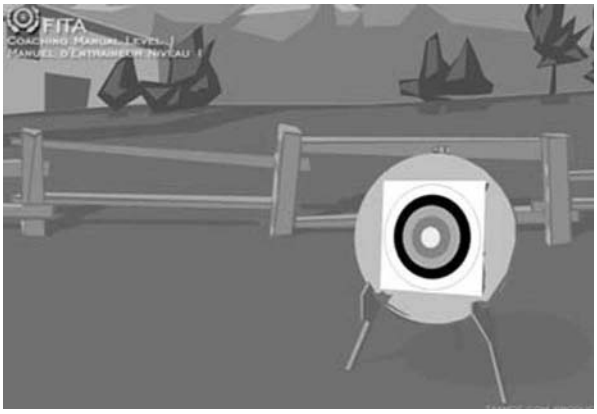
With the increasing aiming task the implementation of the archer's skill being developed is made with reduced consciousness.

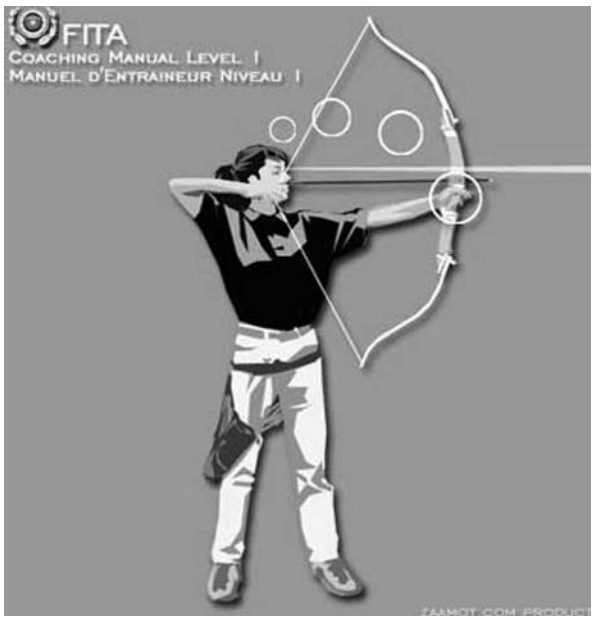
D) Progress by shooting at an 80cm target face without the 9 and 10 rings, this now requires a lot of accuracy in the novice's aiming task.

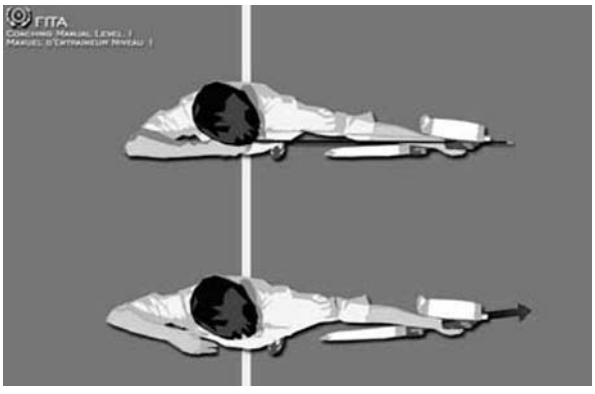


We are now close to the regular aiming situation. The implementation of the skill being developed is made more unconsciously.

E) Progress by shooting at a complete 80cm target face, this requires full attention to aiming. The skill that is now being developed is implemented subconsciously.







In the regular aiming situation. The implementation of the skill being developed is made almost subconsciously.

To summarise, the steps of the above teaching process help the archer to adapt a new skill to the aiming situation through various steps. In the first steps the novice id fully concentrated on the skill implementation while in the later steps he/she is

mainly concentrating on aiming.
You are invited to develop such a teaching process. When used regularly it is called a:

"Standard Teaching Process"

The above standard teaching process can be used for learning almost any technical skill.

9.6. Tips for endurance development and archer evaluation.

During the first few practice sessions, two factors of endurance are developed:

- Strength: by making the archers shoot many arrows. The number of shots increases in direct proportion with the number of sessions:
- Attention: by putting archers in situations where they concentrate on repeating with precision the skill taught. For that purpose the coach can introduce games, self-evaluation with rewards, and structured competition.

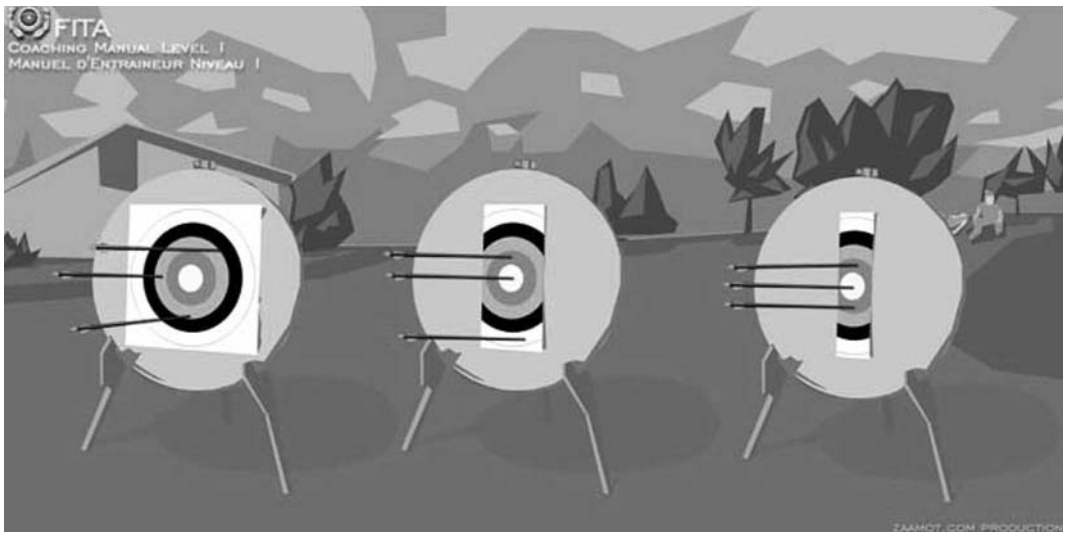
For instance, after the competition of the Standard Teaching Process for one specific technical skill, a game can be introduced.
Such a game, rekindling the interest and attention of archers who:

- did not have a very positive first experience;
- are tired;
- have difficulty putting into practice the skills emphasised in the session.

These archers finish on a more pleasant note. Choose the game carefully, one requiring the skills developed during the session. For example, during the introduction of the string alignment concept, you can introduce a game forcing the archer to control head positioning in relation to the shooting plane. To accomplish this elements dealing with horizontal pattern of hits are part of the game, vertical precision being unimportant. The following "narrow target" game could be chosen:

- Let the archers shoot a predetermined number of three arrow ends, depending on the time available. After each end is finished, each archer must detach their target face, fold it on the most widely separated points of impact, and then reattach it to the butt. The target now forms a column;
- The archer keeps shooting at the narrowing column, never enlarging the face.

Once all the ends are completed, the ranking is based on the narrowness of the columns obtained. The archers who concentrate on head tilting (i.e. on string alignment) will find less lateral variation of arrows.



The width of a group of arrows is the reference to fold/cut the face for the next end.

To summarise, plan each practice session with each of the above stages. Structure and tailor the teaching stages based on the shooting skill/skills being taught in the session. Always incorporate the standard teaching process in the exercises used during the practice session.

The following chapter(#10) is a collection of basic archery skill exercises, incorporating the standard teaching process, to be used in practice sessions.

Chapter # 10

Some suggested Teaching exercises

The following section presents a few exercises to use in practice sessions. In most of these exercises we recommend you use a standard teaching process.
All these exercises do not have the same format, because they come form various authors and/or from the same author but written at different times; since many coaches strive to always improve their services, they change their exercises format once in a while.
As not all archers respond to the same training methods it is suggested each exercise is selected to suit each individual archer and training session being conducted.
This following list is not a complete list. Try developing your own exercises.
When you have some new and interesting exercises, please send them to the FITA office.

Exercise suggested for teaching:

Presetting the body (1)

1. Close your eyes as soon as you grip the string. At this moment you are probably bent forward slightly. Continue your sequence with eyes closed until your are upright come to full draw and then open your eye(s) and complete the shot - **12 arrows**. While you have your eyes closed concentrated on:

a) When and how you preset your body (main pyramid = the geometrical form between your aiming eye and your feet). It could be before raising your bow, or after a pre-draw in direction of the floor or the target. For Compound archers who distort their bodies in getting over the peak, it could even be after over the peak.

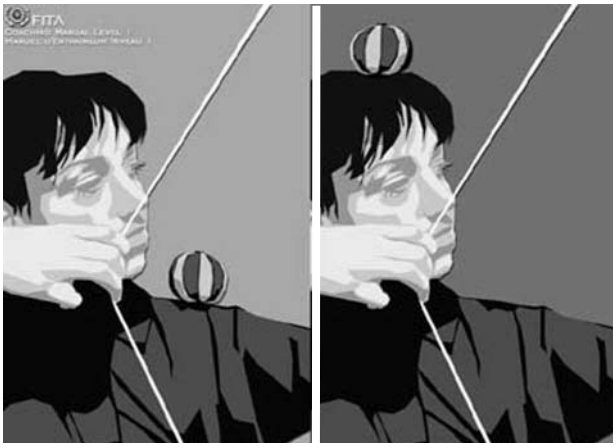
b) The following points and feelings.
Upright body (vertical spine with body weight equally distributed over both feet).
Fixation of your body on your hips (especially in your lower back).
Low centre of gravity (heavy & powerful belly, low shoulders & blades, flat chest, and stretching feeling in the trapezius).
Erect spine with head upright (flat nape)
Entire body in the shooting plane (shoulders above your hips & feet)
Head orientation facing the target (chin & nose pointed towards the target).
c) Maintenance of this preset posture while raising and drawing your bow.

2. Same as above, with a stick (or arrow) pressing on your belly; the other end of the stick can be pressed against a wall or a partner - see picture "Powerful Belly", or even the ground (you need a one meter long stick) - see picture "Centre of gravity pressed down on a stick" - **12 arrows**

Powerful belly

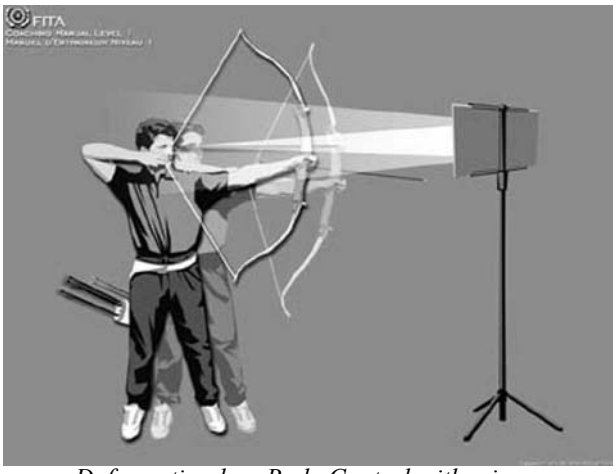
Centre of gravity pressed down on a stick

3. Same as 1) but with eyes opened, shooting at a blank butt, with a Haki ball (slightly flattened) on the top of your head- see picture "Motionless Head control" - 12 arrows



Motionless Head control

4. Same as 1) but watching yourself in a mirror, instead of having your eyes closed - see picture "Maintain body monitoring in mirror"- 12 arrows.



Deformation less Body Control with mirror

5. Same as 1) but with eyes opened, shooting at a blank butt - 6 arrows
6. Same as above, but shooting at a target face - 6 arrows.

Note: *Note: for all the exercises with a mirror, the mirror should be placed such that the archer can see him/herself without having to move the head. Therefore, the mirror should be at the level of the archer's face and very close to the aiming plane - about 10"/250mm between the arrow axis and the edge of the mirror. A mirror on a tripod (or any type of stand) is perfect, otherwise you need an assistant.*

Volume: 68 arrows over the session.

Exercise suggested for teaching:

Presetting the body (2)

1. Close your eyes as soon as you hook the string. At this moment you are probably bent forward slightly. Continue your sequence with eyes closed until you are upright, come to full draw and then open your eyes and complete the shot - 22 arrows. While your eyes are closed concentrate on:

1.1. When and how you preset your body (main pyramid = the geometrical form between your aiming eye and your feet). It could be before raising your bow, or after a pre-draw in direction of the floor or the target. For Compound archers who distort their bodies in getting over the peak, it could even be after the peak.

1.2. The following points and feelings

a) Upright body (vertical spine with body weight equally distributed over both feet)

b) Fixation of your body on your hips (especially in your low back)

c) Erect spine with head upright (flat nape)

d) Low center of gravity, heavy & powerful belly.

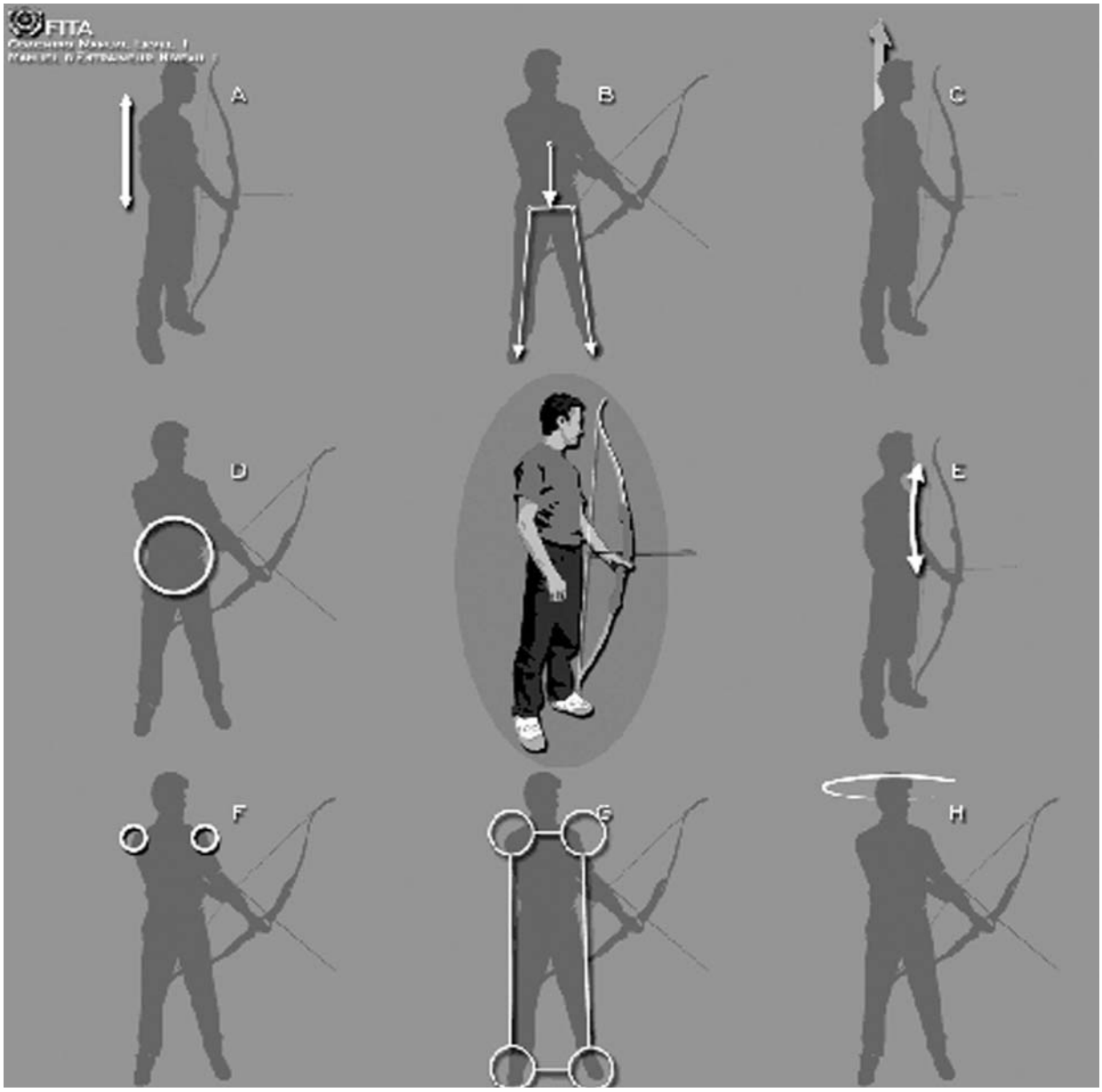
e) Flat chest and stretching feeling in the trapezius muscles.

f) low shoulders & blades

g) Entire body in the shooting plan shoulders above your hips & feet.

h) Head orientation (facing the target, chin & nose pointed toward the target).

Maintain this posture while raising and drawing your bow.



2. Repeat at a blank butt, again during another 22 arrows.

3. Shoot a next 22 arrows , alternating between the first situation (eyes closed), the second situation (blank butt - eyes open) and one arrow aiming at a target.

Note: for all the exercises with a mirror, the mirror should be placed such that the archer can see him/herself without having to move the head. Therefore, the mirror should be at the level of the archer's face and very close to the aiming plane - about 10"/250mm between the arrow axis and the edge of the mirror. A mirror on a tripod (or any type of stand) is perfect, otherwise you need an assistant.

Volume: 66 arrows total over the exercise + 8 warm-up arrows = 74 arrows over the session.

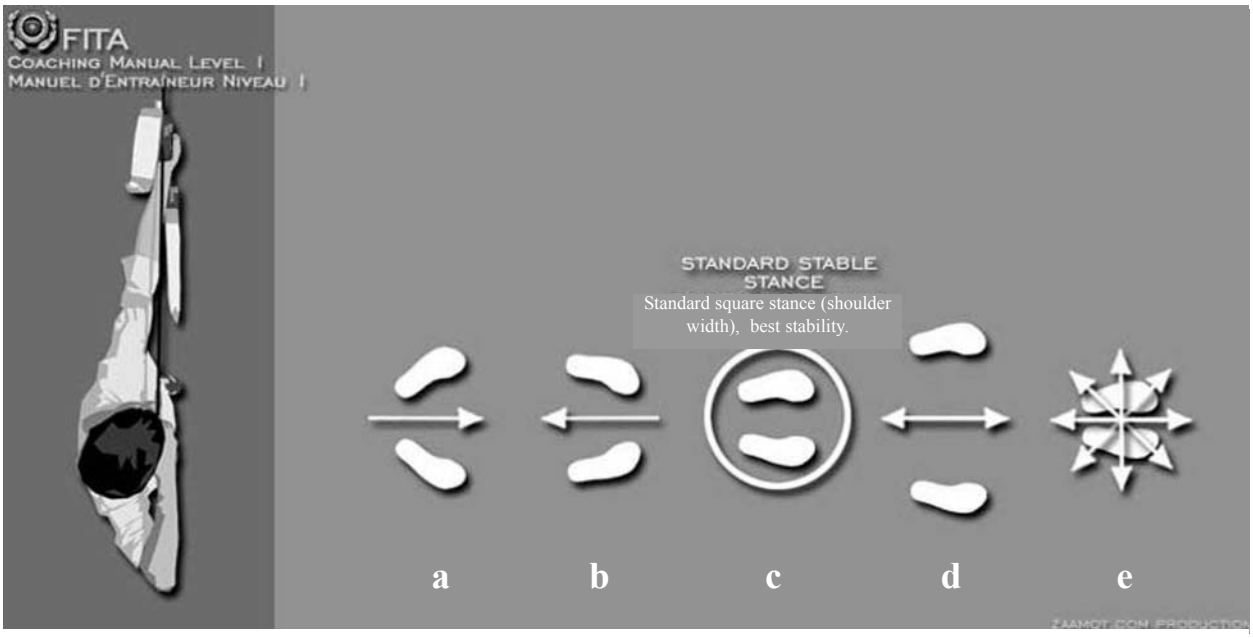
Exercise suggested for teaching:

Stance and body stability Stance / balance

- Objective: Find the foot position providing the best balance in both planes, shooting & frontal.
- Situation: full draw, eyes closed. Without a bow.

A. With feet at shoulder width apart:
- First situation: toes spread out/heels in. This is comfortable, but the body may tilt towards the front;
- Second situation: toes close together/heels spread out. This is uncomfortable and the body may tilt backwards;
- Third situation: feet parallel. This is often the most stable of the three positions.

B. With feel parallel to each other:
- First situation: large distance separating the feet. Good stability in the shooting plane, but unstable in the frontal plane;
- Second situation: feet close together. Unstable in all directions, perhaps even more so in the shooting plane;and
- Third situation: feet spread at shoulder width apart.



The various stance are identified "a" to "e" from left to right.
a & b - the body moves toward the open side
c - a standard stable stance
d - a wide stance makes body move forward & back
e -feet close together is the most unstable stance

Equipment: bow, braced with an elastic string.
Instructions:

the archer gets a feeling for possible unstable stances and chooses the most stable one. If stability is not satisfactory, act as follows:

- Make sure the archer's feet are parallel;
- Spread the feet if moving from left to right;
- Bring the feet closer together if moving from front to back.
- Reduce the weight on the heels.The weight of the body should be taken on the full foot but the balance point is for several archers on the instep. With the balance on the forward portion of the foot the body is able to move to compensate for wind and other influences. String clearance is also improved at the chest level.
- As a last resort, spread or bring the toes closer together, according to the direction of the instability.

Exercise suggested for teaching:

Body weight distribution

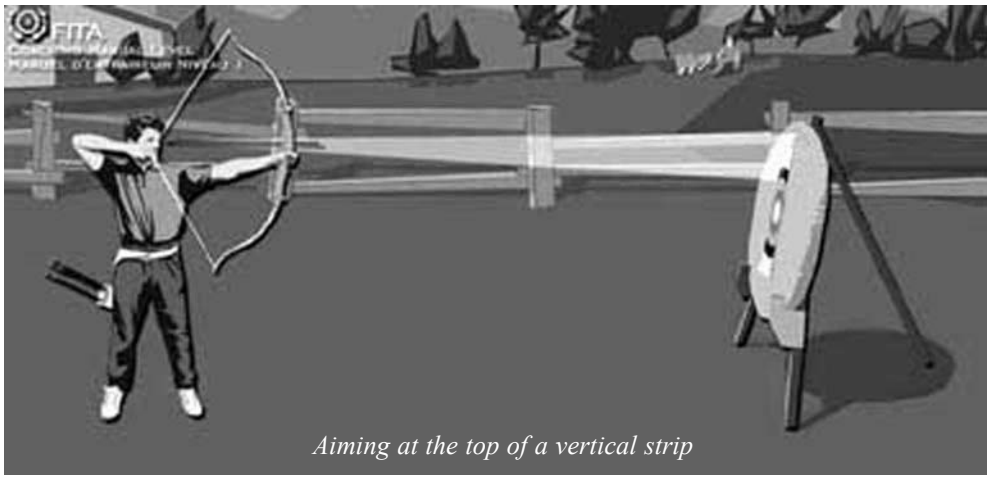
- Objective: control and increase awareness of body-weight distribution on lower limbs.

- Equipment: the basic equipment set-up. Attach a vertical strip on the butt as a target.

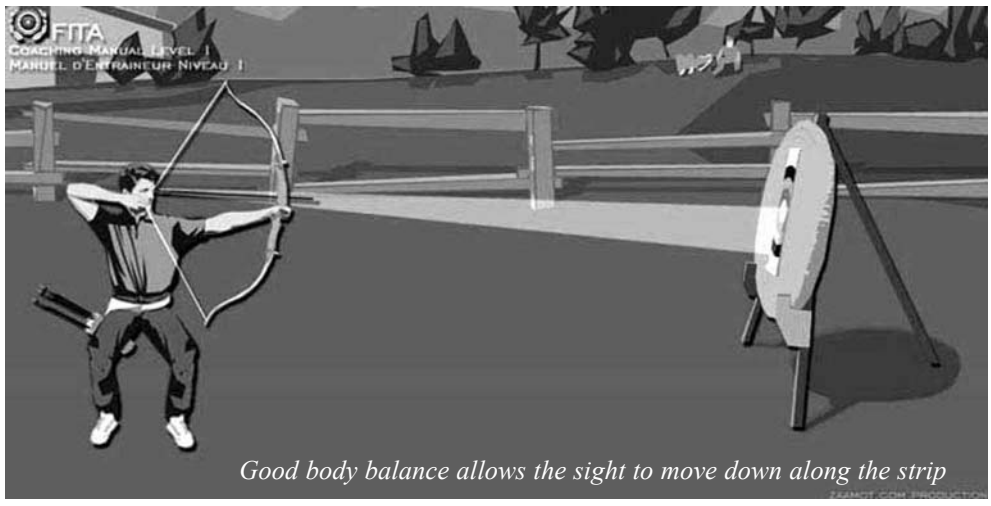
- Instructions:at full draw, the archer closes the eyes and flexes the knees. When flexed, the archer opens the eyes. If the body weight is evenly distributed over both legs, the sight or the arrow (pending the aiming method) will now be at the bottom of the strip.

- Situation:

(see the pictures below)



Aiming at the top of a vertical strip



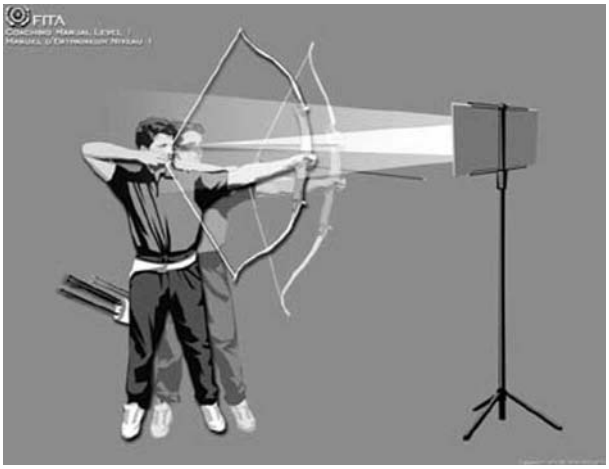
Good body balance allows the sight to move down along the strip

Exercise suggested for teaching:

Body posture/balance maintenance

- Objective: develop the ability to maintain body position during partial and full draw.
- Situation: short distance, about five meters, standing in front of mirror.
- Equipment: basic equipment set-up, and a mirror.
- Instructions: during the draw the beginner archer looks in the mirror to establish/confirm body stability, then tries to maintain this throughout the draw, until after release follow-through.

This exercise incorporates the standard teaching process. The archer repeats the exercise with eyes closed, looking up, watching the empty butt, and then by shooting at increasingly complete targets.



Self-control with a mirror of the maintenance of the pre-set body.

Lower centre of gravity by maintaining pressure on arrow

Exercise suggested for teaching:

Lowering the centre of gravity

- Objective: improve the body stability by maintaining the centre of gravity as low as possible.
- Situation: at normal shooting distance with a partner.
- Equipment: basic equipment: set-up, and an arrow.
- Instructions: the partner faces the archer and place the tip of an arrow just below the belly button, and the nock just below the archer's belly button. From before the draw, until two or three seconds after the release, the archer maintains pressure on the arrow.

Centre of gravity pressed down on a stick

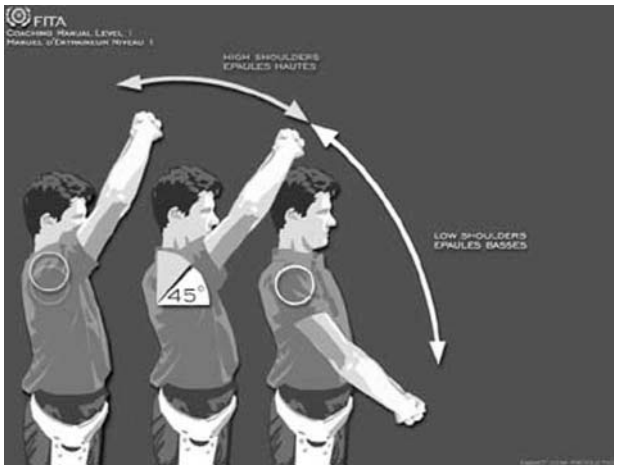
This exercise incorporates the standard teaching process. Instruct the archer to observe in the mirror. Repeat the exercise with eyes closed, looking up, looking the empty butt, and then by shooting at increasingly complete targets.

Exercise suggested for teaching:

RAISING (of the arms, hands and bow).

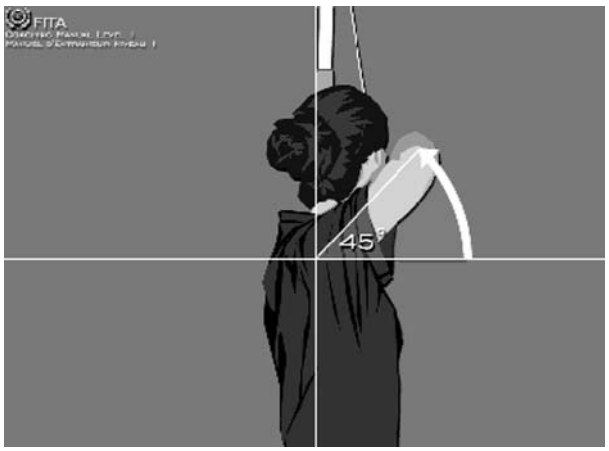
1. Simulations:

1.1. Have your hand/fingers interlaced: palms up, arms against the front of your thighs, your arms are slightly curved at the elbow. Lower your shoulders by using your pectorals, feel your trapezius stretched. Raise your arms up in front of you as high as you can, while maintaining the shoulders DOWN. You should finish with your upper-arms (not the forearms) raised at an angle of about 45 degrees from the vertical, without lifting your shoulders.

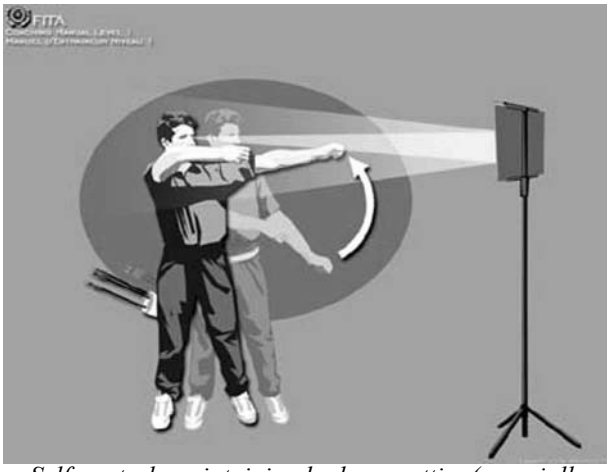


We can raise our arms up to 45 degrees, without lifting our shoulder and without changing the body-chest position.

1.2. Simulate the bow raising while maintaining your shoulders as low as possible. Once raised up, notice that your string-upper arm (not the forearm) makes an angle of about 45 degrees with your body. At this step, your forearm is at about your eyes level, as well as your 2 hands and the imaginary arrow.

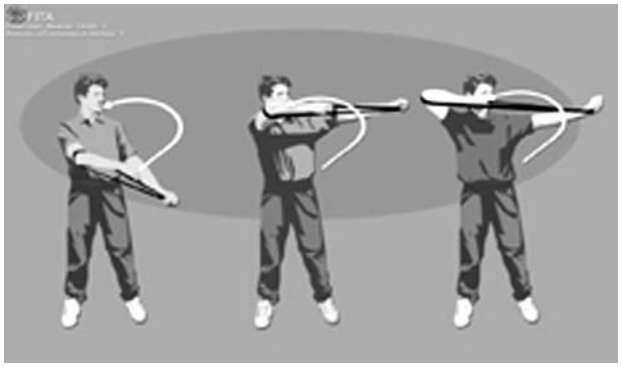


String arm making an angle up to +/- 45°from the vertical, without lifting the shoulders.



Self-control, maintaining body presetting(especially low shoulders, during bow arm elevation

1.3. Repeat the previous simulation with an elastic band passing around your string elbow, and in your bow hand (or hold in the fingers). For the whole of this session, continue to attend to all the points dealt with previously.



Similar to the previous illustration but under an elastic tension.

All this session, continue to take care to the previous work, i.e. your attention should follow the following path:

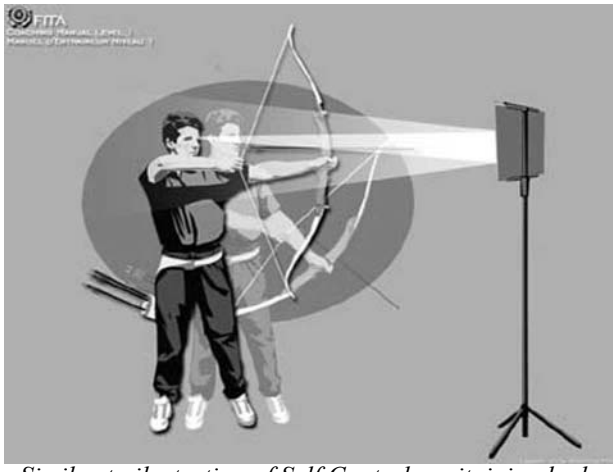
- Start by lowering your centre of gravity (heavy belt);
- Feel a "good" balance on your feet;
- Lower your shoulders;
- Head erect while looking at the target.

At this point your top triangle (triangle between your aiming eye and both your shoulders) is PRESET

2. Shooting

2.1. While shooting observe the upper arm of the bow-arm while raising the bow, look at the bow shoulder if you can, feel the bow shoulder and shoulder blade to be as low as possible. Once the bow is raised look at the butt and draw - 12 arrows

Raise (and draw) the bow .....



Similar to ilustration of Self Control, maitaining body presetting, but with the bow

Raise (and draw) the bow watching with unfocus eyes

Raise (and draw) the bow watching one's bow shoulder.

2.2. Same, but watch yourself raising your bow in a mirror - 12 arrows.

2.3. Similar to #2.1, but close your eyes instead of watching your bow shoulder. Focus on the feeling of a low bow shoulder and scapula (shoulder blades) - 12 arrows.

2.4. Same as #2.1, but now with eyes open and unfocussed - 12 arrows.

2.5. Same, but looking at a blank butt - 12 arrows

2.6. Same but shooting at a target face - 12 arrows.

Volume: 72 arrows over the exercise, with the 8 warm-up arrows, that make about 80 arrows over the session.

Exercise suggested for teaching:

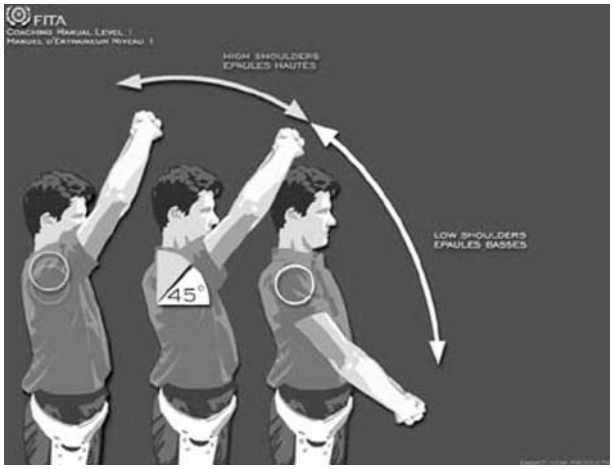
START of DRAW

Simulations:

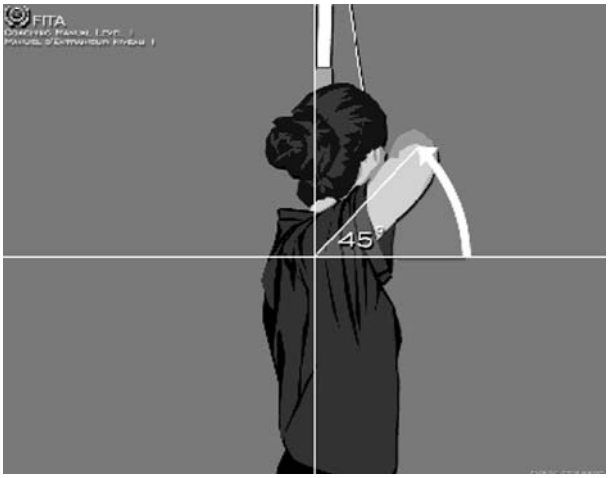
1. Simulations:

1.1. Have your hand/fingers interlaced: palms up, arms against the front of your body, your arms are slightly curved at the elbow level. Lower your shoulders by using your pectorals, feel a stretching feeling in your trapezius. Raise the arms in front of you as high as you can maintaining your shoulders DOWN. You should finish your arms raised wat an angle of about 45 degrees between your body (vertical) and your arms. Which means that we can raise our arms up to 45 degrees, without lifting our shoulders.

Feel that you open your arms as a fan WITHOUT changing the curve of your arms.



We can raise our arms up to 45 degrees, without lifting our shoulders.



String arm making an angle up to +/- 45°from the vertical, without lifting the shoulders.

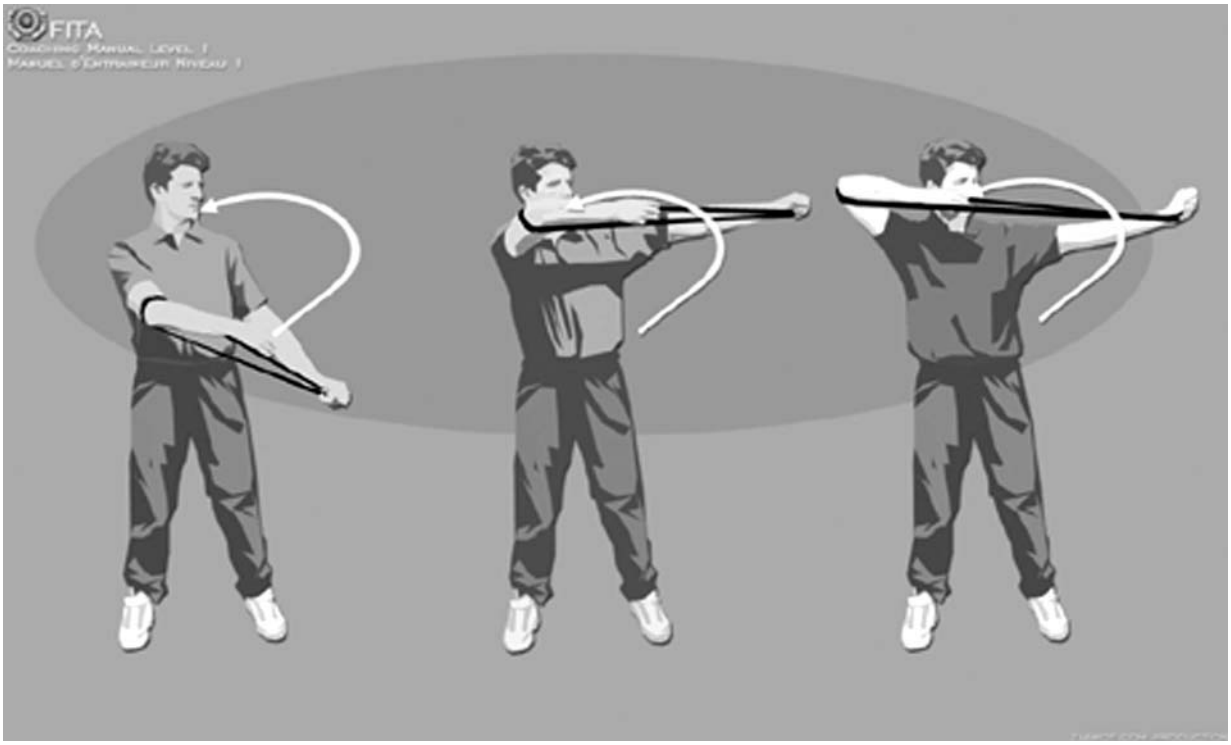
Now separate your hands, and move your arms down and laterally, WITHOUT changing the curve of your arms. Feel that you open your arms as a fan. Feel that the opening notion comes from your shoulders, which move down and apart, also feel the "opening" of your rib cage, a kind of thorax expansion.

1.2. Simulate the bow raising, while maintaining your shoulders as low as possible Notice that the raised upper arm (string arm) makes an angle of about 45 degrees with the body. At this stage your forearm is at about the level of the eyes, as are the hands and the imaginary arrow.

Continue by simulating a draw, changing the shape of your arms as little as possible to avoid using them for the draw action. Feel that the START of the opening motion comes from your shoulders, which move down and apart. Also feel some sort of "opening" of your rib cage, a kind of thorax expansion especially at the BEGINNING of the draw.

Focus mainly on the BEGINNING of the draw.

1.3. Repeat the previous simulation with an elastic band passing around your string elbow, and in your bow hand.



Draw simulation with elastic on string elbow.

All this session long, continue to take care to the previous work, i.e. your attention should follow the following path:

- start by lowering your center of Gravity (heavy belt), and feel a "good" balance on your feet
- lower your shoulders
- stretch up your head, while watching at the target

At this step your *top triangle* (triangle between your aiming eye and 2 shoulders) is PRE-SET

2. From now, the exercises are while shooting. Implement the raising of the bow and the BEGINING of your draw with eyes closed. Open your eyes toward the end of the draw, or even at full draw - 18 arrows.

3. Implement at the raising of the bow and the beginning of your draw while watching yourself in a mirror. Look at the butt toward the end of the draw, or even at full draw - 18 arrows.

4. Implement at the raising of the bow and the beginning of your draw with eyes up and blurred. . Watch at the butt toward the end of the draw, or even at full draw - 18 arrows.

5. Implement at the raising of the bow and the beginning of your draw while watching at a blank butt. Do not focus on one area of the target butt; be like a spectator of the motions of your sight on the butt - 18 arrows.

6. Implement at the raising of the bow and the beginning of your draw while shooting at a target face - 12 arrows.

Volume: 84 arrows over the exercise + 8 warm-up arrows = about 92 arrows total.

Exercise suggested for teaching:

DRAWING IN THE SHOOTING PLANE:

1. In front of a mirror without an arrow on the bow. The mirror is fixed on the target butt, or a wall. Stand very close to the butt, the distance such that the tip of the long stabilizer is ½ meter from the mirror. Raise the bow and:

- For a recurve archer: ensure the string is aligned where you normally align it (on the bow window, or sight aperture)

- For Compound archer: ensure the string is roughly aligned with the centre of the scope. Whilst looking in the mirror strive to see your string in front of your aiming eye (for this exercise anyway).

Draw back the string while controlling that the string remains during its travel:

- In front of your eye
- Where you have aligned it.

Important: Never move your head during the draw. 10 repetitions, and have 3 minutes of rest.

2. Start over but close your eyes just while starting your draw. At full draw open your aiming eye, and check if the string is still in front of your eye, and where you have aligned it. If not, you probably moved your head during the draw, or pulled the string out of the shooting plane, or twisted your body during the draw, or leaned forward (toward your toes) - 10 repetitions

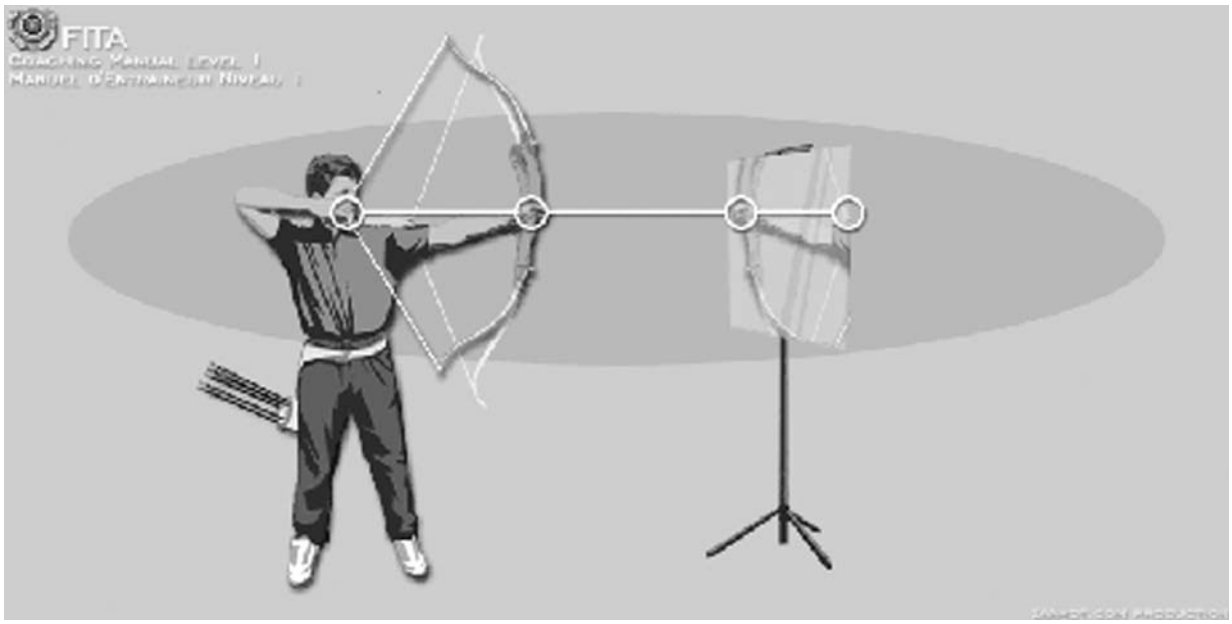
3. As in #1 but while shooting arrows at a blank butt at a short distance 10 to 18 meters (you'd better remove the mirror from the butt!) - 24 arrows

4. As in #1, but while shooting arrows at a vertical band on the target butt, from a short distance 10 to 18 meters - 24 arrows

5. As in #4, while shooting at a vertical band on the target, from a regular shooting distance - 24 arrows

6. As in #1, but while shooting arrows at a regular target face, from a regular shooting distance - 24 arrows

Volume: 116 arrows / exercises + 12 arrows of warm-up = 128 arrows total.



"Control of the Draw plane in a mirror"

Exercise suggested for teaching:

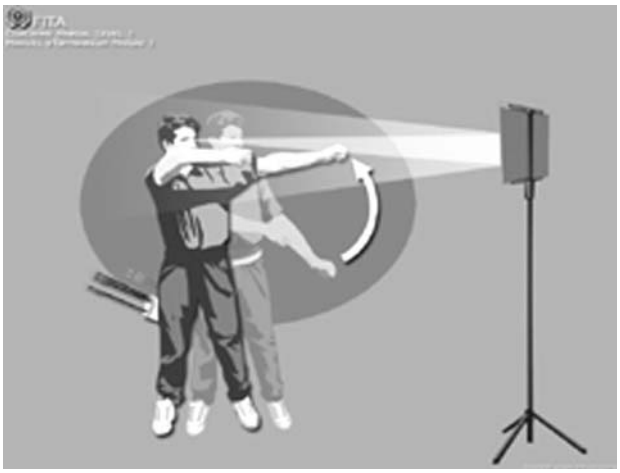
DRAW PATH / TRAJECTORY.

Description:

1. Warm-up, including 9 practice arrows.
2. Simulations:

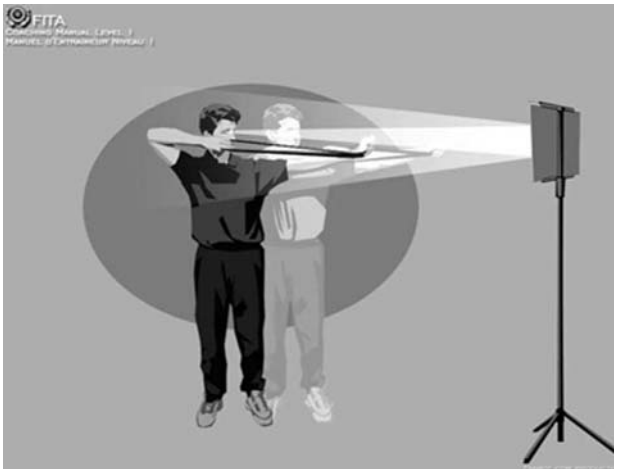
2.1. Simulate your body presetting and raising, continue by simulating your draw, ensure that your hands - especially your string hand - follows a smooth curved trajectory to the end of the draw, i.e. until "landing" under your jaw (or against the face for some compound/bare-bow archers). Both hands should remain at the same decreasing level and parallel to the floor. This action should be progressive, avoid stepping down. - 5 repetitions.

2.2. Same in front of a mirror - **5 repetitions**.



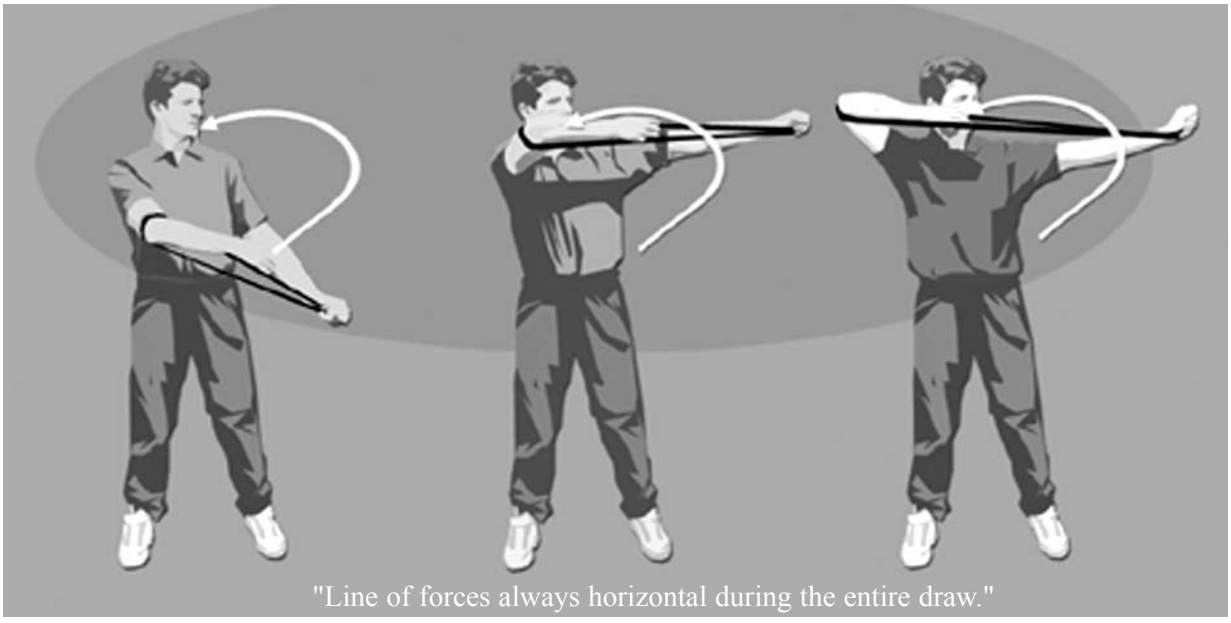
2.3. Same as 2.1. but with an elastic band passing around your string elbow, and in your bow hand - **5 repetitions**.

2.4. Same in front of a mirror - **5 repetitions**.



Simulate a draw such as the hands are always at the same level.

The archer visually checks the level of both his hands in a mirror whilst simulating the draw.



"Line of forces always horizontal during the entire draw."

For the whole of this simulation session, continue to attend to all the points dealt with previously, i.e. your attention should follow the following path:

Straight Body (vertical spine + body weight equally spread over the 2 feet)

Fixation of your body on your hips (especially in your lower back)

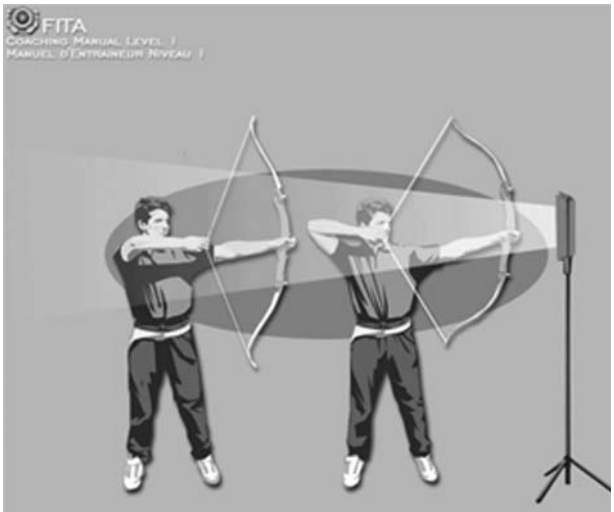
Low centre of gravity (heavy & powerful belly, low shoulders & blades, flat chest, and stretch feeling in your trapezius)

Erect spine (flat nape)

Entire body in the shooting plane, (shoulders above your hips & feet).

Head orientation facing the target (chin & nose pointed toward the target).

At this step your top triangle (aiming eye, shoulders) is PRE-SET, hence you can start your draw with your chest muscles.



Check your hands while drawing.

3.- Now, during actual shooting, starting with raising of the bow, observe your string hand while drawing your bow; watch the trajectory of your string hand as long/far as you can. Be sure that it remains at the same decreasing level as your bow hand and your arrow stays parallel to the floor. When you reach full draw watch at the target and continue your shooting sequence - See the above picture. - 12 arrows.

4.- Same, but watch yourself drawing your bow in a mirror - 12 arrows.

5.- Same as #2, but close your eyes instead of watching your string hand - 12 arrows.

Drawing with eyes closed.

Focus on the feelings of:

- A smooth and continuous progressive trajectory of the string hand;
- An action coming from the muscles of your chest, back and posterior part of your shoulders (not from the upper limbs!).

6.- Same, but now with eyes up & blurred watching - 12 arrows.

Drawing with unfocussed eyes.

7.- Same, but looking at a blank butt - 12 arrows.

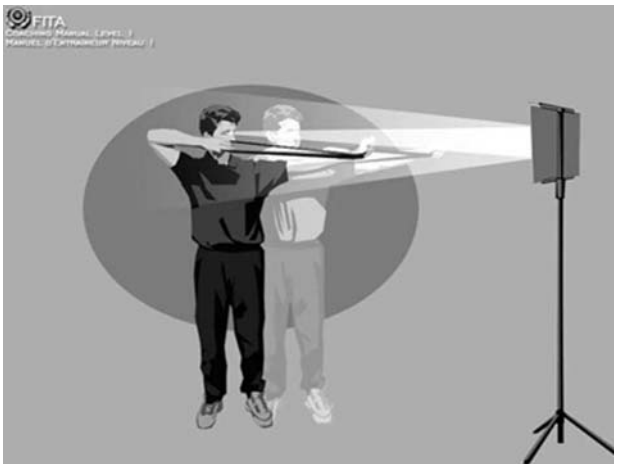
8.- Same, but shooting at a target face. - 12 arrows.

Volume: 20 simulations + 72 arrows over the exercises + 9 warm-up arrows = about **98 arrows** over the entire session.

Exercise suggested for teaching :

HEAD IMPASSIVITY AND STABILITY.

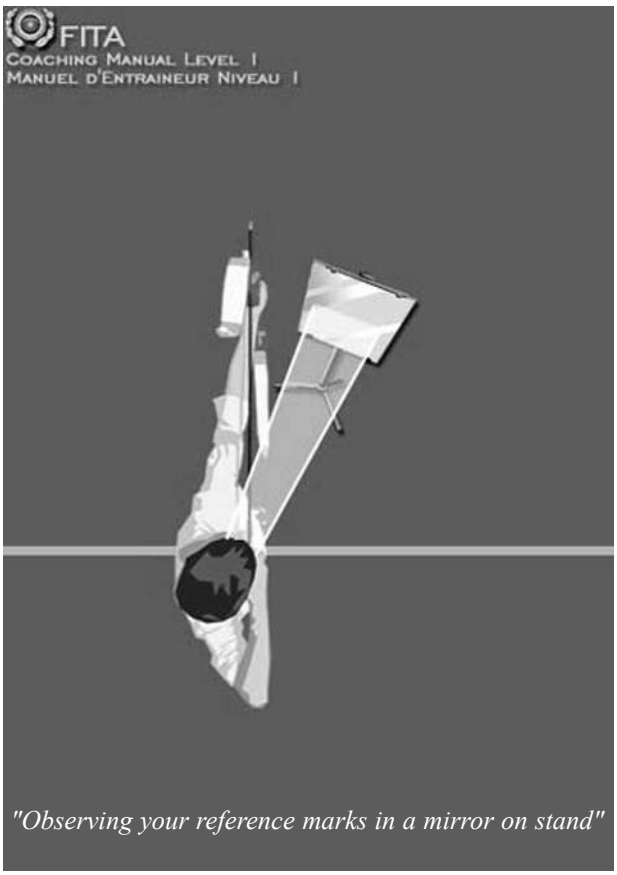
* Simulations with an elastic band.



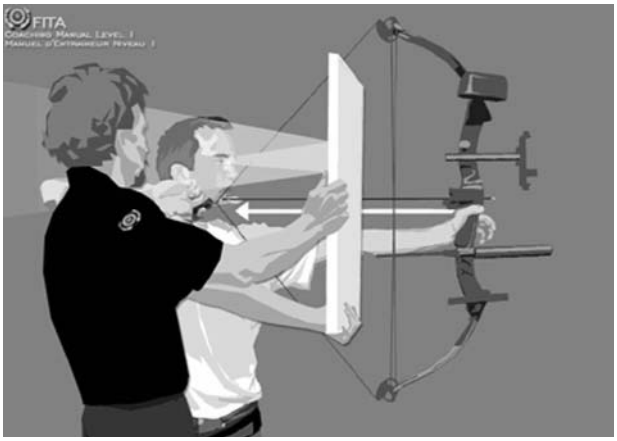
Self-control simulation of the torso during draw with elastic band.

a) Prepare a mirror as below

Preset your body and START your sequence toward the target. As soon as you have started your draw action, move your eyes WITHOUT turning your head toward the mirror and observe the upper body (the top pyramid - in other words your head and shoulders) as well as your face; they should remain immobile and impassive.



"Observing your reference marks in a mirror on stand"



Observing your reference marks in a mirror held by an assistant.

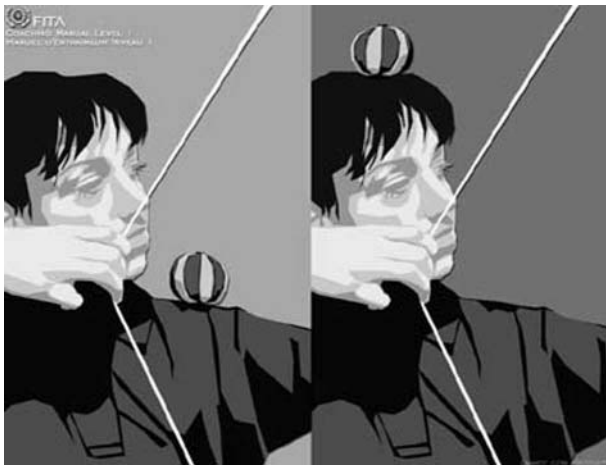
At the moment do not pay attention to the consistency of the facial marks. At full draw, move your eyes back toward the target and continue your shooting sequence - 6 times.

b) Repeat eyes closed - 6 times.

c) Alternate one simulation in the mirror, and one eyes closed - 6 times (3 in each situation).

<u>* While shooting:</u>

1. As soon as you have started to raise your bow (or just at the START of your draw), have someone put a soft ball or something else on the top of your head - See picture below. At the same time, move your eyes, WITHOUT moving your head toward a mirror that is very close to your face; observe the string approaching and landing on your face, while your face remains IMPASSIVE, especially your lips and chin.



Upper body exercise to control non-movement using a juggling ball.

At full draw have a look at the facial marks that you have got, then move your eyes back to the target and achieve your shooting sequence. The soft ball should have remained on your head - 8 arrows.

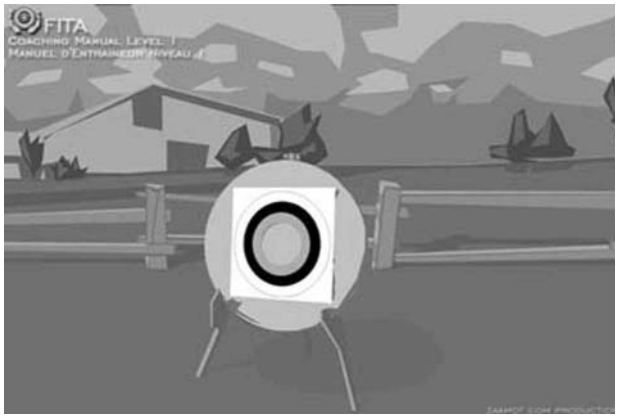
2.- Similar to above but close your eyes instead of watching yourself in the mirror - 8 arrows.

3.- Same as before but with unfocussed eyes (as when you are in the clouds) instead of watching yourself in the mirror - 8 arrows.

4.- Similar to above but shooting at a blank butt - 8 arrows.

5.- Similar to above but shooting at a cut-out target face, only showing scoring zones 1 to 5 - 8 arrows - See picture entitled "A cut-out target face"

6.- Same but shooting at a cut-out target face, only showing scoring zones 1 to 6 - 8 arrows.



A cutout target face.

7.- Same but shooting at a cut-out target face, only showing scoring zones 1 to 7 - 8 arrows.

8.- Similar to above but shooting at a cut-out target face, only showing scoring zones 1 to 8 - 8 arrows.

9.- Similar to above but shooting at a cut-out target face, only showing scoring zones 1 to middle of the 9 - 8 arrows.

10.- Similar to above but shooting at a cut-out target face, only showing scoring zones 1 to 9 - 8 arrows.

11.- Similar to above but shooting at a complete target face - 8 arrows.

Volume: 9 warm-up arrows + 18 simulations + 88 arrows over the exercises = about 108 arrows over the entire session.

Exercise suggested for teaching:

CONTROL HEAD STABILITY IN RELATION TO THE BOW SHOULDER

- Objective: to control and make the archer aware of the possible collapse of the chest at the end of the draw.
- Situation: usual shot, with partner participation.

Partner checks constant distance chin to bow shoulder.

- Equipment: basic equipment set-up.
- Instructions: the partner is positioned behind the archer at shoulder height and places one hand on the bow shoulder and the other against the archer's chin. Both hands remain in position and act as stops, making the archer sense any bow shoulder upward movement, or head movements toward the string.

This exercise incorporates the standard teaching process. During the draw, especially at the end, look in the mirror for immobility of the top portion of the body, then aim. Instruct the archer to repeat the exercise with eyes closed, looking up, then watching the empty butt, and finally by shooting at increasingly complete targets.

Exercise suggested for teaching:

FACE REFERENCE VERSUS ARROW / STRING FOREARM ALIGNMENT

1- Step to the shooting line. Have an assistant on the shooting line hold a mirror at face level and one meter from you.

2.- With your string fingers, grip a thin stiff stick, thin arrow, or pencil… as closely resembling the position normally used to grip the string.

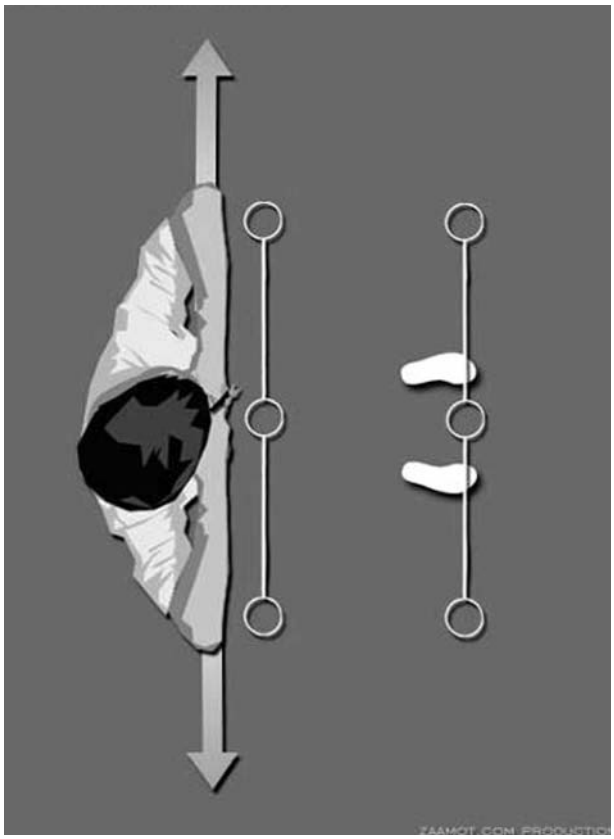
3.- With the forefinger of the other hand, grip the stick where you usually nock the arrow (for instance between your forefinger and middle finger). Hook the stick in the first joint, or a little deeper.

4.- Bring your fingers that are gripping the stick against your mouth whilst watching in the mirror. The stick should be vertical and right in the middle of your face touching your nose. Have the tip of your string forefinger touch your mouth between your lips.

At this stage:

- Your forearms should be on the same horizontal line, as your mouth or chin level.
- Observe that your forearms are in line .

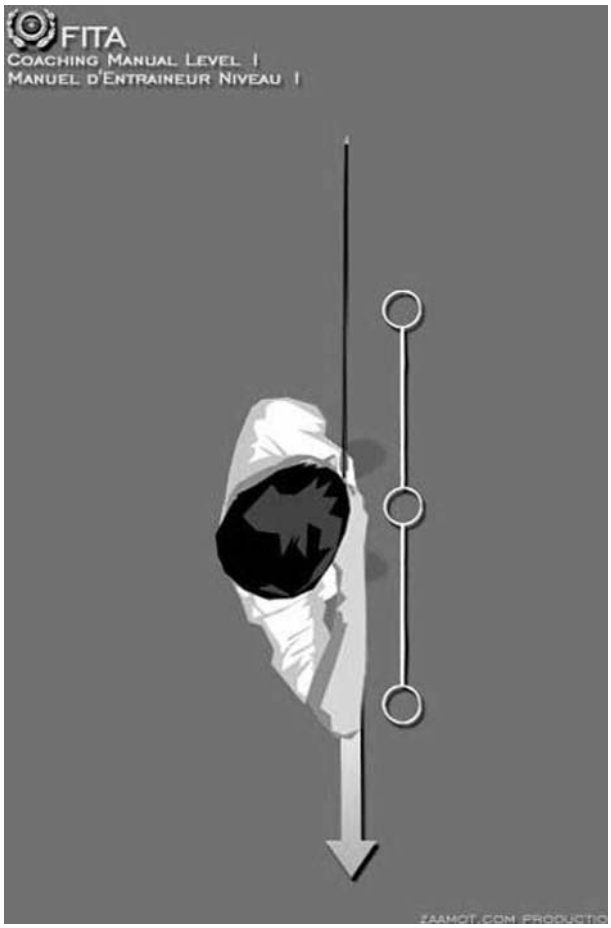
You have thus achieved a perfect force alignment system. See illustration below.



Natural and perfect alignement of both forearms through this simulation.

We will try to approach this ideal form with your bow at full draw.

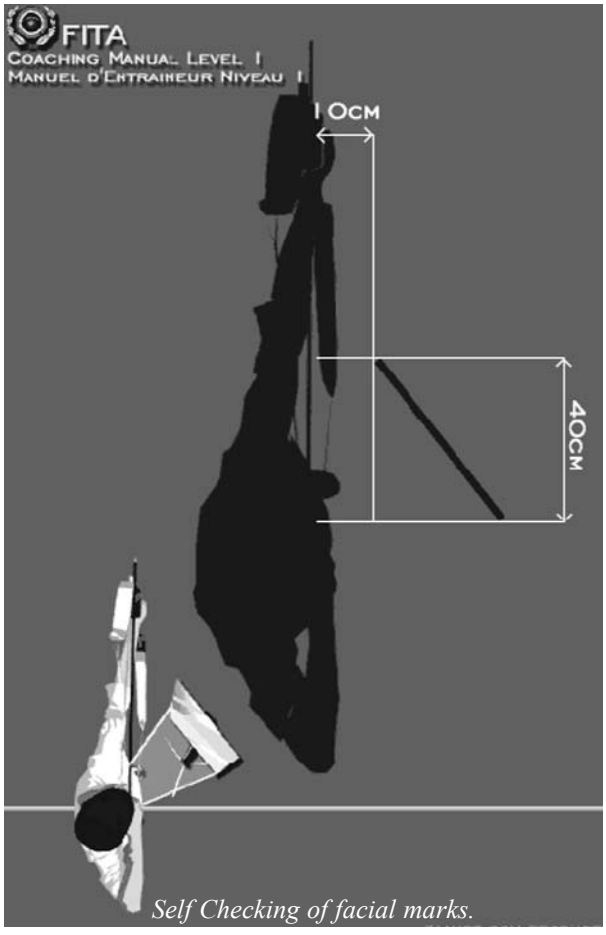
- Keep your arms, forearms and wrists relaxed.
- Lower your shoulders.



Replace the bow forearm with an arrow and you get the ideal position of the string forearm.

Through such a simulation beginners can identify their facial refence position.

5.- Turn your head gently toward the target. You should now feel the tip of your forefinger somewhere near the corner of the mouth. Note the spot you are touching and remember it for the next step; try to identify it in the mirror (without moving your head). Your assistant holding the mirror can move a little to make your observation easier, but feeling the touch is more important. The arrow/stick should be in the position of your string at full draw, which is vertical and down the centre of the target.



Self Checking of facial marks.

6.- Take your bow (with or without arrow), come to full draw - without tab it would be more accurate and easy (sorry for the small pain !) - have the tip of your forefinger at the same spot as noted previously.

Important: do not lean your head toward the target / string at any time, but maintain your preliminaries (low shoulders and straight head) throughout the process.

7.- Your assistant checks your draw length (where is your arrow point) when you are at full draw as previously described.

8.- Start over the process from step # 4 but bringing your fingers that are gripping the stick against the middle of your chin, while watching in the mirror. The stick should be vertical and right in the middle of your face touching your nose. Have your string fingers at their usual height, for instance your string forefinger touching just under your chin.
At this step:
- Your forearms should be on the same horizontal line, at your neck level.
- Observe that your forearms are aligned in any plane; you have achieved a perfect force alignment system. We will try to approach this ideal form with your bow at full draw.
- Keep your arms, forearms and wrists relaxed
- Lower your shoulders.

9.- Turn your head gently toward the target. Now you should feel the contact of your forefinger under your jaw, as well as the string contact with your chin. Your assistant holding the mirror can move a little to make your observation easier, but feeling the touch is more important. Ask your assistant to mark on your chin, where the string should be. Due to the bow weight, and the collapsing / stretching of some parts of your body while at full draw, the string location is ABOUT half an inch ahead of the stick (target side). À good way to mark this location is to affix a piece of tape on your chin with the rear edge at about ½" (13 mm) ahead of the stick. Whatever your choice, the mark should be done on your chin just above your forefinger, to minimise the difference between your vertical stick and the angle of the string. Try to see it (without moving your head) in the mirror.
In the next step you will try to have your string touching the face according to these marks (for instance just after the piece of tape).

String contact and location discovery.

10.- Now take your bow (with or without arrow) come to full draw - without tab it will at first be more accurate and easy (sorry for the small pain) - have your string located according to the mark on your chin - see previously. Your assistant will give you a visual feedback of this location, through the mirror.

Important: do not lean your head toward the target / string at anytime but maintain your preliminaries (low shoulders and straight head) all through the process.

11.- Repeat # 10 several times with your tab and an arrow. Your assistant must be ready with the mirror to show you where the string is touching your chin or face at full draw.

* Come to full draw 6 times, with eyes closed, then open your eyes and look in the mirror. If the string is located correctly shoot the arrow. If not, then come down and start again.

* Come to full draw 6 times, while looking at the base of the top limb. Then look in the mirror. If the string is located correctly shoot the arrow. If not, then come down and start again.
* Come 6 times at full draw, while looking at a blank butt. Then look in the mirror. If the string is located correctly shoot the arrow. If not, then come down and start again.
* During the next 6 arrows go through each of the above exercises in sequence (first arrow with eyes closed, second arrow looking at the base of the limb, third arrow looking at a blank butt). A full draw in each case take a quick look in the mirror to ensure the string is correctly located. If it is, shoot the arrow. If it is not, come down and start again.
* During two ends of four arrows, repeat the previous sequence but introduce a fourth exercise. On the fourth arrow, draw towards a regular target face. At full draw look quickly in the mirror to ensure that the string is correctly located and, if so, shoot the arrow. If not, come down and start again.
* From now, while shooting at a regular target face, alternate the next 12 arrows as follows:
  - one arrow - checking in the mirror that the string is correctly located and, if it is, shoot the arrow. If it is not, come down and start again; and
  - one arrow - shoot the arrow without looking in the mirror. However, if the location of the string feels wrong, come down and start again.

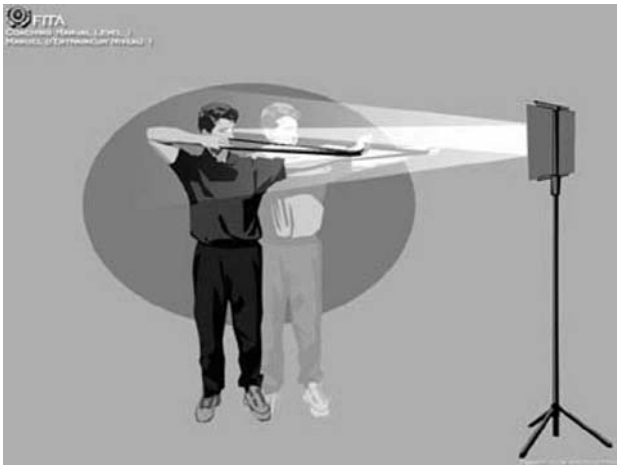
Exercise suggested for teaching:

END OF DRAW .

* Simulations with an elastic band.

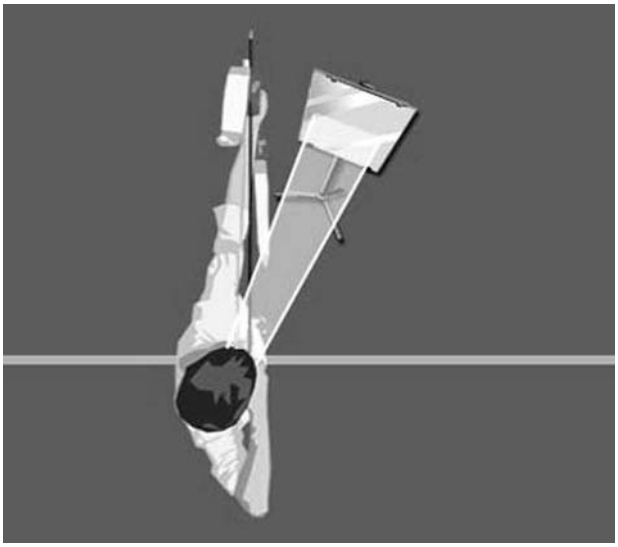
Preset your body and start the shooting sequence. As soon as you have started the drawing action, look towards the mirror WITHOUT turning the head, ensure that your upper body and face remain immobile and impassive. At this stage the constancy of the facial marks is not important. At full draw, move your eyes back toward the target and continue your shooting sequence - **5 times.**

Repeat with eyes closed - **5 times.** Alternate one simulation in the mirror and one with eyes closed - **6 times** (3 in each situation).



Self checking of the end of simulated draw.

1.- Preset your body and START your sequence toward the target; as soon as you have started your draw action, move your eyes, WITHOUT turning the head, ensure that your upper body and face remain immobile and impassive. At the moment ignore differences in the facial marks.



Self checking of the draw.

At full draw, move your eyes back toward the target and continue your shooting sequence.

2.- Repeat the previous actions, but close your eyes instead of watching yourself in the mirror.

3.- Repeat the first set of actions, but with unfocussed eyes instead of watching yourself in the mirror.

4.- Repeat the first set of actions, but shoot at a blank butt.

5.- Repeat the first set of actions but shoot at a cut-out target face showing only scoring zones 1 to 5.

6.- Repeat the first set of actions but shoot at a cut-out target face showing only scoring zones 1 to 6.

7.- Repeat the first set of actions but shoot at a cut-out target face showing only scoring zones 1 to 7.

8.- Repeat the first set of actions but shoot at a cut-out target face showing only scoring zones 1 to 8.

9.- Repeat the first set of actions but shoot at a cut-out target face showing only scoring zones 1 to middle of the 9.

10.- Repeat the first set of actions but shoot at a cut-out target face showing only scoring zones 1 to 9.

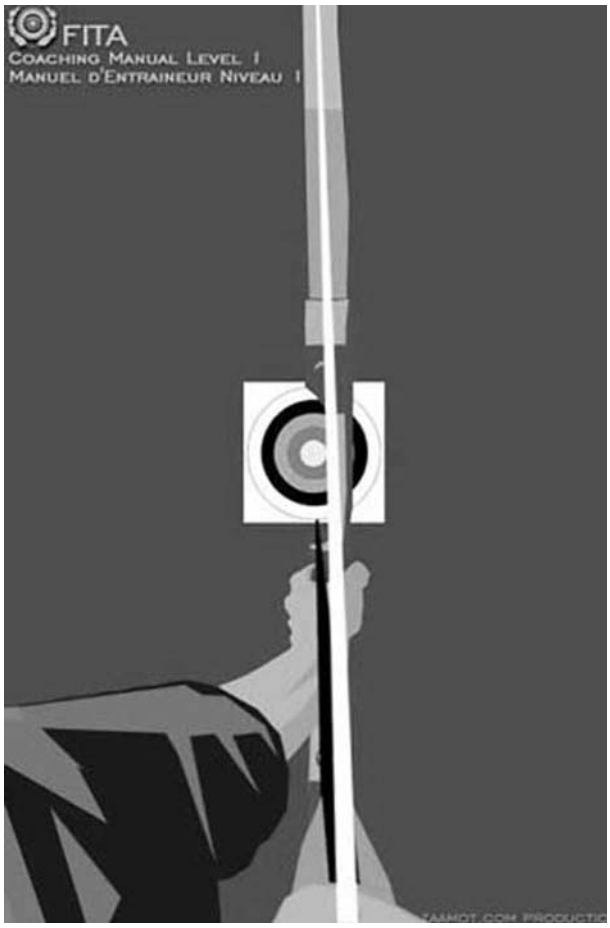
11.- Repeat the first situation, but shooting at a complete target face. Take special care of your train of thought/ attention focus during the draw.

Volume: 8 arrows per situation = 90 arrows over the exercise + 14 warm-up arrows = 104 arrows total over the session.

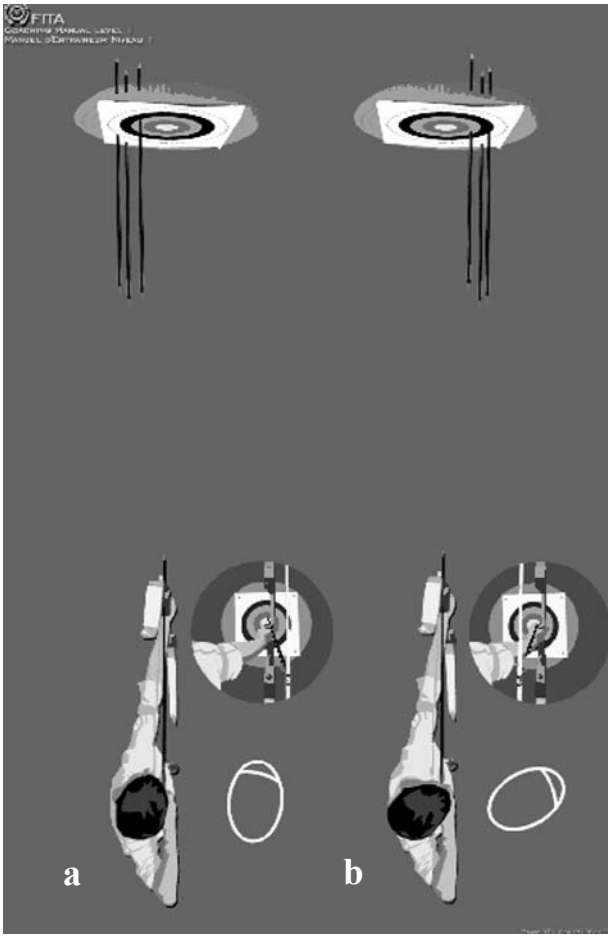
Exercise suggested for teaching:

STRING ALIGNMENT.

Reminder: purpose of the string alignment (bad name, because the string is ALWAYS in the centre of the bow; in fact, the archer adjusts the position of his/her eyes with reference to the plane of the bow, which includes the string and the bow).



A common string alignment, especially with no sight.



a) - Head turn/canted to the left = string towards the right and left impacts.
b) - Head turn/canted to the right = string towards left and right impacts.

At full draw

The archer tilts the head from right to left while watching the string and the bow, and see respectively the string on the left and right.
Can be done with an elastic string (see chapter # 4, in 4.2.2)

Exercise suggested for teaching:

STRING ALIGNMENT STABILITY

1. Test of duration of stable string alignment:

Set-up: One observer standing against a wall. Archer at 2 meters from the observer.

Task: Without an arrow the archer draws, aims at one of the observer's eyes and aligns the string the middle of the sight, which is on the observer's eye. As soon as the observer sees the archer's eye, sight and string ALIGNED, he/she starts a timer. The observer stops the timer when he/she sees a poor alignment, for example:

- for Recurve:
  when there is space between the string and the aiming dot;
- for Compound:
  a reference between Peep-sight and scope can be found.

Record at least 5 timings, if they are not consistent, increase their number.

Note: This exercise seems valid for compound, but still needs some refinement. Any suggestion will be welcome.

2. Self Control of the Alignment stability:

a.- Affixed a mirror to the target butt at a height such that at full draw, the archer can aim at his/her aiming eye. To achieve this view, you can play with the inclination and height of the mirror.

b.- Now take your bow and stand +/- 2 meters form the mirror.

c.- Draw the bow without an arrow and aim at your aiming eye. Try to maintain the best stability as possible with your eye, your string and sight - or peep and scope - while aiming.

Volume: warm-up arrows + 8 sighting arrows + 24 arrows through exercise = 32 arrows over the entire session.

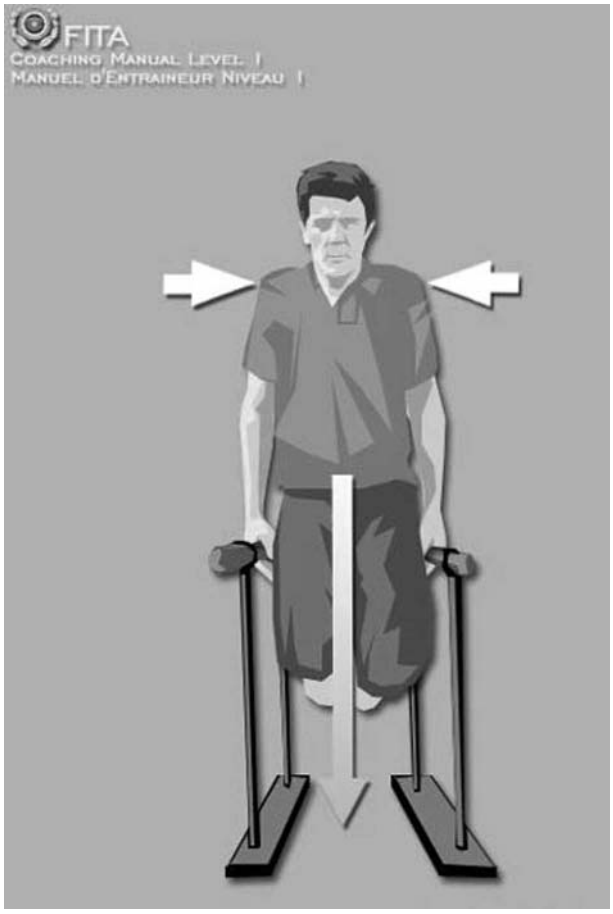
Exercise suggested for teaching:

CHEST ACTIVITY DURING FULL DRAW : THORAX EXPANSION

- Objective: discover the effort needed to counter the compression caused by the tension of the bow.

Situation #1:

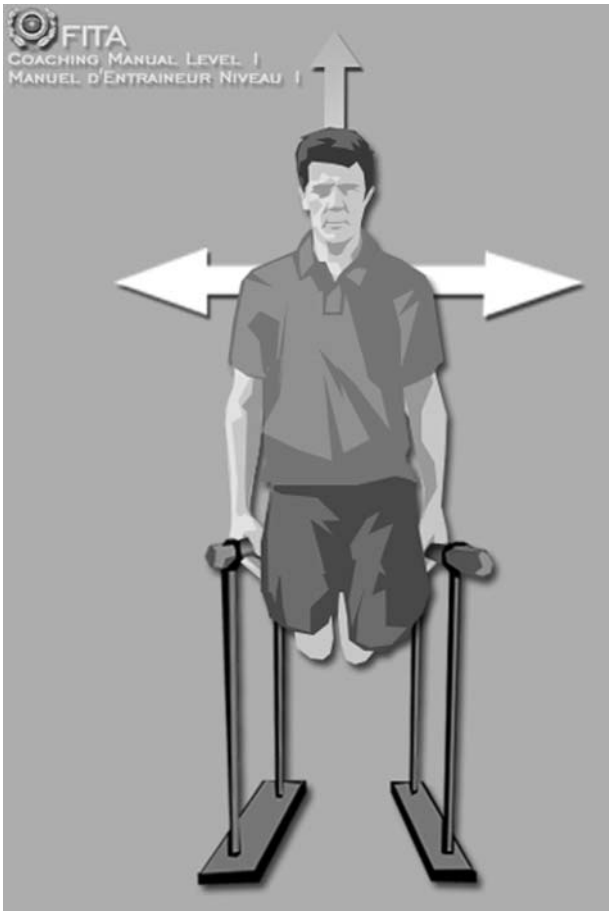
- Equipment: two supports, 70 cm wide and 70-120 cm high (e.g. two chairs with person sitting on each chair.)
- Instructions: Support the body with the hands, feet off the ground, shrug the shoulders and lower the body. The width of the shoulders will now be at a minimum.



Collapsed chest shrinks the triangle between shoulders and aiming eyes, the shoulder span is reduced

Move the shoulders down and lift the body up again. The width of the shoulders will increase to the maximum position.

This increase will be enough to counteract the compression of the shoulders by the action of the bow.



Chest expansion clears the head from shoulders and increases the shoulder span.

This exercise incorporates the standard teaching process. Watch the chest activity during full draw. Instruct the archer to repeat the exercise with eyes closed, looking up, watching the empty butt, and then by shooting at increasingly complete targets.

Note:
Stretching head up also helps to maintain the body in a straight vertical position and to balance the body weight on the two feet. Nevertheless, ensure the archer maintains a low centre of gravity.

Situation #2:
The archer performs "pigeon neck" movements, in front of the mirror with elastic bands attached to the bow hand and string elbow. The archer tries to stretch the elastic bands even further.

Nape stretching: “The pigeon neck”

Exercise suggested for teaching:

BOW SHOULDER EXTENSION.

- Objective: Establishing the action allowing the bow arm to remain in the shooting plane, and avoiding any twisting while:
  - Extending our draw length - for users of clicker and back tension release aid (or release aid with trigger but using a back tension method);
  - Avoiding any creeping or collapse due the spring effect of the bow - for Recurve archers with no clicker, including Bare-Bow division and also for Compound archers not identified above.

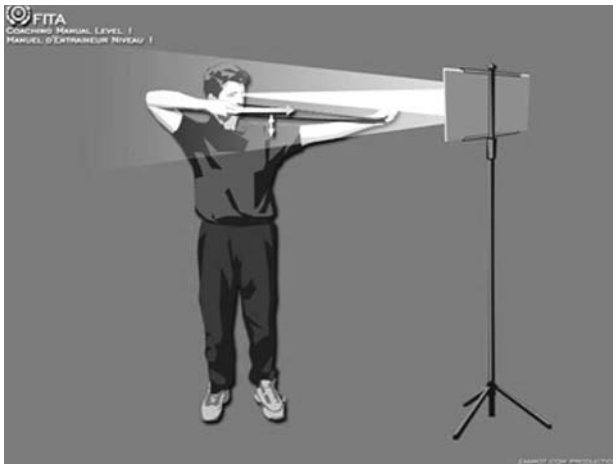
In other words, how to extend the bow shoulder and shoulder blade down and away from the spine?

Special attention:
Feel the string shoulder relax and moving down & away. While shooting during this session, do not worry about the draw action. The action should mainly come from the big muscles around your rib cage, allowing reduction of the muscular effort or your bow arm.

1.- Simulate the action of your bow shoulder on a doorframe or any other pillar,… as per picture entitled "Push simulation on a pillar". Try to move your body in the shooting plane ONLY - 20 reps.

Push simulation on a pillar.

2.- In front of a mirror, simulate your push action with an elastic band attached to your string elbow and held by your bow hand. Ensure the distance between the elastic band and bow shoulder/arm remains constant - see illustration entitled "Push simulation with an elastic band in front of a mirror" - 14 repetitions



Push simulation stretching an elastic band.

3.- While shooting, an assistant applies an arrow flat across your top back just above your shoulder blades. At FULL DRAW (not during the draw), the assistant looks along the shaft while you are pushing to extend your draw length (with a clicker) or opposing the tension of the bow (without a clicker). The arrow should keep the same orientation (whatever this orientation) - see picture below - 12 arrows.

Assistant checking that the push action has no effects on the line of shoulders.

NOTE: On the illustration the arrow could be higher than what is shown. It could be at the base of the neck as well, resting on the posterior top part of the

shoulders.
4.- At full draw, watch your bow arm while pushing to extend your draw length (with a clicker) or opposing the tension of the bow (without a clicker). No twisting should be observed at the bow shoulder level, and the distance between the arrow and your bow-
arm/shoulder should remain constant - 12 arrows.

5.- Repeat #4 with eyes closed - 12 arrows.
6.- Same, but with eyes up & unfocussed - 12 arrows.

7.- Same but watching and shooting at a blank butt - 12 arrows.

8.- Continue on cut-out spots or faces - 6 arrows per cut-out spot (6 situations) = 36 arrows.

Volume: 12 arrows of warm-up + 14 simulations with an elastic band + 96 arrows over the exercises = 122 shots over the entire session.

Exercise suggested for teaching:

"BASIC" DRAW ACTION

This session on your draw will be completed by another one about "BACK TENSION", scheduled for the next shooting session.

- Objective: Establishing the draw action allowing the archer to stay in the shooting plane while trying - with the string side of your body to extend the draw length (clicker) / to get the trigger (Compound). In other words: How to move the string shoulder blade/shoulder while avoiding any twisting of the archer's shoulders, waist or neck.

Special attention: While shooting during this session, reduce your push action. The action should mainly come from the big muscles around your rib cage, not from your string arm, forearm, wrist or hand.

1.- Simulate the action of your string shoulder on a wall as per pictures entitled "Pull simulation in the shooting plane - simulation on a wall".

Pull simulation in the shooting plane - simulation on a wall

2.- Try to move your body in the shooting plane ONLY; you will certainly achieve this by moving your string blade away from the spine - 20 reps

3.- In front of a mirror, simulate your draw action with an elastic band attached to your string elbow and held by your bow hand, watch the constant distance between your elastic band and bow shoulder/ - 14 repetitions

4.- While shooting, an assistant applies an arrow flat cross your top back just above your shoulder blades. At FULL DRAW (not during the draw), the assistant looks along the shaft if while you are pulling to get your clicker (Recurve) / trigger (Compound); the arrow should keep the same orientation (whatever this orientation) - as picture

Assistant checking that the push action has no effects on the line of shoulders (See NOTE on previous similar picture)

below - 12 arrows.

5.- At full draw, watch your bow arm while getting your clicker (Recurve) / trigger (Compound). No twisting should occur at the following levels:

- bow shoulder
- waist
- neck

The distance between the arrow and your bow-arm should remain constant - 12 arrows.

6.- Repeat #4 with eyes closed - 12 arrows.

7.- Same, but with eyes up & unfocussed - 12 arrows.

8.- Same but watching and shooting at a blank butt - 12 arrows.

9.- Continue on cutout spots or faces - 6 arrows per cutout spot (6 situations) = 36 arrows.

Volume: 12 arrows of warm-up + 14 simulations with an elastic band + 96 arrows over the exercises = 122 shots over the entire ses-

sion.

Exercise suggested for teaching:

COMBINED DRAW ACTIONS
(Basic + Back tension)

- Objective: Introduce Back Tension and establish the combined Draw actions:
  - Spread your string shoulder down and away from your spine (Basic draw) and;
  - Rotating action of the posterior muscles of the string shoulder (Back Tension).

1.- Simulate a Basic Draw action with your string elbow against a wall, as you did during the latest shooting session. Try to move the body in the shooting plane ONLY - 10 repetitions.

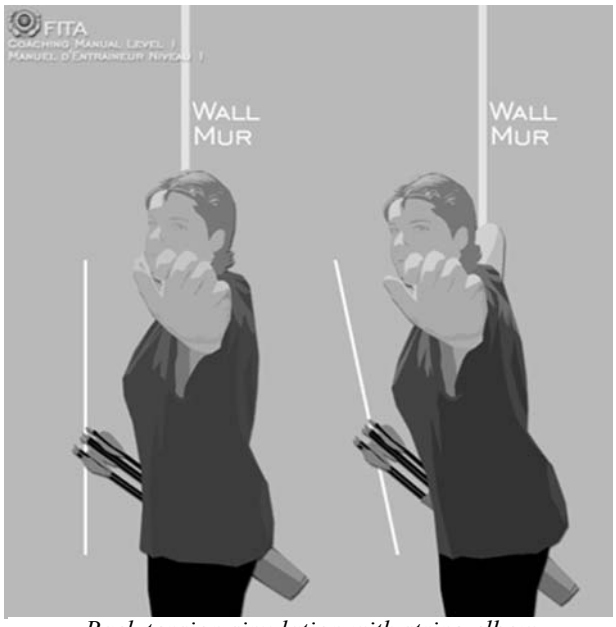
Special attention: Your string scapula should move away from your spine.

2.- Back tension simulation.

Have the tips of your string -fingers on your sternum, while the inside of your string-hand is flat against your right chest. Move your string elbow forward while curling your fingers and bringing the external part of your fingers against the left part of your chest - see picture below.

Now while returning back to the original position feel the motion in the back part of your string shoulder. This feeling is close to what is usually called "Back Tension" - see picture below - 10 repetitions.

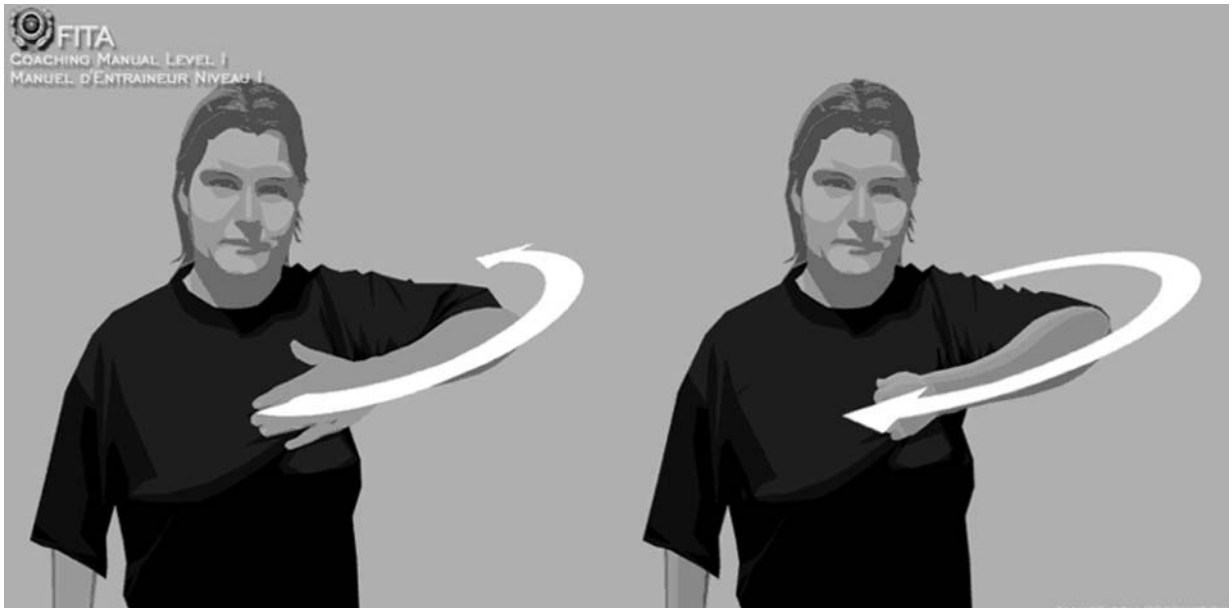
3.- Simulate a Back Tension action with your string elbow against a wall as you did in #1, but this time try to move your body in the in the antero-posterior plane (toes to heels) - see pictures below - 10 repetitions



Back tension simulation with string elbow pressed on a wall.

Special attention: Your humerus (upper arm), should turn clockwise viewed from the top.

4.- Still with your string elbow against a wall, combine the simulations of the Basic Draw and those of Back Tension actions. Your body should move 45 degrees, e.g. a bit toward the imaginary target and toward your toes - 12 repetitions.



"Simulation introducing the Back Tension feeling" .

Special attention: Your string side shoulder blade (scalula) should be moved away from the spine, and the humerus (upper arm bone), should turn clockwise (for a right hand archer) viewed from the top in the hori zontal plane. Your string elbow should NOT move down.

5.- Then simulate the combined Draw actions with an elastic band attached to your string elbow and held by your bow hand - 6 repetitions

6.- While shooting, an assistant applies an arrow flat cross your top back just above your shoulder blades. The assistant looks along the shaft if at FULL DRAW (not during the draw), and while you are pulling to get through your clicker (Recurve) / operating the trigger (Compound); the arrow should keep the same orientation (whatever this orientation) - see the following pictures - 6 arrows.

Assistant checking that the extension action of the shoulders has no effects on the line of shoulders (See NOTE on two previous similar pictures).

7.- At full draw, watch your bow arm whilst pulling through your clicker (Recurve) / trigger (Compound). No twisting should be observed at the following levels:

- bow shoulder
- waist
- neck

6 arrows.

8. Repeat #2 with eyes closed - 15 arrows.

9.-Repeating the same, but with eyes up & blurred - 12 arrows.

10.- Repeating the same but watching and shooting at a blank butt - 12 arrows.

11.- Continue while shooting at cut out spots or faces - 6 arrows per cut out spot (6 situations) - 36 arrows.

Volume: 12 warm-up arrows + 87 arrows over the exercises = 99 arrows total over the session.

Exercise suggested for teaching :

EFFICIENT DRAW

- Objective: Be able to draw without any head and upper body movement.

1.- Simulate the "Combined Draw Actions" with an elastic band attached to your string elbow and held by your bow hand.

Combined Draw Actions are developed in the previous exercise, they combine the *Spread your string shoulder down and away from your spine (Basic draw) and the Concentric action of the posterior muscles of the string shoulder (Back Tension).*

Simulating the combined Draw Actions.

2.- Feel that your string hand moves SLIGHTLY along your chin (Recurve and some Compound archers) or jaw (Barebow and some Compound archers) - 15 repetitions

3.- While shooting at a very short distance.
At full draw (not during the draw), watch the string motion to your face in a mirror, . Try to see its progress (moving backward) - 6 arrows.

4.- Now eyes closed, still from a very short shooting distance, try to feel either:

- the string moving backward to your face;
- your string hand sliding backward under your chin, or against your jaw;
- the string pressure increasing on your face (often on your chin and nose);
- a combination of any above feelings.

18 arrows.

5.- Same, but with eyes up & infocussed - 12 arrows.

6.- Same but looking and shooting at a blank butt - 12 arrows.

7.- Continue the exercise using cut-out spots or faces - 8 arrows per cut-out spot (6 situations) - 48 arrows.

Volume: 96 arrows over the exercise + 8 warm-up arrows = 104 arrows total over the session.

10

Exercise suggested for teaching:

BASIC SYMMETRIC FULL DRAW ACTION.

Note: *This session sets out to teach the COMPLETE Full Draw Action, but just the symmetric part of the FDA. During the next session Back Tension will be added to this basic Symmetric FDA. From there it will be up to you to choose YOUR most efficient FDA.*

- Objective: Establishing the BASIC combined muscular actions of the bow and string sides of the archer's body which allow to maintain the lines of forces (Push and Pull) in their axis, just by spreading both shoulders down and away. At the same time flatten your chest, stretch your head up and lower your belly.

1.- Simulate the action of your bow shoulder on a door frame or any other pillar… as per picture below.

"Push simulation on a pillar".

Try to move your body in the shooting plane ONLY - 12 repetitions.

2.- Shoot at a blank butt, eyes may be open or closed, 12 arrows with mainly - a repulse action.

"Draw in the shooting plan simulation on a wall".

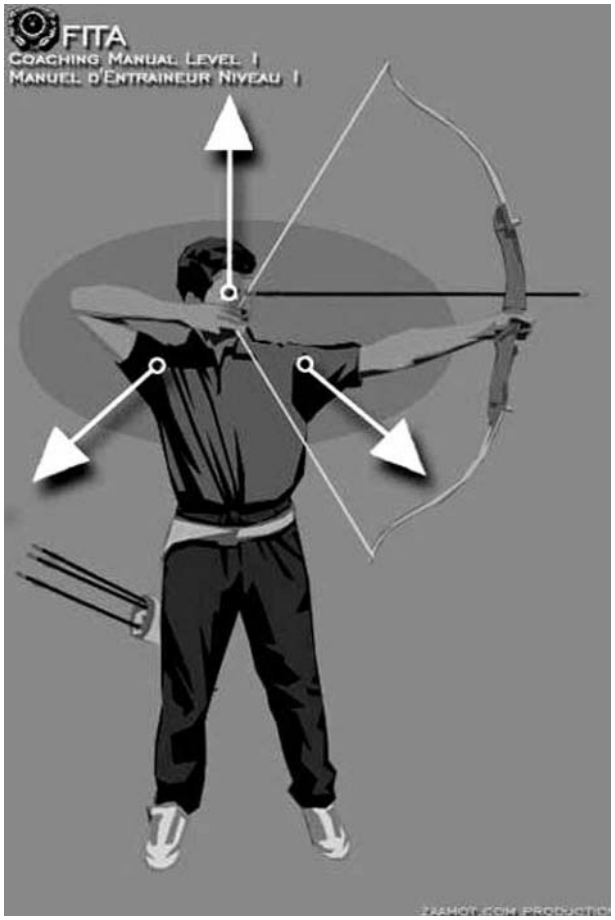
3.- Simulate the action of your string shoulder on a wall as per picture below.
Try to move your body in the shooting plane ONLY - 12 repetitions.

4.- Shoot at a blank butt, eyes may be open or closed - 12 arrows. Concentrate mainly on the draw action.

5.- Simulate a SYMMETRIC full draw action with an elastic band held by your bow hand and affixed to your string elbow. Research the muscular actions:

- Maintaining the elastic band in the shooting plane;
- Avoiding any twisting or deformation of your body, especially the top, by spreading your shoulders blades and shoulders down & away from your spine.

Have the feeling of relaxing down & away your shoulders. Stretch your head upward. See picture entitled "Enlarge your top pyramid" - 12 repetitions.



Enlarge your top pyramid.

7.- Repeat #2 with eyes up & blurred - 12 arrows.

8.- Repeat the same but at a blank butt- 12 arrows.

9.- Continue shooting at cut-out spots or faces 9 arrows per cut-out face (six situations) = 54 arrows.

Volume: 15 warm-up arrows + 114 over the exercises = 129 arrows over the entire session.

Some archers feel a kind of boat feeling, imagine that your head is the mast of the yacht, your bow hand is the prow of the ship, and your string elbow the stern. Now when you lower your shoulders, feel a slight rising of the mast, prow and stern.

The action should mainly come from the big muscles around your rib cage. Allowing a decrease of the muscular action of your arms. Have the feeling of expanding the triangle: aiming eye / bow shoulder / string shoulder.

6.- Eyes closed while:

- Getting to your clicker (Recurve)
- Getting to your trigger (Compound)
- Increasing your draw slightly (Bare Bow and others).

look for a symmetric and balanced expansion of the triangle: aiming eye / bow shoulder / string shoulder, while maintaining this triangle in the shooting plane - 12 arrows.

Exercise suggested for teaching :

COMPLETE FULL DRAW ACTION.

- Objective: Combine the:
  Push action (bow part of the archer);
  and
  Draw combined action (string part of the archer).

- Description:

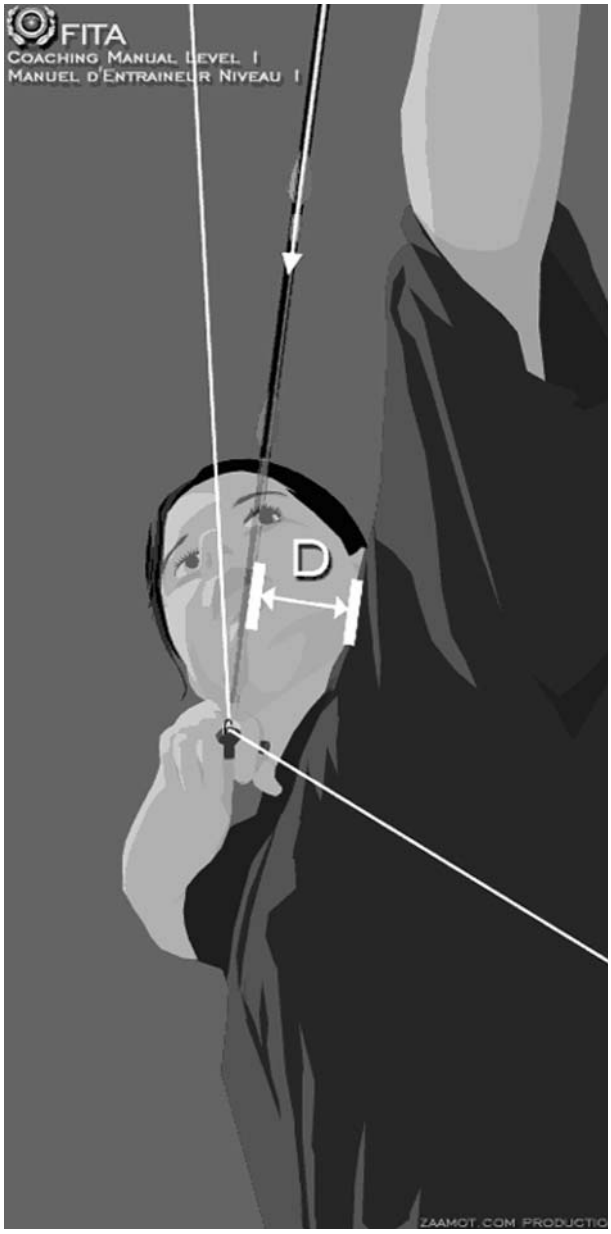
A. Push action - Revision:

1.- Simulate the action of your bow shoulder on a doorframe or any other pillar… as per picture entitled "Push in the shooting plane - Simulation on a pillar". Try to move your body in the shooting plane ONLY - 12 reps.

"Before pushing with elastic band".

"After pushing with elastic band".

2.- In front of a mirror, simulate your push action with an elastic band attached to your string elbow and held by your bow hand, watch the constant distance between your elastic band and bow shoulder/arm - see the previous illustrations
- 12 repetitions



"Constant distance line of forces-Bow shoulder while pushing".

3.- While shooting, an assistant applies an arrow flat across your top back just above your shoulder blades. At FULL DRAW (not during the draw), the assistant looks along the shaft while you are pushing to:

extend your draw length to pull through your clicker;

or, extend slightly your draw length before operating your trigger;
or, extending your draw length slightly to cancel the spring effect of the bow (no clicker).

The arrow should keep the same orientation (whatever this orientation) - see picture below- 9 arrows.

Assistant chacking that the push action has no effects on the line of shoulders.

B. Combined Draw action - Revision:
4.- With your string elbow against a wall, combined the simulations of the Basic Draw and of Back Tension actions. Your body should move 45 degrees, e.g. a bit toward the imaginary target and toward your toes - 12 repetitions.

Special attention:

Your string blade should be moved away from the spine, and the humerus (arm), should turn clockwise viewed from the top in the horizontal plan. Your string elbow should NOT move down.

5.- In front of a mirror, simulate the combined Draw actions with an elastic band attached to your string elbow and held by your bow hand - 12 repetitions.

6.- While shooting, an assistant applies an arrow flat cross your top back just above your shoulder blades. At FULL DRAW (not during the draw), the assistant aims along the shaft while you are pulling to:

extend your draw length for getting yourclicker;
or,
extend slightly your draw length for getting your trigger;
or,
extend slightly your draw length for cancelling the spring effect of the bow (no clicker).

The arrow should keep the same orientation (whatever this orientation) - similar as shown on previous picture- 9 arrows.

Complete Full Draw Action: A + B
7.- In front of a mirror, simulate the Complete Full Draw Actions with an elastic band attached to your string elbow and held by your bow hand - 12 repetitions.

8.- While shooting, at full draw, watch your upper body and and the arrow, while you are:

extending your draw length to get through your clicker;
or,
extending your draw length slightly to get through your trigger;
or,
extending your draw length slightly to cancel the compressive effects of the bow tension (no clicker).

No twisting or deformation should be observed at the following levels - 10 arrows:

- Bow shoulder
- Waist
- Neck

9.- Repeat #8 with eyes closed, feeling the perfect maintenance of all the axis of your physical form - 12 arrows.

10.- Same, but with eyes up & blurred - 12 arrows.

11.- Same but watching and shooting at a blank butt - 12 arrows.

12.- Pursuit on cut-out spots or faces - 9 arrows per cut-out spot (6 situations) - 54 arrows.

Volume: 12 arrows of warm-up + 118 arrows over the exercises = about 130 arrows over the entire session.

Exercise suggested for teaching:

MOVING CENTRE FOR AIMING #1.

1.- Display a horizontal line across the butt (1" masking tape will do).

a) Draw your bow and aim at the left end on the line. At full draw move your sight slowly along the horizontal line toward the right while getting your clicker/trigger & releasing (6 arrows).
Special attention: Identify which part of your body allows your sight to follow the line

b) Same as 1) but from right to left (6 arrows).
Special attention: Identify which part of your body allows your sight to follow the line

You should have realised that it is not your top body that allows this displacement.

2.- Same with a vertical strip

a) from up to down (6 arrows)
b) reverse (6 arrows)

Special attention: Identify *which part of your body* allows your sight to follow the line
You should have identified that it comes from your waist or belly. Keep this in mind, especially for Field archers, also when it is windy (how to re-centre your sight after a gust of wind).

3.- Same with the 2 diagonals

a) from high left to low right (6 arrows)
b) reverse on one diagonal (6 arrows)
c) from high right to low left (6 arrows)
d) reverse on the other diagonal (6 arrows)

4.- Same on a circle, you can use a target face and follow a line between 2 colours;

a) Clockwise (6 arrows)
b) reverse (6 arrows)

2.- Same on a sinuous / doodled line; the length of each segment of the sinuous line should make you change direction at least once while at full draw

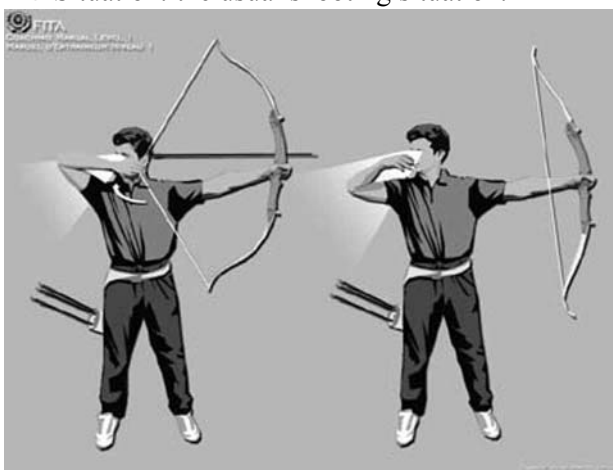
a) from one way (6 arrows)
b) reverse (6 arrows)

Volume: 72 arrows over the exercises + 8warm-up arrows = 80 arrows over the session.

Exercise suggested for teaching:

NECK AND SHOULDER RELAXATION TEST

- Objective: control the level of neck and shoulder tension/relaxation.
- Situation: the usual shooting situation.



Rotating head proves the neck relaxation. The archer should not release with the head turned away from the target, unless the archer is less than 4 metres from the target.

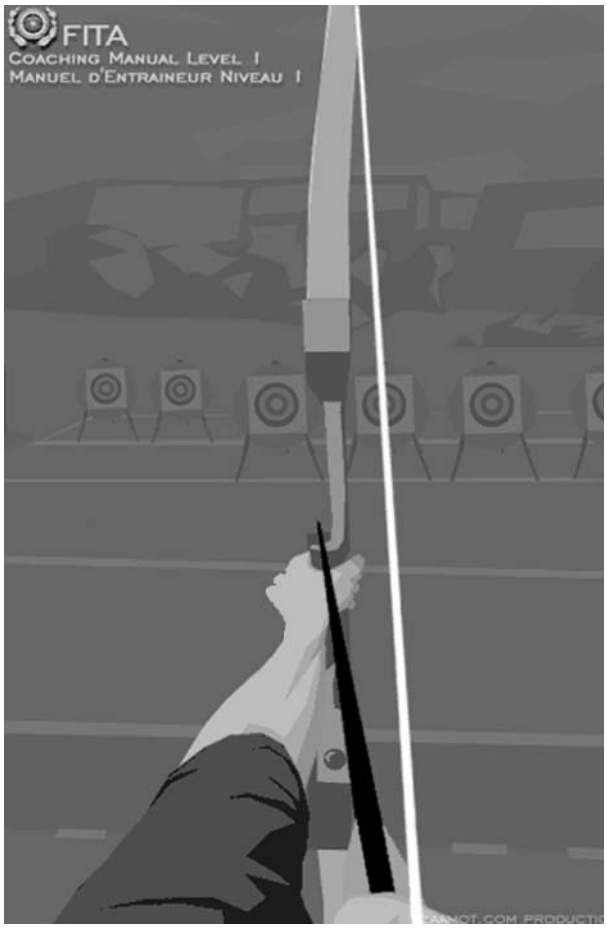
- Equipment: bow.
- Instructions: at full draw, lower the string hand under the jaw (for triangle and straight line methods), or draw the string hand directly to position. Turn the head, until you are looking in the direction of your string elbow.

This exercise incorporates the standard teaching process. Instruct the archer to repeat the exercise with eyes closed, looking up, watching the blank butt, and then by shooting at increasingly complete targets.

Exercise suggested for teaching:

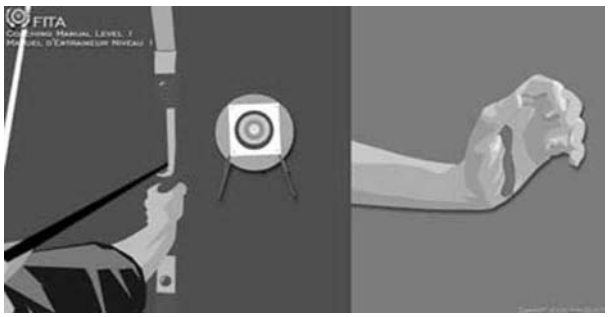
BOW HAND

- Objective: discover a bow hand position easy to reproduce; solid, not tiring, relaxed, allowing for an unobstructed string displacement.
- Situation: shooting situation.

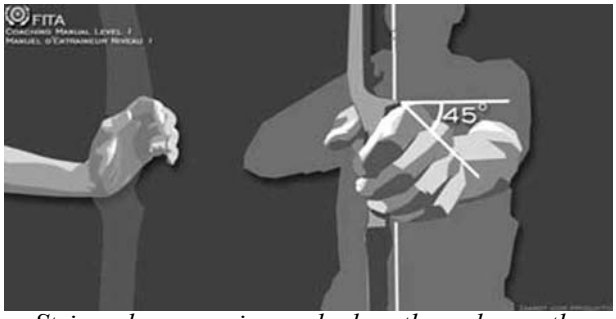


A "good" bow hand position.

- Equipment: bow.
- Instructions: pay attention to:
  - The obstructed string displacement when the ball of the little finger palm side presses against the bow grip; and

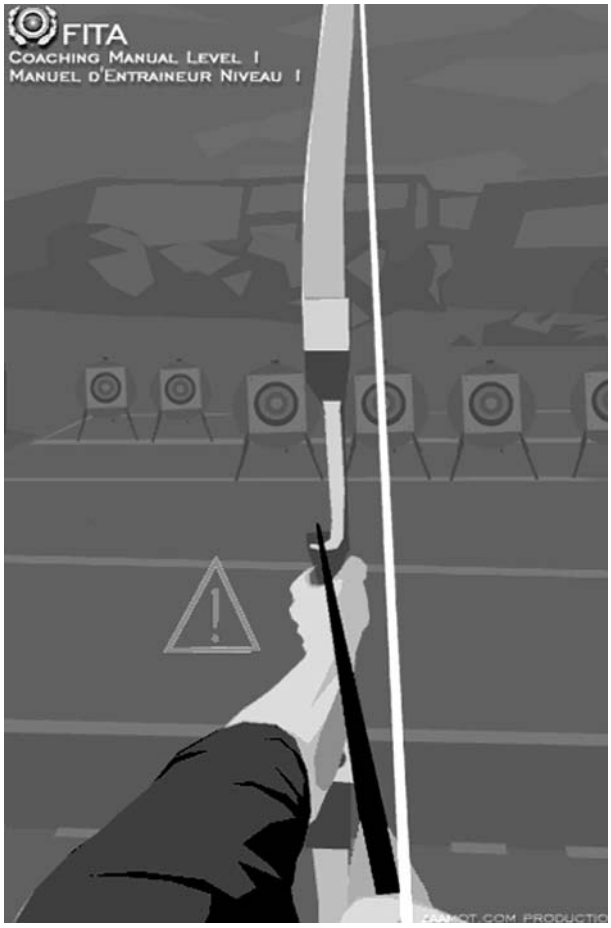


String clearance is poor when the palm on the little finger side presses against the bow grip.

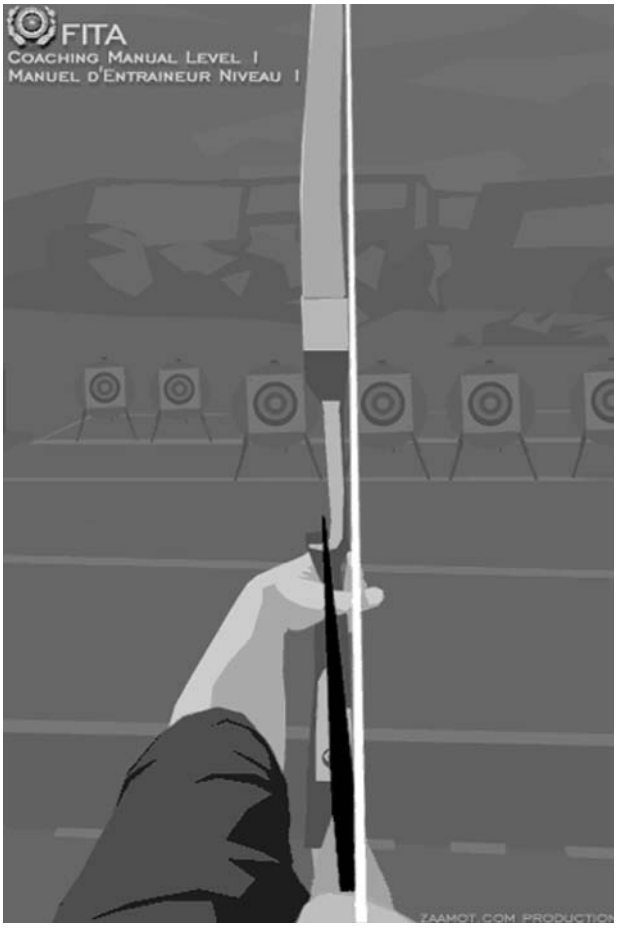


String clearance is good when the palm on the little finger side is not in contact with the side of the bow grip.

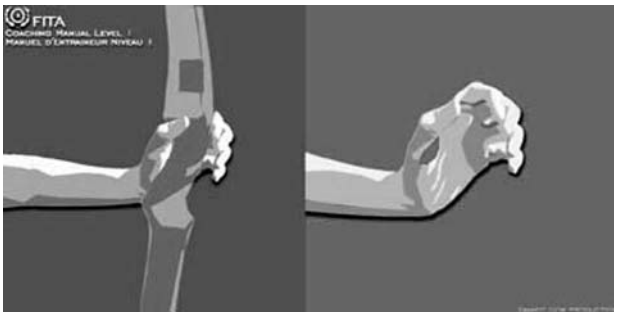
- The discomfort and tiring nature of the position when the string is pulled slightly with the bow grip pressing against the base of the thumb.



Another view of a poor string clearance due to the palm of the little finger pressed against the bow grip.



Bow hand position out too far and on thumb.



An unstable and tiring grip occurs when pressing the thumb against the bow grip.

A recommended position is shown in illustration entitled "A good bow hand position", it provides a support zone between the lifeline and the base of the thumb.

A "good" bowhand position.

If the torso exercises were well stabilised into the archer's shooting process, do not work on the bow shoulder position. If the siring displacement is obstructed and neither the bow hand position, nor the unlocking of the elbow is responsible, repeat the two first torso exercises.

Try the following exercise if string displacement is still obstructed. If the string displacement is unobstructed, move on to the bow wrist relaxation control exercises.

Exercise suggested for teaching:

BOW HAND.

* Olympic Bow Shooters

A1. At about 4 meters from the target, load an arrow on your bow. WITHOUT the clicker, raise your bow arm to shoulder level, an assistant behind you supports you at your string shoulder, and draws your string just a little (10cm). See illustration: "Bow hand relaxation - shooting with an assistant, the assistant releases the bowstring".

Bow hand relaxation - shooting with an assistant. Not seen on the illustration: left hand of the assistant holding the string shoulder of the archer.

Note to the assistant: draw just a little toward the archer's chest, NOT higher, to avoid hitting the archer in the face upon release.

Archer's task: OBSERVE YOUR bow-hand, make it as relaxed as possible, when the assistant releases you should see your bow wrist bend ing down smoothly and finishing loose, your fingers should have stayed slightly curved and very relaxed -10 arrows. See illustra tion: : " A relaxed bow hand after the shot "

A "good" bowhand position at full draw.

A2. Now do it alone - 10 arrows. See the next illustration.

"Bowhand relaxation at pre-draw".

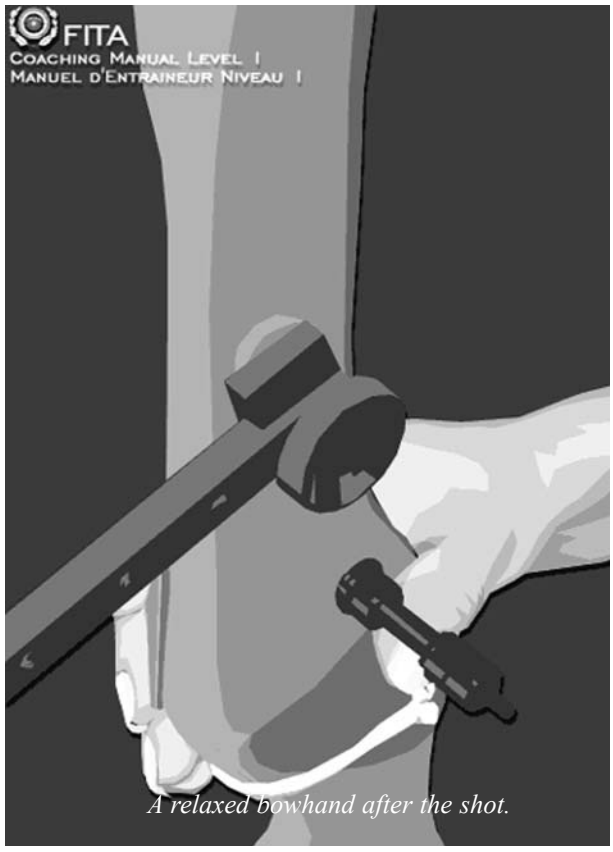
A3. As above but increase your draw progressively at each arrow until reach full draw - 10 arrows

A4. Do the same with your clicker on - 10 arrows.

* Compound archers.

A1. Standing close to the target (5Mtrs.) and at full draw, WATCH YOUR bow hand, make it as relaxed as possible while an assistant squeezes your trigger to release on your behalf. You should see your bow wrist bending down and finished very relaxed, your fingers should have stayed slightly curved and loose - 20 arrows.

A2. Now have the archer go through the whole procedure alone - 20 arrows



A relaxed bowhand after the shot.

Exercise suggested for teaching:

FINGER RELAXATION TEST (PRIOR TO INTRODUCING THE SLING)

- Objective: control the bow finger relaxation.
- Situation: in pairs, the archer holds the bow; the partner stands beside the archer, on the side of the bowhand fingers.

- Equipment: bow, no arrow is necessary.
- Instructions: the partner tries to make the archer's fingers move to make the archer aware of the relaxation level. The archer keeps the bow arm in a horizontal position, without tensing up, and then looks at the fingers, or closes eyes, trying to relax the fingers.

Partner checks the relaxation of the bow hand fingers by touching them.

Introducing the sling

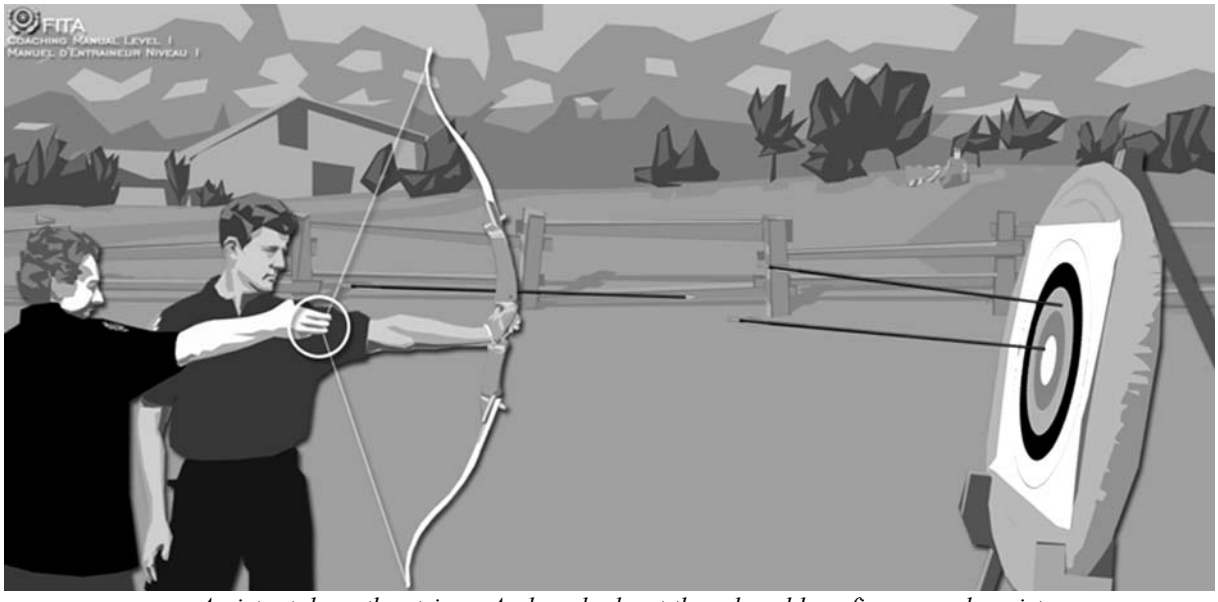
- Objective: to keep the bow still (free of any movement).

- Situation: three meters from the butt. In pairs, the archer holds the bow and the partner is behind the archer. The partner holds the archer' shoulder with one hand, and with the other hand holds the string while drawing it slightly.

- Equipment; shooting equipment with sling adjusted. Avoid adhesive slings affixed to the bow.

- Instructions: the partner orients the arrow toward the butt; the archer keeps the bow arm in a horizontal position, without tensing up. The archer looks at the bow fingers and wrist, which are highly relaxed, from now until two or three seconds after the release. The partner releases during this time. Afterwards, the archer does the same thing alone. Archer increases the draw length progressively, until full is accomplished.

This exercise incorporates the standard teaching process. Instruct the archer to repeat the exercise with eyes closed, looking up, watching the empty butt, and then by shooting at increasingly complete targets.



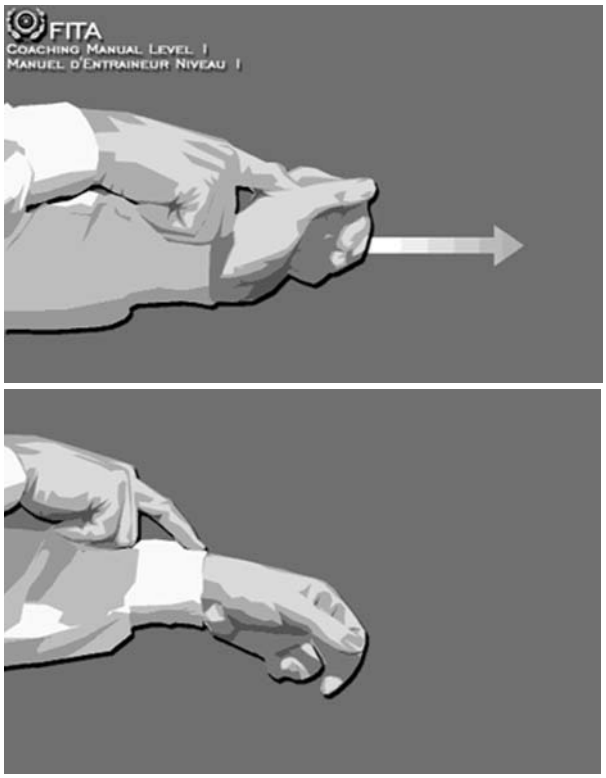
Assistant draw the string - Archers looks at the relaxed bow fingers and wrrist.

Exercise suggested for teaching:

BOW HAND

- Objective: Develop a passive bow hand and fingers, to get the propulsion of the arrow be done without any force being applied to the riser which could create torque in the bow at full draw, during the arrow propulsion period (just after release).

Simulations of bow hand relaxation. Wrist is relaxed on the grip, therefore when the grip moves forward just after the release, the wrist bends down - See pictures entitled "Simulation of a relaxed bowhand at full draw and after release"
- 12 repetitions



"Simulation of a relaxed bowhand at full draw and after release.

1. Hold a 2" nail between your bow thumb and your bow forefinger. The length of the nail could be slightly different depending on the thickness of the bow grip and natural finger position. Roof nails are usually very good for that exercise - see picture entitled "Bowfingers holding a nail".

At full draw watch your bow hand and fingers and release. The nail should be pushed away by your riser while you should not feel any residual pinhole in any of your fingers - 12 arrows

Bowfingers holding a nail.

2. For those who have some difficulty in properly implementing this exercise, add the following step. Same exercise, but while watching your bow fingers through a mirror placed 50 cm ahead of your bow and a bit on the right (for right hand archers), showing the front of your riser and your fingers. Put the nail between your fingers every second arrow - 6 arrows.

3. Shoot with eyes closed while concentrating on the bow hand - 6 arrows

4. Same as above, but eyes up - 6 arrows

5. Same as above, but shooting at a blank butt - 6 arrows

6. Shoot at cut-out faces (5 cut-out spots and a regular face) - 6 arrows per face = 36 arrows

7. Finish by shooting all arrows without the nail - 12 arrows

Note 1: A slight tension in thumb & forefinger toward the target is acceptable.

Note 2: If your wrist is stiff after the release, relax it completely before lowering your bow.

Volume: 84 arrows over the exercises, plus 18 warm-up arrows = 102 arrows over the session.

Exercise suggested for teaching:

BOW HAND

1. Take your sling off, shoot from a short distance (5 m) while watching your bow-hand; the assistant will catch your bow - 12 arrows. See illustration: " Shooting without a sling - With assistant "

Shooting without a sling with assistant.
The assistant catches the bow.

Note: Depending the type of overdraw or extended arrow-rest some Compound archers may not be able to implement this exercise.

2. Same as above, but shooting at a target face at a regular distance - 18 arrows
3. Put your sling on, shoot with eyes closed at 5 m, while staying concentrated on your bow-hand. - 6 arrows
4. Same as above, but eyes up - 6 arrows
5. Same as above, but shooting at a blank butt at 18 meters - 6 arrows
6. Shoot at cut-out faces - 6 arrows per spot = 36 arrows

Note 1: A slight tension in thumb & forefinger toward the target is acceptable.
Note 2: If your wrist is stiff after the release, relax it completely before lowering your bow.

Volume: 12 arrows of warm-up + 124 arrows over the exercises = about 136 arrows over the entire session.

Exercise suggested for teaching:

DRAWING HAND.

Objective: To have the least tension possible in the drawing wrist and forearm, to avoid changing pressure on the string. When the string moves forward upon release, the tensionless drawing hand wrist bends down naturally (and moves back due to the maintained tension in the back muscles of the drawing shoulder) with the flexed drawing arm.

Recurve archers

Simulation of string hand relaxation.
With your string fingers, hook your middle bow finger that is pointed down. Have a flat drawing wrist & hand (knuckles should not point out); your drawing hand should be "twistable". Both elbows should be slightly up.

Archers simulate their shot, doubling as a learning situation for the draw action.

Simulate a release while watching your drawing hand. At the end of the simulation, be sure that your hand is relaxed, the wrist should be bent down and the fingers quite relaxed - see picture below

Archers simulate their shot, doubling as a learning

Simulation of relaxed hands through the release.

Watching what works is a fundamental step in the teaching process.

situation for the draw action.

1. Stand at 4 meters from the target, load an arrow on your bow WITHOUT using the clicker. Raise the bow and start to draw the string (10 cm), towards the breast bone to avoid hitting your chin upon release!
   Making sure the arrow is pointing at the target or a net.

   Release the string while watching your string hand - see above pictures - 12 arrows

   Important: Don't stop the draw; ensure a CONTINUOUS backward motion of the string until the release. ALWAYS WATCH your string hand being slowly & progressively more relaxed, follow it with your eyes throughout the release action. At each arrow, increase your draw a little, until reaching full draw

2. When you cannot observe the string hand directly anymore (because your string hand is under your chin), use a mirror to observe your hand during and after the release - 12 arrows.
   You can introduce your clicker after 4 to 6 arrows.

Always keep the string hand, as relaxed as possible.

Note: Try a deeper string grip if you cannot avoid:

- your knuckles standing out on the back of your string hand;
- or your string wrist bending out.

10

Just carry something or pull on an elastic to discover the proper string hand alignment and relaxation.

Compound archers

Simulation of string hand relaxation.
With your release aid gripping something, like a stick; firmly hold the stick with your other hand. Keep both

your elbows SLIGHTLY up and pull apart.
For those using a release with trigger, squeeze the trigger of 1/3 to 2/3 of its range.
Maintain this pressure.
For those using a release with a trigger, feel your trigger finger as a hook. Do not tense this finger, just keep it firm. Pay particular attention to the tension in your whole string hand, just keep its hook shape and make it resistant.

Take a special note of the tension within your whole string hand & fingers.

For those using a trigger, the other fingers should be consistently equal.

Look for the most efficient tension level while you are extending your draw with the muscles from your back and neck.
Now while shooting in front of a mirror, observing your hand on the release - 24 arrows.

Our advice: Start with a very relaxed whole string hand & fingers, then gradually - arrow per arrow tense them up a little. Check the how curled are your fingers and the space between them and the inside of the palm. Strive to visually identify the most efficient shape for next step (B1)

FOR BOTH TYPE OF BOW USERS
Your tensionless string wrist should be bent down after the release. String-hand should slide along your neck, never away (we'll work on this during our next session).

B1. Shoot eyes closed, while staying concentrated on your string-hand, - 12 arrows

B2. Same, but eyes up - 12 arrows

B3. Same, but shooting at a blank butt - 12 arrows

B4. .Shoot at cut-out faces - 12 arrows per spot = 72 arrows.

Volume: 11 arrows of warm-up + 132 arrows over the exercises = about 143 arrows over the entire session.

Exercise suggested for teaching:

STRING HAND, WRIST, FOREARM ALIGNMENT,AND RELAXATION

Cord drawing

- Objective: Establishment of string forearm, wrist and hand alignment and relaxation.

Alone or in pairs. Observe the alignment of the relaxed hand.

- Situation: simulations in pairs, or alone.

Equipment: two pieces of thin cane 10 cm long with a cord threaded through them forming a loop. Instructions: each individual holds on to one of the two threaded cane pieces with their string fingers, then exerts a slight tension on the cord with the other hand while maintaining the string forearm approximately parallel to the ground and at chin height. Avoid wrist muscle contractions as much as possible. A straight line is formed between the partners' elbows. This is force alignment.

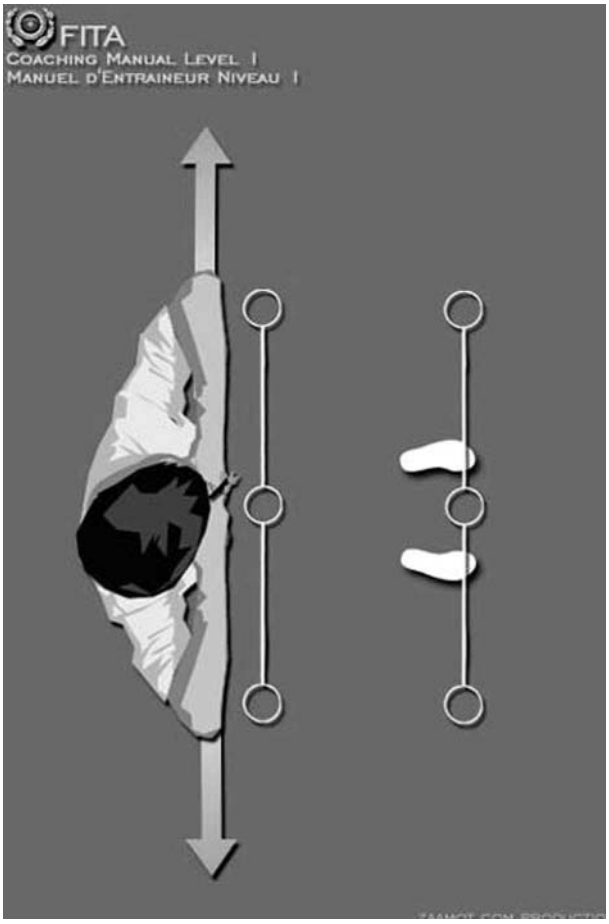
Observe the aligned position of the string wrist and the flat back of the string hand.

These exercises help understand what it feels like to be relaxed when drawing and the resulting alignment of draw and push forces. Continue with the following exercise.

Exercise suggested for teaching:

FACIAL MARKS AND DRAW LENGTH

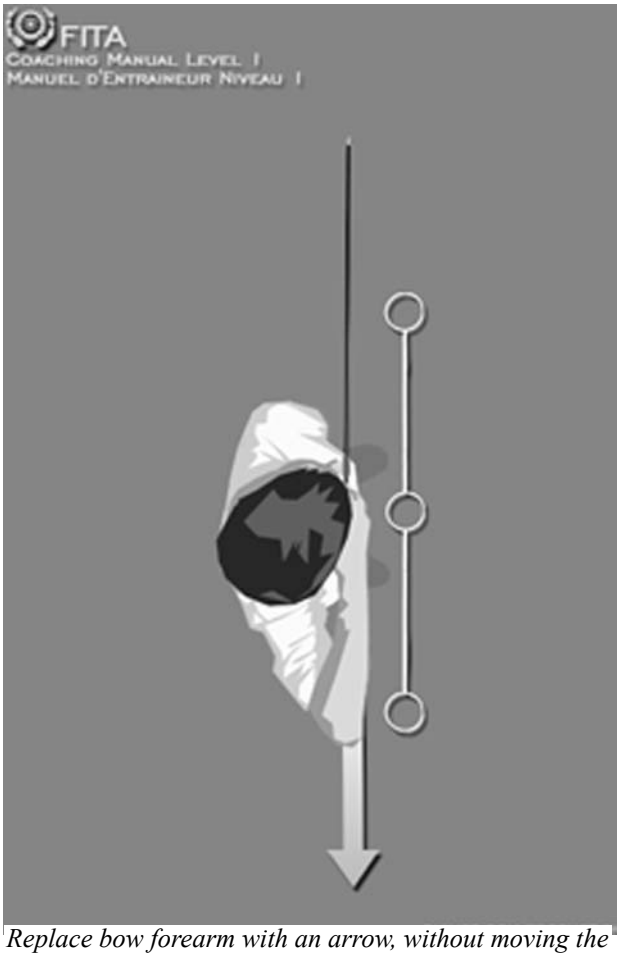
- Objective: determine at what moment during the draw a facial mark must be used to achieve a good alignment of drawing and push forces.



In this situation the two forearms are aligned.

- Situation: simulations.
- Equipment: mirror.
- Instructions: string fingers grasp the bow forefinger that is vertical and pointed toward the ground. Draw using both hands bringing the bow fingers against:

- mouth for straight line and triangle methods; and
- the neck for the quadrilateral method. Forearms form a horizontal line. The head is turned towards the target. Imagine an arrow in the place of the bow forearm; the string forearm and arrow are in perfect alignment. Leave the string hand where it is and disengage the bow hand. When the archer shoots, the string hand is positioned at its current location. Notice this position in the mirror. Follow in front of a mirror by drawing a bow strung with an elas-



Replace bow forearm with an arrow, without moving the drawing hand or the location of the facial reference a shooting reference is found.

tic string, then with a normal bow.

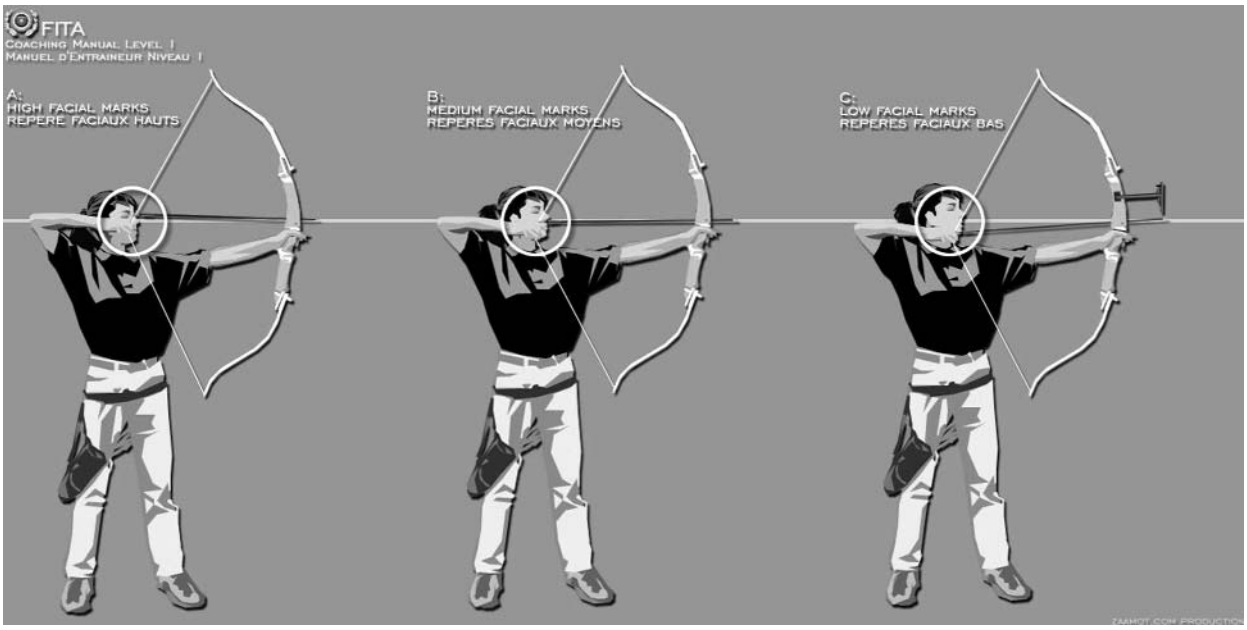
Facial anchor height - triangle method only

- Objectives: determine height of facial anchors. Become aware of the precision required to reproduce these anchors.
- Situation: various simulations.

A high facial mark orients the arrow down.
A low facial mark orients the arrow up.

- Equipment: mirror, and an arrow.
- Instructions: hold an arrow by the nock, between the string fingers. Place the front part of the arrow on the bow hand, in the depression between the thumb and forefinger. Simulate a full draw position and aim at a particular spot with the point. Look at the eye-arrow distance and the slope of the arrow in the mirror. Do the same thing but with the string finger positioned at a lower location on the face. Imagine the arrow trajectory in relation to the first position and to a situation where the position would be very close to the eye.
- Variation: can be accomplished with an arrow drawn on a bow strung with a rubber band.

Follow up using these various exercises in real shooting situations at short distances, approximately three meters. Analyse the inverse correlation between the anchor height and the height of impact. Then organise a game requiring good vertical pre-

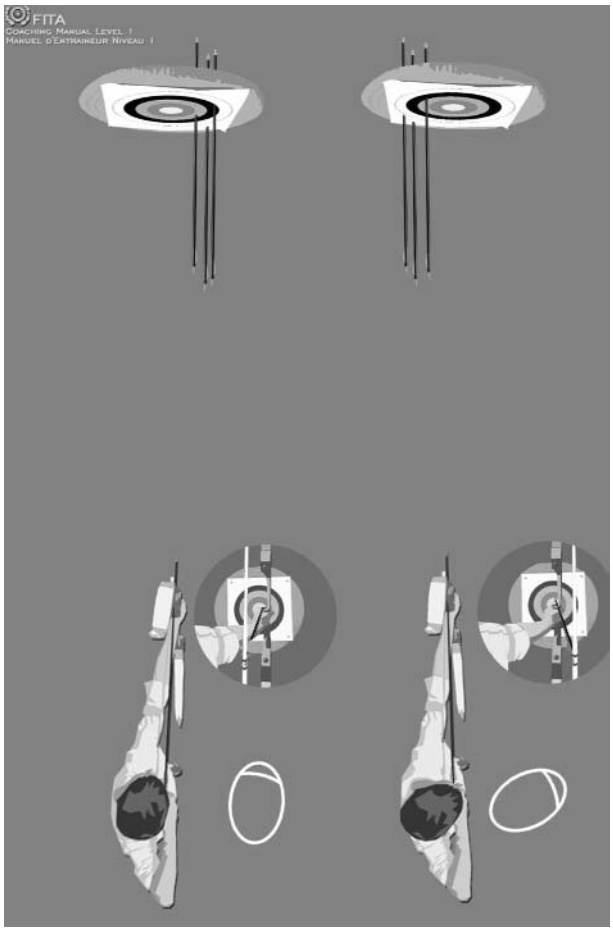


A high facial reference orients the arrow to point down. *A low facial reference orients the arrow to point up.*

cision (e.g. shooting at a folded or lined target.)
Exercise suggested for teaching:

STRING ALIGNMENT OR VISUAL ANCHORS FOR HEAD INCLINATION - for both triangle and quadrilateral methods

- Objective: repeat the triangle or quadrilateral positions during full draw in the shooting plane.
- Situation: shooting situation.



(for a right hand archer).
a) head turning or leaning towards the right, string seen from left side, and impact points towards the right side,
b) head turning or leaning towards the left, string seen from right side, and impact points towards the left side.

- Equipment; three vertical strips attached to the target. Strips are 10 cm in width, 10 cm apart.

- Instructions: without letting go of the string, look at the string and bow while changing the headhead position from right to left. Notice the string image seems to be moving from right to left of the bow body. Shoot at the usual distance by targeting the central strip throughout the exercise. By watching the string at the right of the bow body, notice the impacts are closer to the vertical strip on the left. While watching the string at the left of the bow body, the impacts are closer to the vertical strip on the right. Continue by organising a game requiring good lateral precision (e.g. shooting at a target folded or divided into columns.)

Exercise suggested for teaching:

STRING ALIGNMENT - USE OF STRING AS A BACK SIGHT

The archer comes to full draw, and lines up the sight, string and target. The archer does not shoot yet:

- the archer turns or cants the head to the right until the string can be seen to the left of the sight, but the sight stays on the middle of the target. The archer releases, arrow hits towards the right of the target;

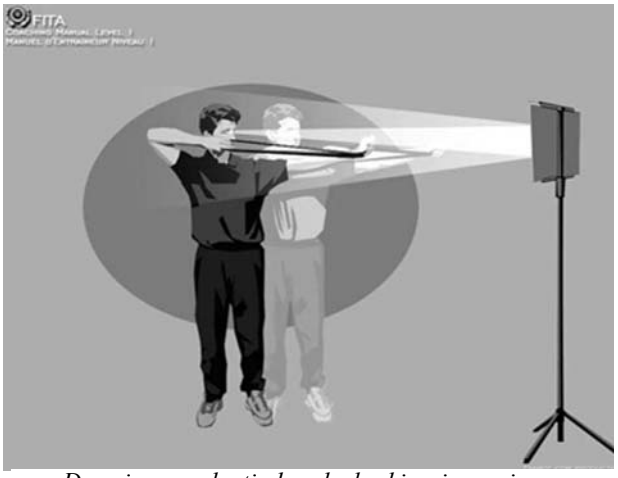
- the archer turns or cants the head to the left until the string can be seen to the right of the sight. The archer releases, the arrow hits towards the left of the target. This shows how much an arrow can be "off" when the string isn't used as a back sight.

Exercise suggested for teaching:

RELEASE

Simulation with elastic band

● Objective: to learn the continuity of the muscular action provided during the draw.



Drawing an elastic band - looking in a mirror.

● Situation: as per picture below

● Equipment: elastic strip,

● Instructions: hold one end of the rubber band with the bow hand and hold the other end with the string fingers, and then come to full draw. At this point, the head is turned towards the target and the archer is watching in a mirror. Eliminate unnecessary hand, wrist and forearm muscle contractions as much as possible. Lower and spread shoulders apart while keeping the back of the neck stretched to the maximum. The archer is able to see and feel the rubber band stretch. Release the string finger grip and watch the hand separation as the scapular muscle contracts during follow through.

This exercise incorporates the standard teaching process. Start by shooting while watching the bow's upper limb follow-through in the mirror. Instruct the archer to repeat the exercise with eyes closed, looking up, watching the empty butt, and then by shooting at increasingly complete targets.

Exercise suggested for teaching:

RELEASE

Simulation in pairs

● Objective: to learn the continuity of the draw action.

● Situation: the archer and the partner are face-to-face, bow hand leaning against the partner's shoulder. With their string fingers, they hold on to each

The archers pulls the loop toward the neck, while the assistant slows down the pull.

shaft piece.

● Equipment: two pieces of hollow cane about 10 cm long threaded through with a cord loop.

● Instructions; the archer applies a slight drawing pressure on the cord and a slight push on the partner's shoulder. The archer doubles the efforts. The partner slows the archer's action, the cord nears the archer's face, and then the partner lets go of the cord. Notice the draw back of the archer's string

The previous exercise can be done alone.

arm and the pressure applied on the partner's body.

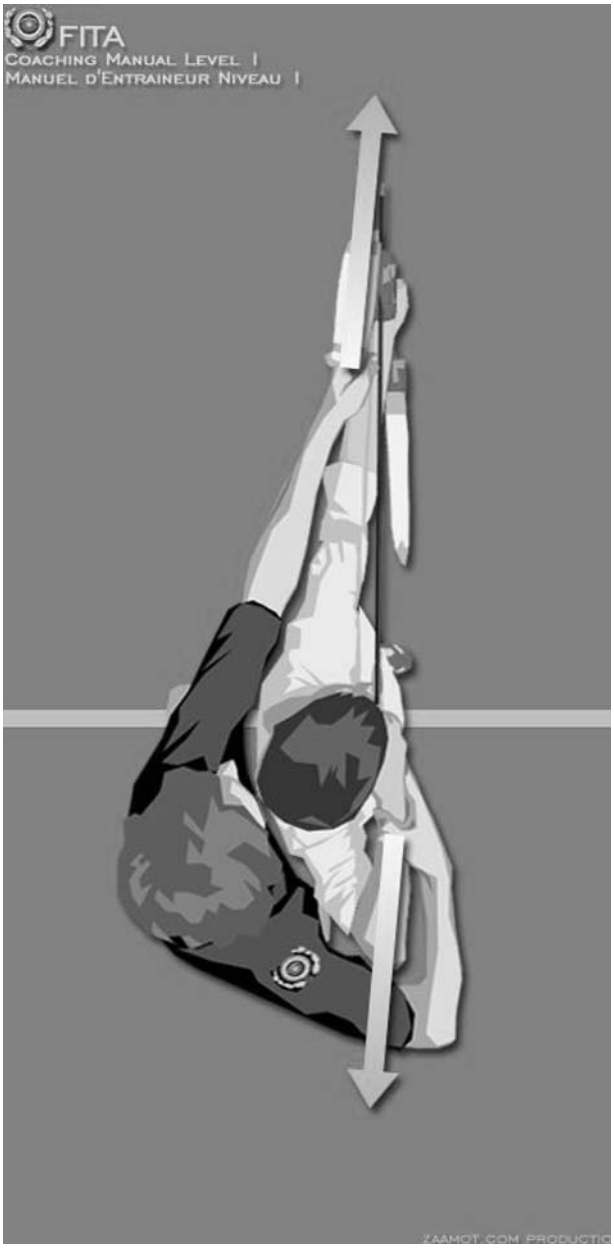
Exercise suggested for teaching:

RELEASE

Assisted release

● Objective: discover motor follow-through,

● Situation: The partner wraps an arm around the archer's back. The arms overlapping the archer's



Manual assistance helps the archer better understand what should be done.

arms-Shoot at a butt.

● Equipment: the basic equipment set-up

● Instructions: the partner applies a slight drawing pressure on the archer's arms, substantially

increasing the opening and extension of the archer's chest. During the release, drawing is sustained by the partner to make the archer aware of the appropriate physical follow-through.

Repeat the exercise while decreasing the degree of assistance. The archer's eyes are closed, giving more opportunity to sense the follow-through quality. This exercise incorporates the standard teaching process. Instruct the archer to repeat the exercise with eyes closed, looking up, watching the empty butt, and then by shooting at increasingly complete targets

For Compound archers, you can use the following

Compound releasing with assistant's help.

situation. (adaptation to compound archer)

Exercise suggested for teaching:

RELEASE

● Objective: Keep the same muscular activity from full draw, to the end of the shot (muscular follow-through).

For finger archers: only one change - the level of tension in your string fingers.
For archers with a mechanic release: no change

Simulations of string hand relaxation (Recurve).

a) Grip your middle finger of the bow hand, which is pointed down, with your string fingers. Raise enlaced hands up to your throat level. Have your elbows slightly above the horizontal and a flat string wrist & hand (no knuckles). Your string hand should be "twistable".

Relaxed string grip simulation.

Release simulation.

Simulate a release while watching your string hand - see pictures below.

b) Grip your middle finger of the bow hand as

before, turn your head, and watch your string bow-elbow during release simulations. This elbow should keep the same angle, moving back and away, horizontally ; the motion should

Watch the string elbow during release simulation.

come FROM the shoulder joint see picture below.

c) Combine both simulations while looking toward the target, your string hand should slide along the neck and end about about directly

End of release for quadrilateral method.

below the ear - see picture below.

Thorax continues expanding when fingers release from each other. The same thing occurs when the string fingers release the string

12 repetitions of each step

Note to Compound archers:
pending your facial marks (where your string hand on your face) you could face some difficulties in turning your head in the following exercise.

#1. String elbow

At about 4 meters from the butt, at full draw, turn your head 180 degrees for observing your string elbow, release while ensuring:

- the constant angle at the elbow level,
- your string elbow moving back on the same horizontal plan (more or less),
- the pivoting/rotation motion of your string

Visually check the string elbow, before during and after the release.

arm at the shoulder joint - 12 arrows.
See pictures below.

#2. Release form observation.

2.1. At full draw, observe your release form through a mirror. Keep your string hand as relaxed as possible. Release WHILE WATCHING your string hand and arm in the mirror - **24 arrows** for those who were not able to implement the

Self observation of the release.

previous exercise, **12 arrows** for the others.

2.2. Shoot eyes closed, while concentrat ing on the release, feel that your body and release remain in the shooting plane (no twist) - 12 arrows

2.3. Same, but eyes up - 12 arrows

2.4. Same, but shooting at a blank butt from an official shooting distance (18 meters) - 12 arrows

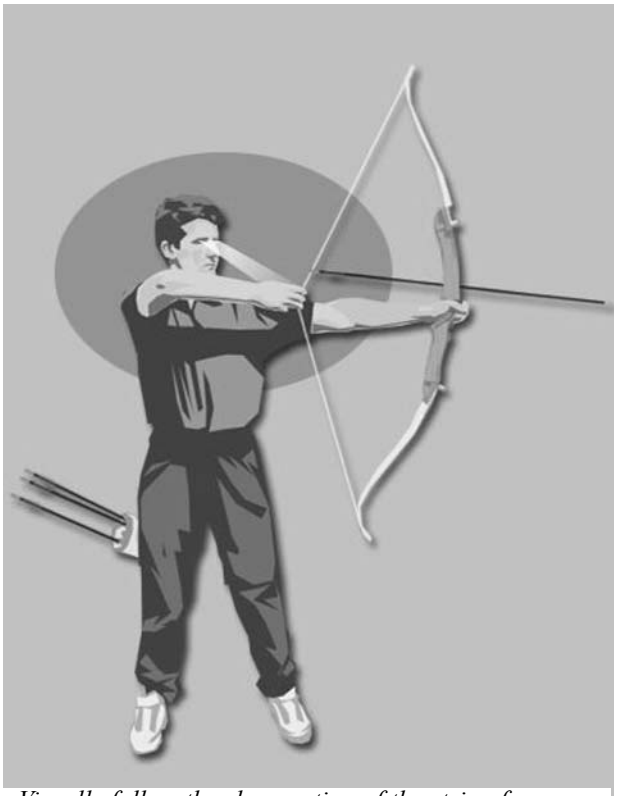
2.5. From an official shooting distance, shoot at a set of progressive cut-out faces (five cut-out target faces and one complete face) - 12 arrows per spot = 72 arrows

Volume: 11 warm-up arrows + 132 arrows over the exercises = 143 arrows total

Exercise suggested for teaching:

PROGRESSIVE DRAWING FOLLOW-THROUGH

- Objective: learn drawing follow-through by analysis.
- Situation: shooting at 3 or 4 meters from target, same situation as illustration of the previous exercice entitled "Visually check the string elbow, before during and after the release"
- Equipment: the basic equipment set-up
- Instructions: raise both hands and the arrow; to shoulder height, but not above. Start drawing the string slowly. Check the string hand, wrist



Visually follow the slow motion of the string forearm.

and forearm relaxation, they must be in line. Visually follow the slow movement of the string elbow; ensure the elbow must is held high enough.

The release must be done during the draw, so do not stop the drawing action. Release must occur:

- at 1/2 draw;
- at 2/3 draw;
- at 3/4 draw;
- just before anchor;

- at full draw, but increasing the draw length; and
- at full draw, no progression of draw length. During release the eyes follow the string elbow movement follow-through. After release, the eyes go from the string elbow to check the wrist's final position, resembling illustration " Relaxed string grip" of the previous excercice.

Continue while watching the string elbow in the mirror. This exercise incorporates the standard teaching process. Instruct the archer to repeat the exercise with eyes closed, looking up, watching the empty butt and then by shooting at increasingly complete targets.

Exercise suggested for teaching:

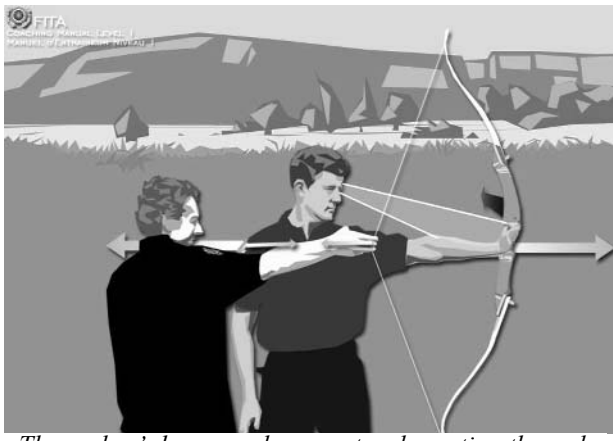
SHOOTING WITH A MECHANICAL RELEASE

- Objective: discover muscle action follow-through.
- Situation: shooting situation.
- Equipment: shooting equipment and a mechanical release preferably attached to the wrist.
- Instructions: shooting while looking in the mirror. Observe the follow-through. Continue incorporating the standard teaching process, eyes closed, etc.... Then repeat in front of the mirror, but this time without the mechanical release.

Exercise suggested for teaching:

PUSH / BOW ARM

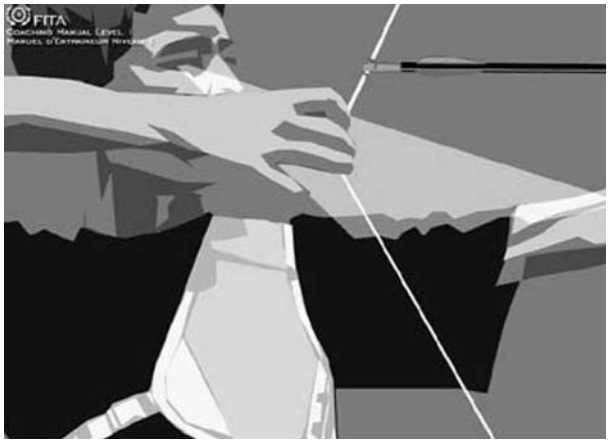
- Objective: discover push follow-through.
- Situation: in pairs, the archer holds the bow; the partner is behind the archer's string shoulder. The partner holds one hand on the archer's string shoulder, and the other draws the string slightly. Distance from the target is four to five meters.

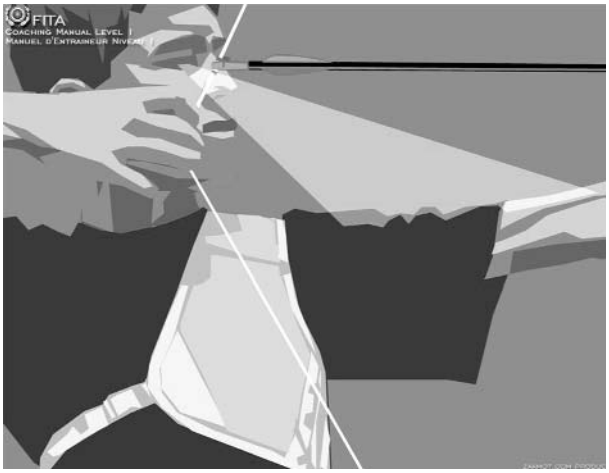


The archer's bow arm has a natural reaction through such a situation.

- Equipment: the basic equipment set up. an empty butt.
- Instructions: the partner pulls slightly on the siring at 1/2 draw and pushes the archer's shoulder slightly to help maintain balance. The partner aims the arrow visually towards the butt. The arrow is at the archer's shoulder height. The archer remains in an up-right position; bow shoulder lowered, and looks at the bow arm, not the butt. The partner releases, the archer's bow arm moves towards the side of the bow window and the body moves slightly towards the target.

The archer continues alone while watching the bow arm at partial draw, then at an ever increasing draw, until full draw is reached. The archer continuously watches the bow arm during release.





Self observation of the bowarm at increasing draw.

This exercise incorporates the standard teaching process. Instruct the archer to repeat the exercise with eyes closed, looking up, watching the empty butt, and then by shooting at increasingly complete targets.

Exercise suggested for teaching:

STRING CLEARANCE.

1. At the bow arm level.

With no hand on the string, raise your bow and check where your string is located on your arm-guard or forearm. About half an inch forwards of this spot affix a piece of tape which raised about 2 mm in the middle (bridge shape - a bandage is fine). The bridge of tape should be affixed vertical-

Bridge of tape is an efficient way to check siring clearance.

ly, across your bow forearm/armguard, or if you prefer parallel to the string.

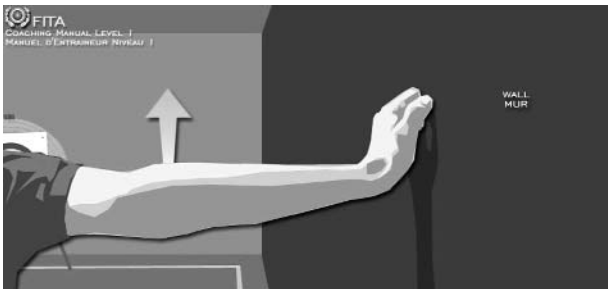
Identify with a pen, the side of the tape closest to the string (I prefer to mark this side before sticking the tape on the armguard). This mark will help to identify if the string hits the tape while pushing the arrow or during its way back.

(See the illustration before) Shoot one arrow with this tape in place - make sure you not flatten out the bridge-tape before the draw! After the shot, watch the tape, and analyze the hit (if any).

If you conclude that the string clearance is poor, try varying the following elements until a good string clearance:

- the angle "bow arm / shoulders line" by

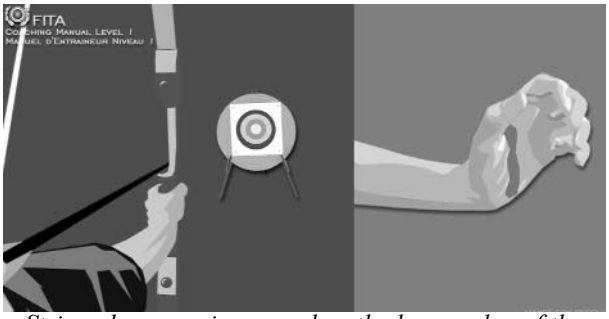
means of chest &/or feet orientation, also the hips are lined up equally with the shoulders. It is preferable to have the shoulders directly above your the hips and feet with no twist, since any twist between top body and hips reduces the string clearance. See the following picture.



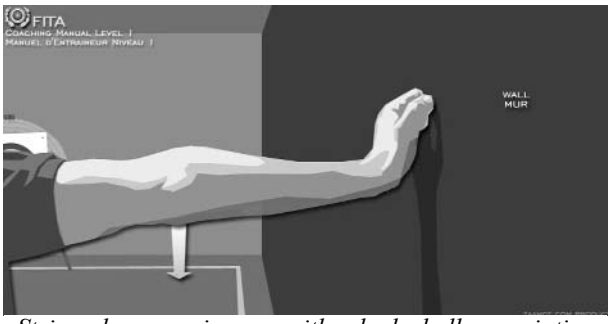
String clearance is good with an unlocked elbow.

Little space between forearms, elbows toward ground, like a volley ball player.

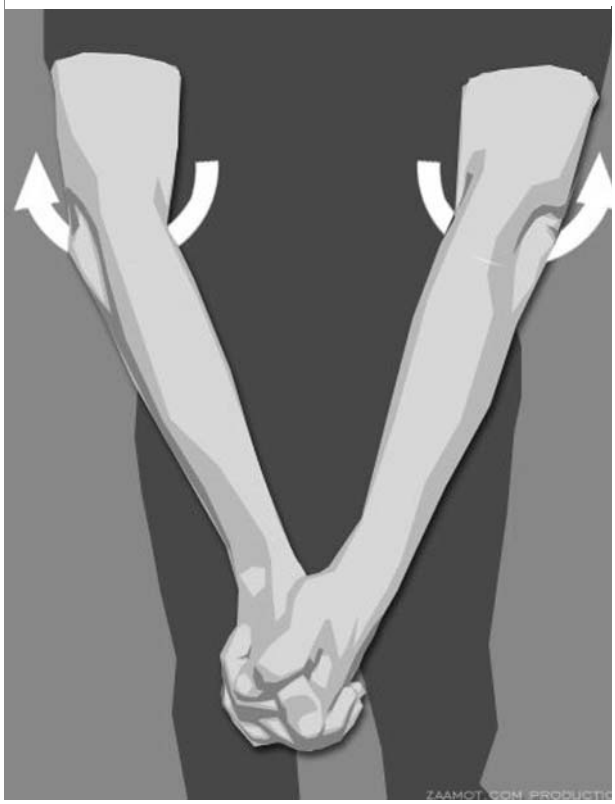
- the position of your bow shoulder joint. This joint should remain above the hipbone (of the same side!). Moving this joint toward the string drastically reduces the string clearance. However, the bow arm can rotate clockwise in the shoulder joint, as long as the joint remains in the correct location.
- the bow elbow position. See the following



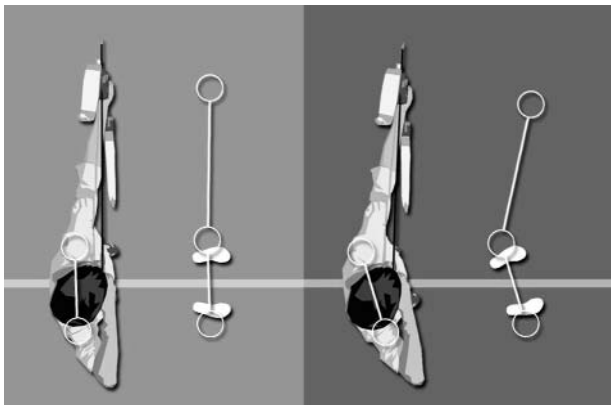
String clearance is poor when the lower edge of the palm presses on the grip.



String clearance is poor with a locked elbow pointing toward the ground



Large space between forearms, elbows opposed. This should be the position of the archer's bow elbow while shooting.



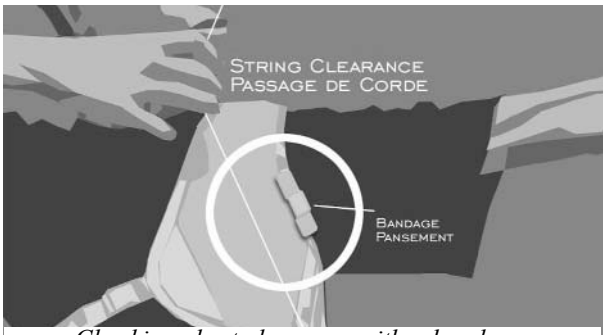
String clearance is improved with an open stance. Take care not to go too far as this could jeopardise the draw force line.

pictures for the correct elbow position.

- bow hand position on the grip. See picture 2. At the bow side chest level.

Either watching yourself in a mirror, or with the help of an assistant observe at full draw where the string touches your chest, if at all. About a half-inch forward of this spot affix a piece of tape that has a bridge shape - 2 mm raised in the middle (a bandage is fine). See picture below.

The most critical point is the edge (hem or trim) of the chest-guard surrounding your bow shoulder.
The bridge of tape should be affixed parallel to the string on your chest-guard. Shoot one arrow with this tape in place - pay attention to not flatten out



Checking chest clearance with a bandage.

the "bridge" part before the draw. After the shot, analyze the hit (if any).
If you conclude that the string clearance is poor, play with the following elements until a good string clearance is achieved by:

- the angle of the "bow arm/shoulder line" as above,
- the position of your bow shoulder joint as above,
- the verticality of your body. Leaning toward the target helps to clear the string from your chest; towards your toes too, but could disturb your body stability.
- The inner chest tension. Lowering your energy in your belly helps to flatten your chest, this is also good for body balance (lower centre of gravity) and for staying relaxed.

Volume: variable, pending the initial quality of your string clearance, and the speed to solve the problem. Nevertheless you should shoot about **78 arrows** total over the session, including the warm-up arrows.

Exercise suggested for teaching:

FOLLOW-THROUGH

- Objective: Be able to let the string go off the fingers or release aid without any mental, visual and physical change.

Note: Only the "Finger" archers have a slight physical change, in the tension level in the muscles of their string fingers.

1. Follow-through simulations:

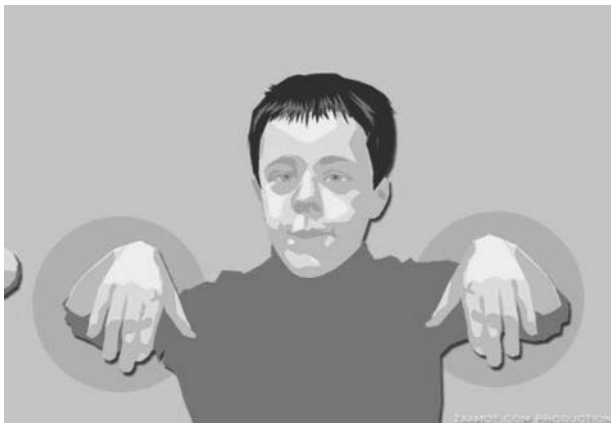
* Recurve Archers:
  With your string fingers, clasp one of your bow fingers.
* Compound archers:
  With your release aid holding something

Simulation of the archer's efforts at full draw for a Compound archer

like a stick. Hold the stick with your bow hand, and your release aid trigger in our string hand.
<u>For both types of bows:</u>
Raise your both forearms in the above position up to your throat level. They should be now horizontal and aligned. With your back muscles, pull on your hands as described above. Turn your head toward


Simulation of the archer's efforts at full draw for a recurve archer.

the butt; increase your pull effort on your arms to simulate a full draw effort. See picture below.
With a mirror very close to your face watch "in the bottom of" your own eyes, ensure they remain



Thorax continues expanding when fingers release from each others. The same thing occurs when the string fingers release the string.

unchanged during the simulated release, no trouble should occur - 12 reps

2. Same exercise but while shooting at a short distance (+/- 6 meters) - 12 arrows

3. Shoot at a blank butt from any distance (18 meters / Indoor - 70 meters / Outdoor) - 12 arrows

4. Shoot at cut-out faces; 6 cut-out faces; 6 arrows per cut-out = 36 arrows

5. Shot at a normal face - 15 arrows.

Volume: 12 warm-up arrows + 65 arrows over the exercises = 77 arrows total over the session

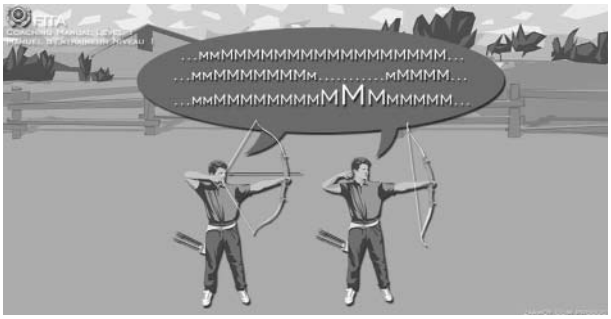
Exercise suggested for teaching:

FOLLOW THROUGH

- Objective: Keep the same mental activity from reaching full draw to after the release.

Simulations.

a) Recurve archers:
With your string fingers, hold your middle bow finger that is pointed downwards;
Compound archers: With your release aid, put your string loop, or equivalent, round a stick. Simulate your position at full draw - make a loud and continuous hum, like "Hhhhhuuuuuummmm…." simulate a release while keeping the exact sound until two seconds after the release.
Avoid any: "Hhhhhuu uuuummmm…" (interruption upon release) Or
"HhhhhuuuUuummmm…." (higher intensity upon release).
Goal: The continuity and intensity of the sound



Same sound should be maintained during and after the release.

should be exactly the same - 8 simulations
b) Same but with an elastic band - 10 simulations
Now while shooting.
1. Same as above while shooting eyes closed at a short distance, 10 meters - 15 arrows
2. Same as above while watching yourself - in your own eyes - in a mirror - 15 arrows
3. Same as above while shooting at a blank butt at the regular distance, 18 or 25 meters - 15 arrows
4. Same as above shooting at cut-out faces; 5 cut out faces; 6. arrows per cut-out face - 30 arrows total
5. Same as above while shooting at a regular face from the regular distance - 12 arrows
6. Same as above but with no sound every second arrows - 14 arrows
7. Same as above without any sound - 12 arrows

Volume: 12 warm-up arrows + 18 simulations + 113 arrows over the exercises = 143 arrows over the session.

Exercise suggested for teaching:

VISUAL FOLLOW-THROUGH - USING A MIRROR.

- Objective: learn to continue aiming during release.
- Situation: shooting at a short distance of five meters.
- Equipment: the basic equipment set up and mirror.
- Instructions: at full draw look at your eyes with the help of a mirror. Release while ensuring that the eyes, face, and torso remain impassive during the shot.

Self control of visual impassivity and follow-through using a mirror.

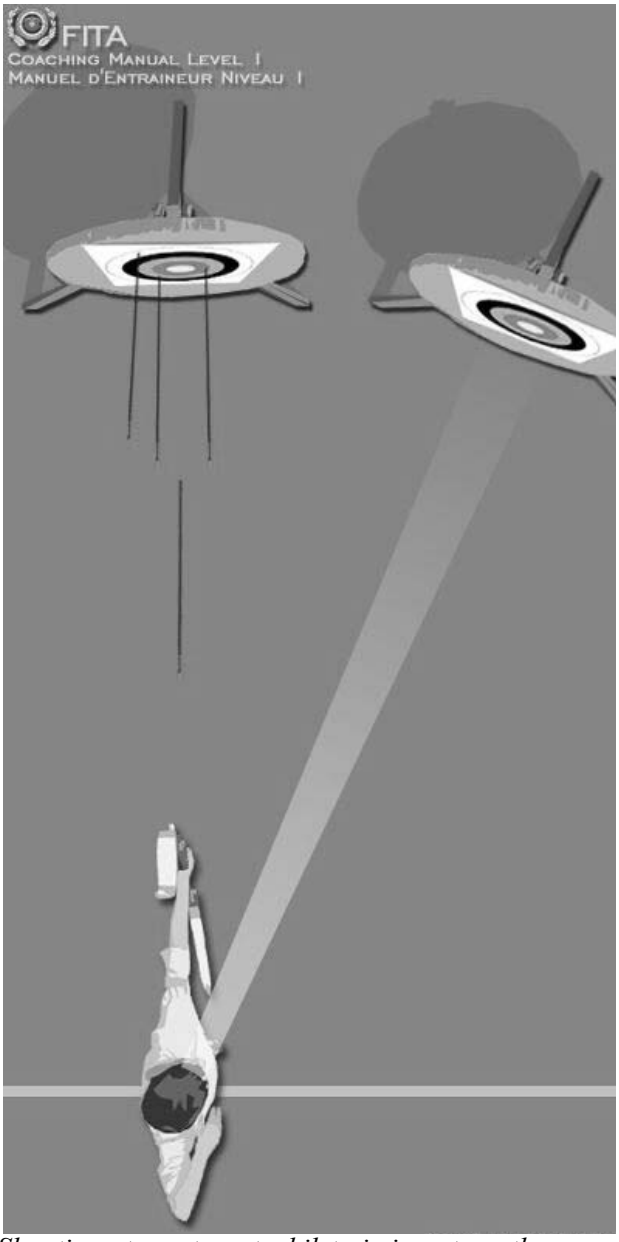
Continue with the following exercise.

Exercise suggested for teaching:

FOLLOW-THROUGH.

Whilst watching another target

- Objective: Looking at another target while releasing
- Equipment: the basic equipment set up with two targets at least two metres apart.
- Instructions: at full draw, the archer aims briefly at the target directly in front of the shoot ing position. Then, the archer looks at the other target and shoots whilst looking at the second target. Visual activity should remain excatly the



Shooting at one target whilst aiming at another one.

same during the shot.

Repeat, but this time look at own target.

Exercise suggested for teaching:

COUNTER-AIM

When shooting without a sight, counter aim exercises must be introduced because archers sometimes have difficulty imagining it is possible to aim at one point to achieve results in another location. To take advantage this thinking, an aiming spot is placed at the point diametrically opposed to the average shot groupings. Have the archer aim at this spot - the archer experiences hitting the target centre when not directly aiming there. Remove the spot after two or three ends, by then the point has been made.

Exercise suggested for teaching:

COUNTER AIMING SESSION - WITHOUT SIGHT:

Draw the rings of a target face with thin lines on a target face but with the “gold” off centre, let us say with the centre in the 7 zone scoring area at 9 o'clock. These thin lines should not be visible from where you will shoot.

Have differently drawn target faces and/or turn it once in a while between ends, but tell them where the “off centre ” bull’s eye is located. It will then be possible to evaluate the success of the exercise.

Shoot and score some round at different distances.

Exercise suggested for teaching:

COUNTER AIMING SESSION:

Draw the rings of a target face with thin lines on a target face but with the “gold” off centre (let say with the centre in the 7 point scoring area at 9 o'clock). These thin lines should not be visible from where you will shoot.
Have different drawn target faces and/or turn it once in a while between ends. Make the archers

shoot at them.

Exercise suggested for teaching:

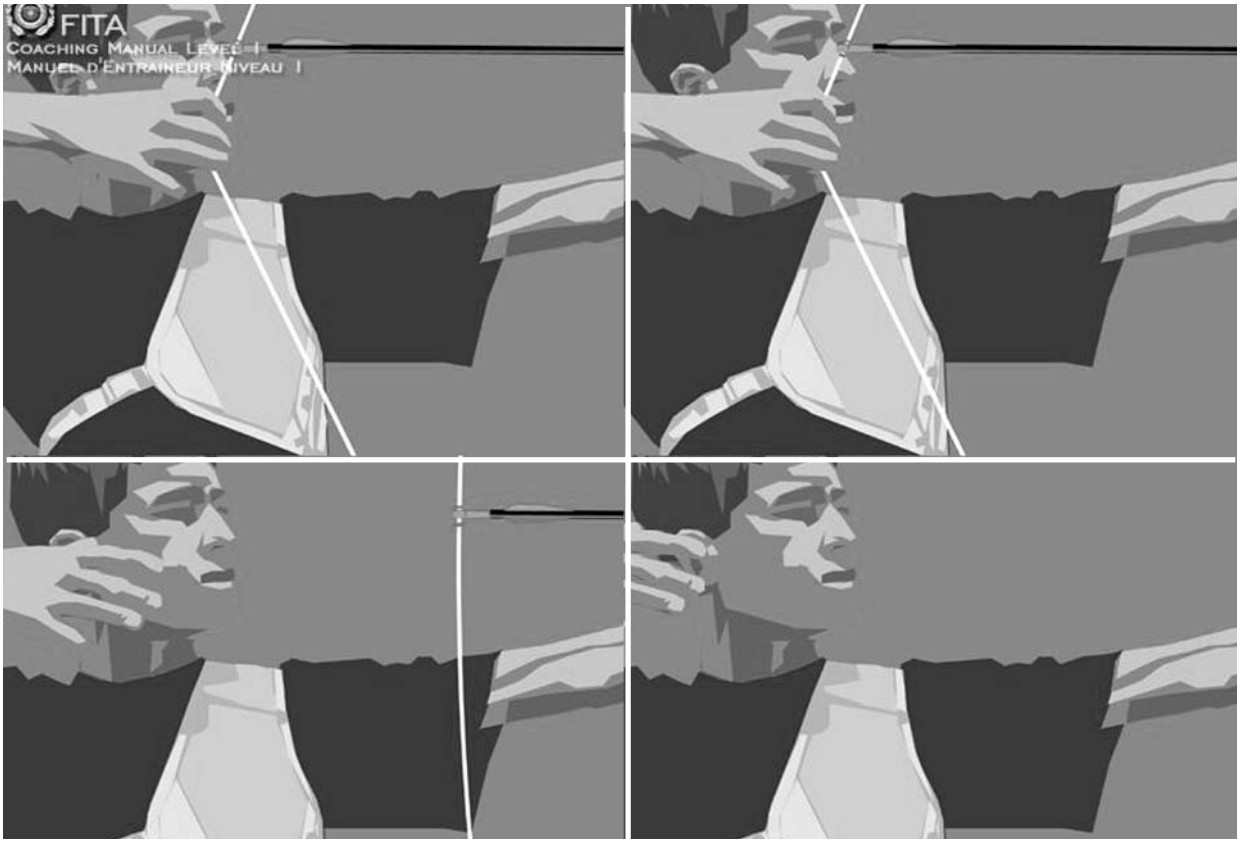
FACIAL REFERNCE DURING THE RELEASE

- Objective: to discover facial reference during the backward movement of the deawing hand.
- Situation: simulations.
- Equipment: none.
- Instructions: drawing fingers hold the bow forefinger that is vertical and pointed toward the ground; apply drawing on both hands bringing the string fingers against:
  - mouth for straight line and triangle methods;
  - neck for the quadrilateral method.

Forearms form a horizontal line. The head is turned towards the target and the archer is watching in the mirror. Eliminate unnecessary hand, wrist and forearm muscle tension.
Lower and spread shoulders apart while keeping the back of the neck extended. The archer feels the increased tension in the fingers. Release the string finger grip suddenly and observe, in the mirror, the sliding of the string hand/fingers alongside:
- cheek for straight line and triangle methods;
- neck for the quadrilateral method. Repeat with eyes closed.

String fingers slide against neck in quadrilateral method.

Repeat these two exercises with a bow strung with a rubber band then follow up by actually shooting with the normal equipment, at first by looking in the mirror. Then incorporate the standard leaching process. Instruct the archer to repeat the exercise with eyes closed, looking up, watching the empty butt, and then by shooting at increasingly complete targets.



A common "back-end" with the quadrilateral method..

Exercise suggested for teaching:

FINAL FCACIAL REFERENCE AT END OF RELEASE

- Objective: to discovery final anchor movement.
- Situation: simulations similar to those given-above.
- Equipment: none.
- Instructions; string fingers grasp the bow forefinger that is vertical and pointed toward the ground. Draw using both hands bringing the string fingers against:
  - mouth for straight line and triangle methods;
  - neck for the quadrilateral method.

The forearms form a horizontal line. The head is turned towards the target and the archer is watching himself/herself in the mirror. Eliminate unnecessary hand, wrist and forearm muscle contractions. Lower and spread shoulders apart while keeping the back of neck stretched. The archer feels the increased tension on the fingers. Release the string finger grip suddenly and observe, in the mirror, the final position of the string hand as follows:

String hand path with the straight line and triangle methods.

- against the ear for the straight line and triangle methods;
- against the neck and under the ear for the quadrilateral method.

This final position is called: "back end."

Repeat with eyes closed.

Repeat these two exercises using a bow strung with a rubber band. As a general rule, the beginner's bow tilts insufficiently so introduce the forward end concept. If, however, it does occur, bring it to the attention of the archer at this moment, then incorporate the standard leaching process. Instruct the archer to repeat the exercise with eyes closed, looking up, watching the empty butt, and then by shooting at increasingly complete targets.

With compound archers you can use the following

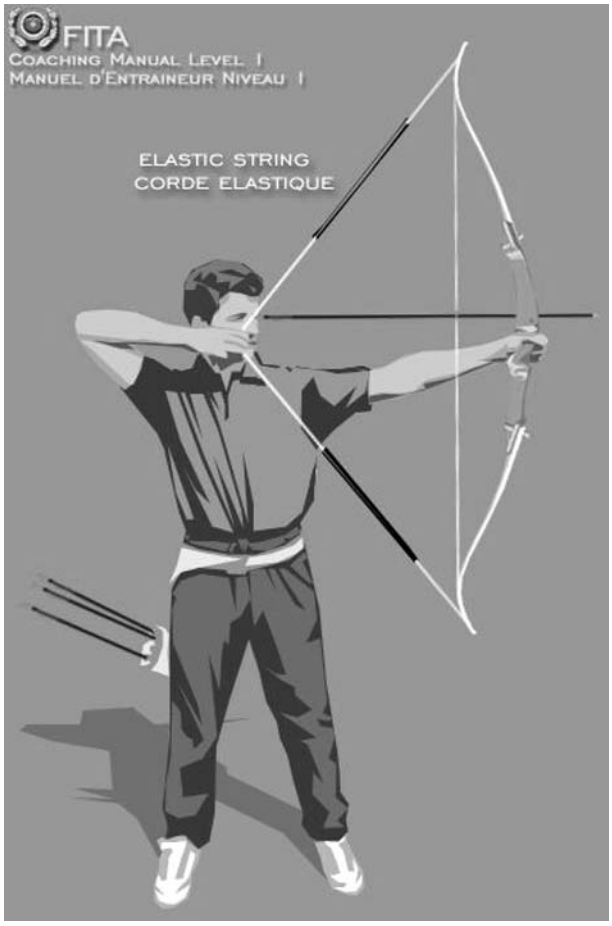
Compound archer discovering the natural end of the string hand.

situation.

Exercise suggested for teaching:

SIGHT ADJUSTMENT

- Objectives: learn the function of the sight and how to adjust it.



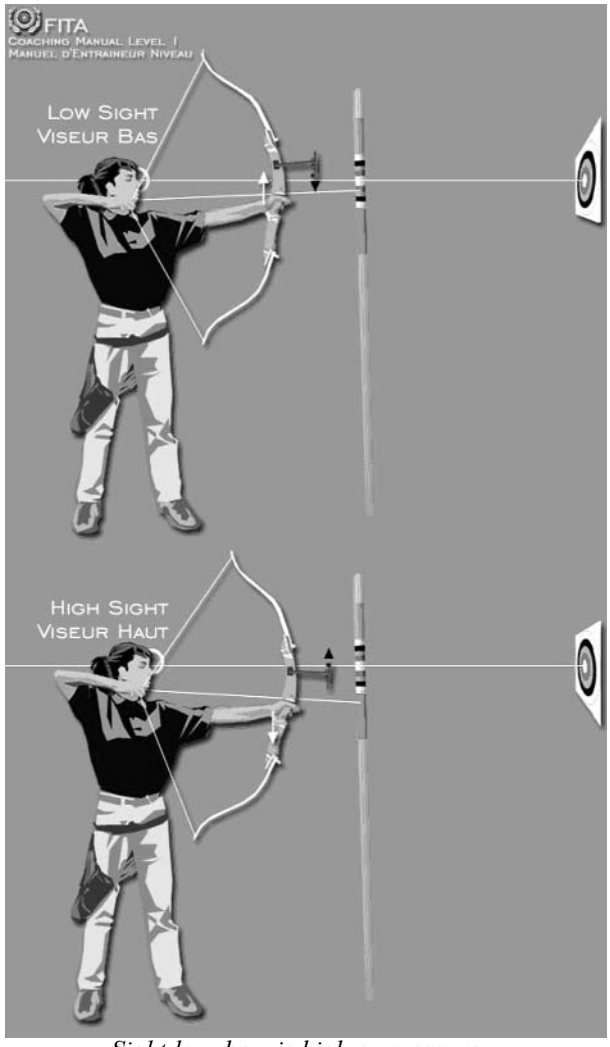
The elastic string is very useful for holding the bow a long time.

- Situation: shooting simulation in pairs.
- Equipment: bow strung with an elastic string, plus 1.75 m stick.
- Instructions:

A. To understand height adjustment:

Position the sight at its maximum height. The archer draws the bow without an arrow and aims at a target at its usual distance. The partner places a vertical measure on the ground, beside the archer's bow. The partner marks a location on the measuring stick at arrow shelf height; the archer looks at this location.

a) Effect of moving the sight down
The partner lowers the archer's sight, at full draw. The archer centres the sight on the target again and notices the rise in the bow arm. and then comes back and rests.



Sight low, bow is high on measure.
Sight high, bow is low on measure.

Conclusion: "When I lower my sight, my arm and arrow rise, thus my arrow hits higher on the target."

b) Effect of moving the sight up
The archer draws the bow without an arrow and aims at a target at its usual distance. The partner marks a location on the measuring stick at arrow shelf height, the archer looks at. this location The partner raises the archer's sight at full draw. The archer centres the sight on the target and notices the drop in the bow arm; then relaxes the bowstring and rests.

Conclusion: "When I raise my sights my arm and arrow drop, thus my arrow hits lower on the target."

NOTE: It is equall effective to view the posi-

tion of the bow hand on the target with the sight pin at maximum height and compare it with the position of the same hand with the sight pin at minimum height.

B. To understand windage adjustments

The partner holds an arrow horizontally at the archer's sight level with the arrow tip slightly beyond the bow window. The archer aims at the target using the arrow tip as the sight.

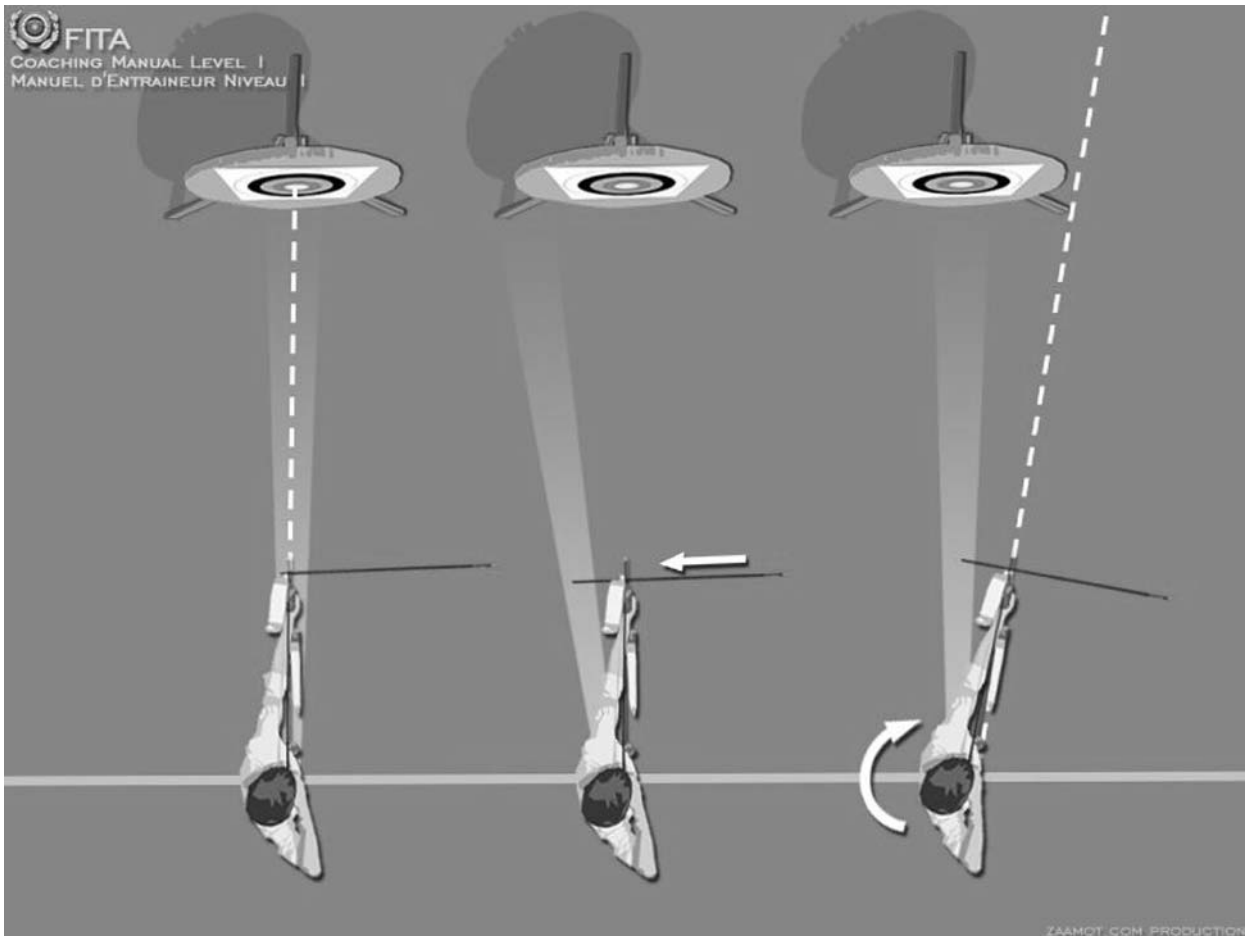
c) Effect of moving the sight in.
The archer remains at full draw while the partner slips the arrow 10 cm into the archer's window. The archer readjusts the aim using the arrow point and notices the leftward motion of the bow arm; then relaxes the bowstring and rests.

Conclusion: "When I move my sight out, I move my arm and my bow to the right, therefore my arrows hits right on the target."

d) Effect of moving the sight out.
The archer aims at the target with the arrow point. The arrow point advances out off the bow window by about a dozen centimetres. The archer maintains full draw while the partner slips the arrow 10 cm in the archer's window, towards the inside cheek. The archer adjusts the arrow point and notices the rightward motion of the arm then relaxes the bowstring and rests.

Conclusion: "When I (right-hander) move my sight in, I move my arm and my bow to the left, therefore my arrow hits left on the target."

NOTE: It is equall effective to view the position of the bow hand on the target with the sight pin far left and compare it with the position of the same



a) replace the sight with the point of an arrow.
b) partner moves the point of the arrow out about 10 cm.
c) to bring the point of the arrow on the gold, the archer moves arm and shoots towards the right.

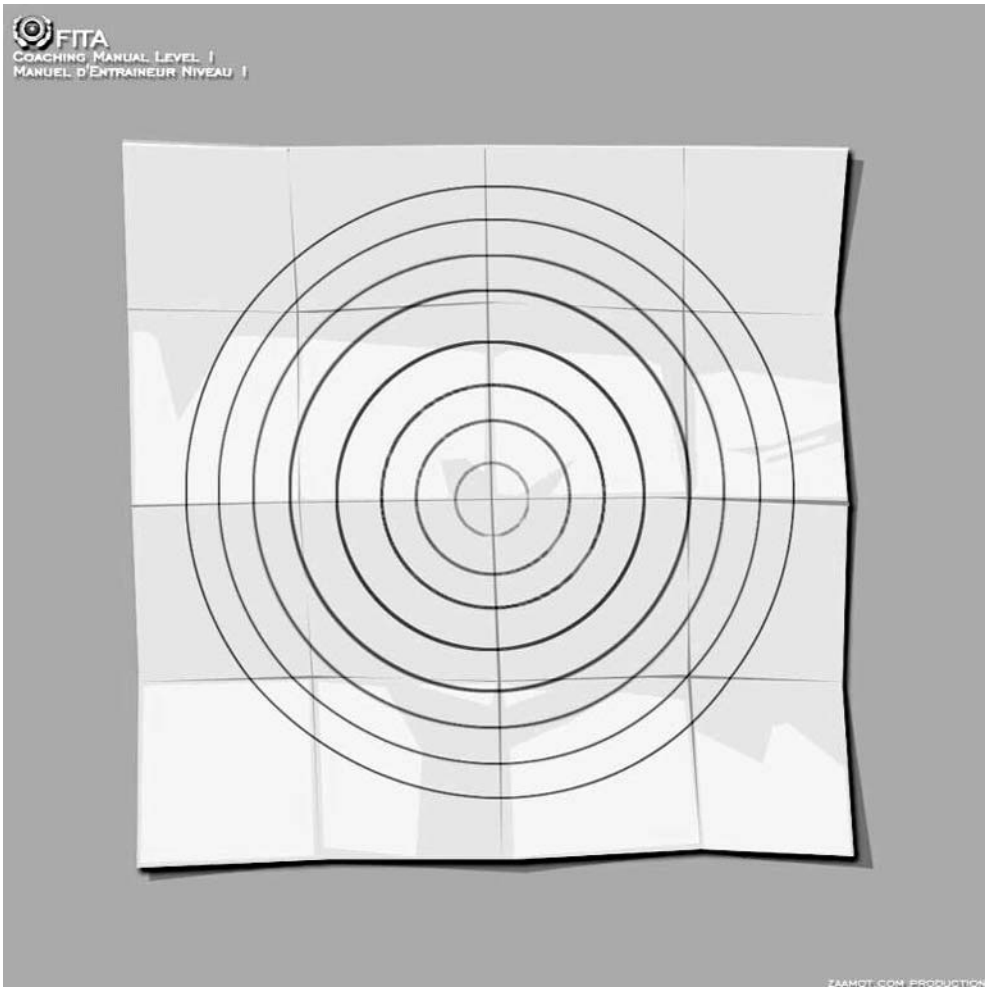
hand with the sight pin far right.

Exercise suggested for teaching:

SIGHT ADJUSTMENT

Trial/impact analysis

- Objective: learn how sights work and how



Checkerboard target face.

to adjust them.

- Situation: shooting situation.
- Equipment: the basic equipment set up with butt and a checkerboard shaped target face.

- Instructions: centre the sight and afterwards adjust the sight in one direction then observe where the shots group. The sight adjustment is always done in the same direction of the impact. For example, move up the sight to correct high

impacts.

Practice Session Planning Sheet

of this session in the program: _____ Total number of sessions in the program: _____

Practise session duration: _____ hrs/min Facilities: _____

# of students :_____ Student profile : _____

Type of welcome:

_____

Equipment preparation:

_____

Duration: ____ min

W arm-up, description of exercises

General:_____

_____

_____

Specific:_____

_____

_____

Shooting:_____

_____

Duration: ____ min

Review of previous practice session

Review topic: _____

Questions to be asked: _____

_____

Expected answers:_____

_____

Expected implementation:_____

_____

Observations:_____

_____

From: _____

_____

Duration: ____ min

Introduction of the theme to be taught

Skill to be taught:_____

Type of introduction:_____

Questions to be asked: _____

_____

Expected answers: _____

_____ Duration: ____ min

Objective:
What achievements are expected from the archers, regarding this skill?
Consider the age and number of archers, the number of coaches, and the duration of the session.

_____

_____

_____

Presentation of the exercise # 1:

Demonstration:

Done by: _____ Distance: _____m
Equipment required: _____
Location of archers: _____
Where I will stand: _____
Instructions: _____

Application:

Archer groupings (if required): _____
Equipment required: _____
Where I will stand: _____
Instructions: _____
Observation: _____
# of arrows to be shot: ____ ends of ___ arrows.
Feedback: _____
Analysis: _____

Duration: ____ min

Presentation of the exercise # 2:

Demonstration:

Done by: _____ Distance: _____m
Equipment required: _____
Location of archers: _____
Where I will stand: _____
Instructions: _____

Application:

Archer groupings (if required): _____
Equipment required: _____
Where I will stand: _____
Instructions: _____
Observation: _____

# of arrows to be shot: ____ ends of ___ arrows.
Feedback: _____
Analysis: _____

Duration: ____ min

Presentation of the exercise # 3:

Demonstration:

Done by: _____ Distance: _____min
Equipment required: _____
Location of archers: _____
Where I will stand: _____
Instructions: _____

Application:

Archer groupings (if required): _____
Equipment required: _____
Where I will stand: _____
Instructions: _____
Observation: _____
# of arrows to be shot: ____ ends of ___ arrows.
Feedback: _____
Analysis: _____

Duration: ____ min

Game #1

Name: _____
Introduction : _____
Set-up: _____
Archer groupings (if required): _____
Instructions: _____
# of arrows to be shot: ____ ends of ___ arrows.
Task of the eliminated archers (if required): _____
Analysis: _____

Duration: ____ min

Game #2

Name: _____
Introduction : _____
Set-up: _____
Archer groupings (if required): _____
Instructions: _____
# of arrows to be shot: ____ ends of ___ arrows.
Task of the eliminated archers (if required): _____
Analysis: _____

Duration: ____ min

Analyse of the session:
Type of analysis: _____

Questions to be asked: _____

_____

Expected answers: _____

_____

Duration: ____ min

Information to be given:
Misc. (club's activities, ...): _____

Documents to be given: _____

Next session: _____

Duration: ____ min

Taking down:

Duration: ____ min

Total number of arrows to be shot: ____

Practice Session Evaluation Sheet

Overall feeling Good Average Poor (circle one)

Why?:_____

Changes to be made:_____

Archers' participation Good Average Poor (circle one)

Why?:_____

Changes to be made:_____

Number of archers Too many Correct Too few (circle one)

Why?:_____

Changes to be made:_____

Number of assistants Too many Correct Too few (circle one)

Why?:_____

Changes to be made:_____

Welcome / set-up Good Average Poor (circle one)

Why?:_____

Changes to be made:_____

Warm-up Good Average Poor (circle one)

Why?:_____

Changes to be made:_____

Review of the previous session Good Average Poor (circle one)

Why?:_____

Changes to be made:_____

Quantity of instructions Good Average Poor (circle one)

Why?:_____

Changes to be made:_____

Quality of instructions Good Average Poor (circle one)

Why?:_____

Changes to be made:_____

Quantity of feedback Good Average Poor (circle one)

Why?:_____

Changes to be made:_____

Quality of feedback Good Average Poor (circle one)

Why?:_____

Changes to be made:_____

Diversity Too many Correct Not enough (circle one)

Why?:_____

Changes to be made:_____

Fun Good Average Poor (circle one)

Why?:_____

Changes to be made:_____

Exercise(s) used Appropriated Inappropriate (circle one)

Why?:_____

Changes to be made:_____

Teaching aids used Appropriate Inappropriate (circle one)

Why?:_____

Changes to be made:_____

Progression(s) used Appropriate Inappropriate (circle one)

Why?:_____

Changes to be made:_____

Game(s) used Appropriate Inappropriate (circle one)

Why?:_____

Changes to be made:_____

Objective(s) Exceeded Achieved Non achieved (circle one)

Why?:_____

Changes to be made:_____

Duration of the session Too long Correct Too short (circle one)

Why?:_____

Changes to be made:_____

Number of arrows shot Too many Correct Not enough (circle one)

Why?:_____

Changes to be made:_____

Analysis of the session with the archer Good Average Poor (circle one)

Why?:_____

Changes to be made:_____

Other _____ Good Average Poor (circle one)

Why?:_____

Changes to be made:_____

Other_____
__ Good Average Poor (circle one)

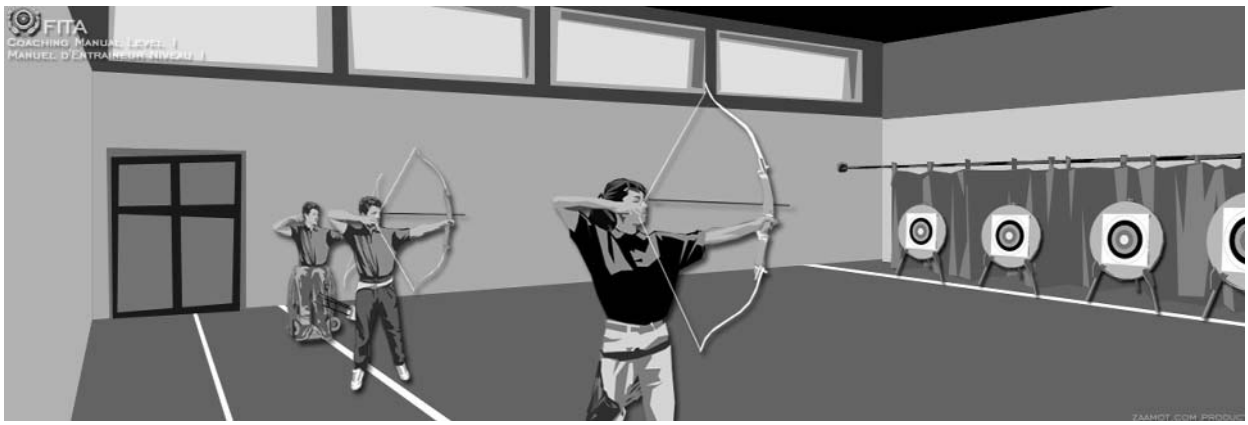
Why?:_____
_____
_

Changes to be made:_____
_____

Chapter # 11

Facilities for group instruction

Indoor or outdoor, choose a facility that is wheelchair accessible to accommodate challenged archers, and make sure that there are all the security needs to have a safe archery practice.



Indoor layout.

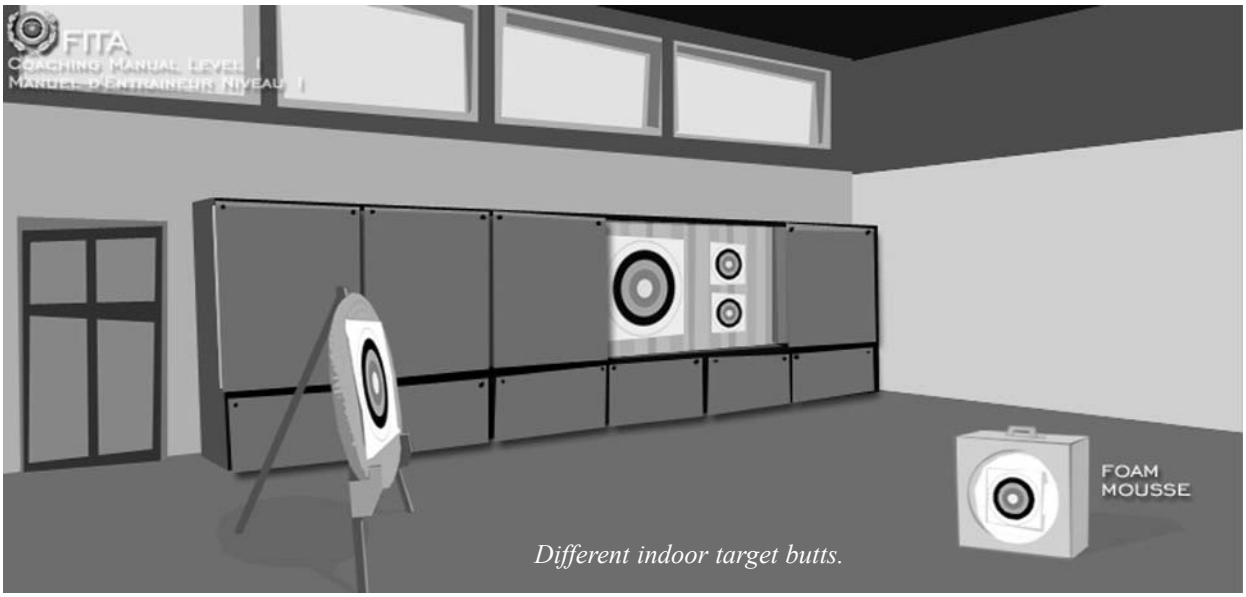
11.1. Indoor

Any area of 9 m by 21 m can be used for archery practice and can accommodate a line of 10 or 12 archers. For a larger group and a longer range, the ideal size would be 20 m x 30 m, with anything in between being workable by cutting the range and number of shooters accordingly. In an indoor facility wall protection is necessary, over and under the butts. Wall protection avoids arrows bouncing back toward the archers, protects the wall from errant arrows, and preserves the arrows. If possible a net should be provide for this purpose and the pillars will be covered. Ideally the net should be:

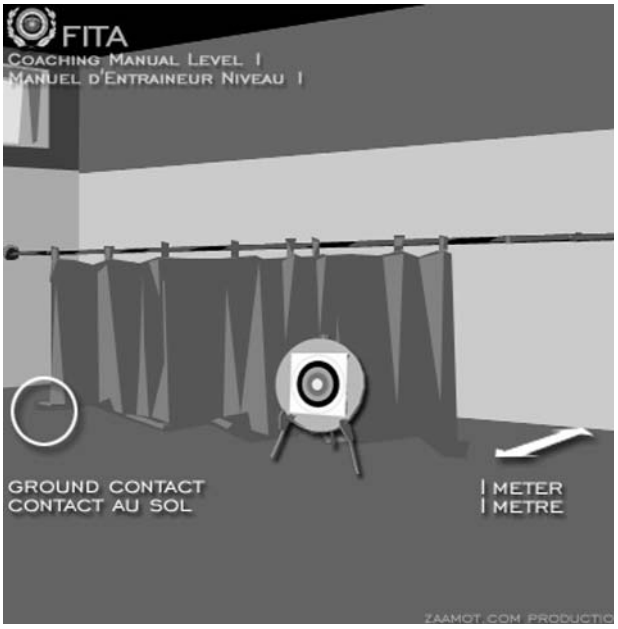
- at least 1 m from the wall;
- not stretched;
- and lay on the floor (20 cm).

Openings (windows, access...) should be avoided, as well as direct sunlight on the shooting line

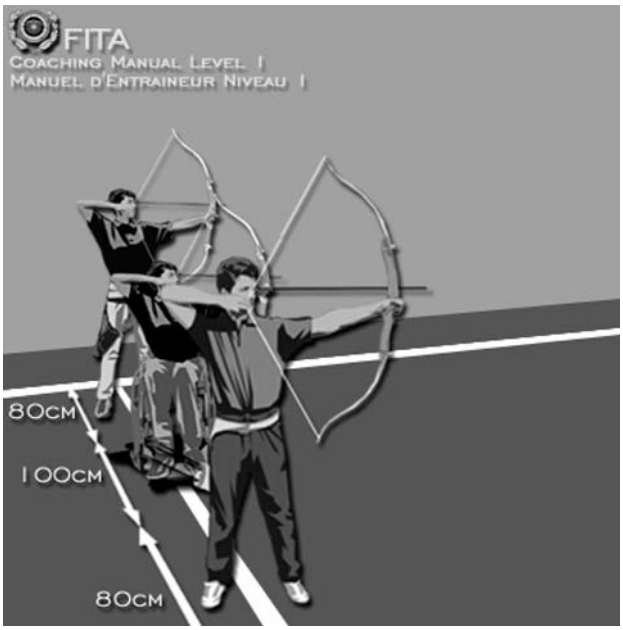
When targets are fixed to the wall, safety equipment, similar or identical in composition to the buttresses, is attached over and under the buttresses. The equipment must be sufficiently thick, and at an adequate distance from the wall, to avoid damage to the points.



Different indoor target butts.



Net installation and setting.



Shooting line.

Floor damage should be considered with archers so it is wise to use some old tumbling mats, carpets or rugs on the floor behind the targets, and if possible, 2 to 3 m in front of the targets for novices archers. In more advanced classes, this precaution can be eliminated.

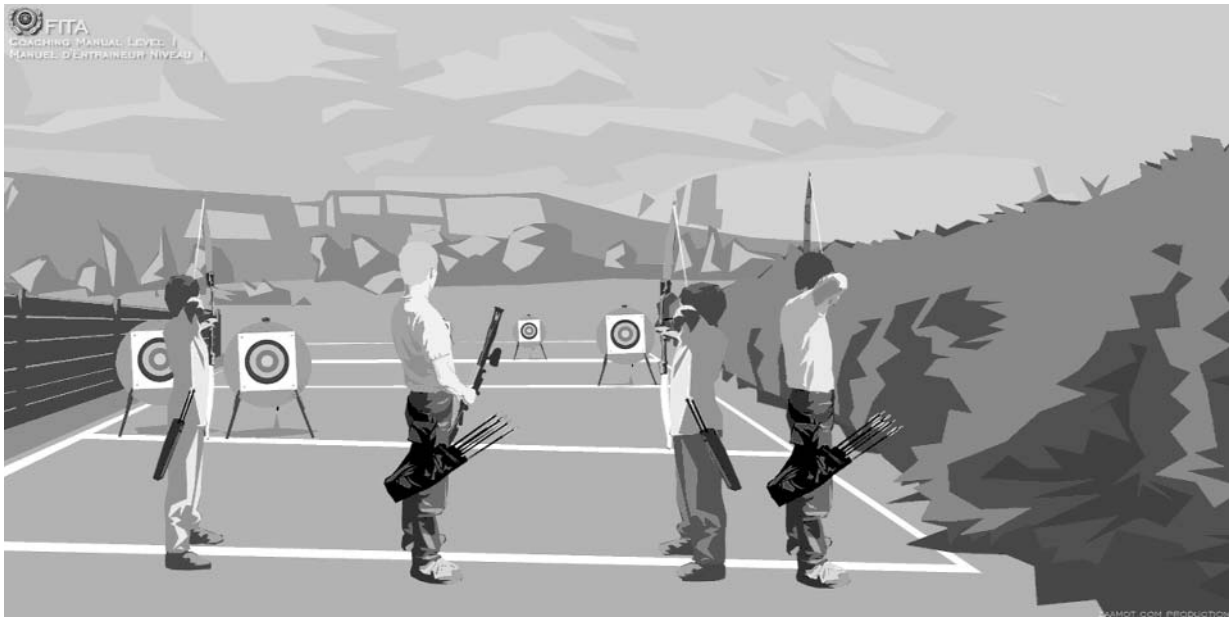
To clearly indicate the shooting line, place a strip of masking tape on the floor. A second strip of masking tape is placed about 4 to 5 m behind the shooting line. This waiting area is for the archers, coaches, and for bow stands. There should be at least 80 cm for each archer and a minimum of 1.5 m for wheelchair archers. Where the space is very restricted, shoot in two groups avoid crowding. This also facilitates the use of one bow by two archers.

11.2. Outdoor

An ideal layout is a flat area with the ground rising behind the target area to act as a natural backstop for the arrows, and to eliminate the problem of looking for arrows in the grass. Even closely mowed lawn can hide an arrow. Where no backstop is provided, a long clear area must be left behind the targets. When shooting at close ranges of 10 to 30 m, have at least 45 m of free space to allow the arrows to fall to the ground before encountering any obstruction. At target level and just behind, asphalt and such hard material should not be used to avoid bounces of the miss arrows.

Normally the target range is used by moving the targets back and forth for the various distances, leaving the shooting line stationary, this allows for the added safety area behind the targets at close range. However, when outdoor layout and a recommended buttress fixed or semi-permanent targets are used, the shooting line must be moved to the distance required. This requires a sufficiently large safety area, or a natural backstop such as a bank, to ensure safety at all distances shot. If a net for indoors use is available, it could also be used outdoors. Since the wind will raise it, secure the net on a cable to avoid folding.

It is recommended that the shooting field faces north (in the north hemisphere and south in the southern hemisphere). If this is not possible, the next preference is east. By the time the range would be in use, the sun would be high enough not to be a problem, and in the afternoon the sun would be behind the archers. For recommended range sizes, please, check the FITA rules book



Range Set up.

Target mats & butts

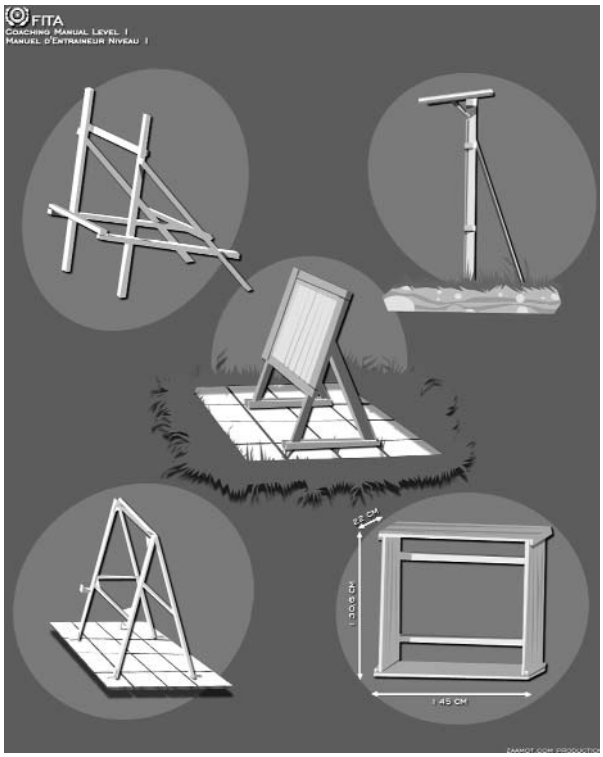
A light-weight, portable mat is an ideal target for archers using light-weight bows. For initial instruction, the 90 cm butt is the most convenient. The butts should be fastened to stands securely, and stands pegged to the ground, to avoid to being tipped over by the wind. To avoid accidents when removing arrows from the butts, position butts as low as possible. Soft butt makes it easier for children and for a wheelchair archer to collect his/her arrows.

Target faces

Target faces can be purchased in many sizes, from 40 cm up to 122 cm. For initial instruction, 80 cm full color faces are suitable. Whenever possible use the largest target face size. It is easier to start to shooting at big target faces. The satisfaction of hitting the gold is an excellent motivation for any new archers.

Stands

Wooden stands are recommended for reducing arrow damages. Arrows could bounce back from metal stands towards the shooters. Also, the lower the stand, the easier it is for short archers like children and wheelchair archers to collect their arrows.



Some wood stands.

11.3. Equipment for group instruction

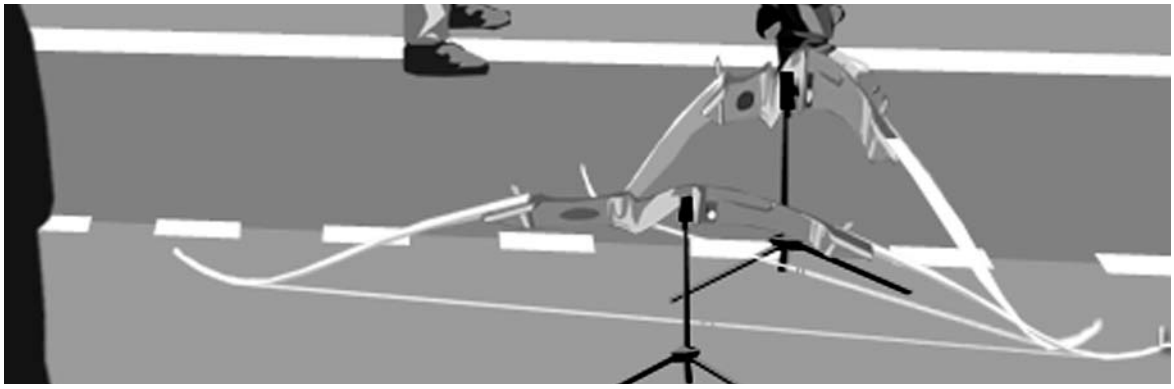
Ensure each archer has adequate and safe equipment to use. Good group instruction depends on having sufficient and the correct equipment for all participating archers. If it is not possible to have a complete set for each archer, match the archers according to size and gender (male archers can usually pull heavier draw weights than female archers) and have two archers share a set of equipment.

Teach archery at the beginner level with light draw weight Recurve bows, because this type of bow can fit different draw lengths. If teaching with compound bows or long bows, try to use bows lighter than 20 lbs at full draw (and no more than 36 lbs peak weight for compounds if any)

A standard archer set has the following equipment:

1 bow, 10 lbs to 25 lbs;
1 arm guard;
1 finger tab;
1 quiver attached to the belt or put on the floor
3 to 6 identical arrows of the correct length.
1 elastic band

Item	Qty	Description
Right-handed bows		
	1	12 lbs - 64"
	3	12 lbs - 66"
	1	12 lbs - 68"
	1	15 lbs - 70" (or 68")
	3	15 lbs - 68"
	2	15 lbs - 66"
	1	15 lbs - 64"
	1	15 lbs - 62"
	1	20 lbs - 68"
	1	20 lbs - 66"
	1	20 lbs - 64"
	1	20 lbs - 62"
	1	24 lbs - 68"
Left-handed bows		
	1	12 lbs - 66"
	1	12 lbs - 64"
	1	15 lbs - 70" (or 68")
	1	15 lbs - 66"
	1	15 lbs - 62"
	1	20 lbs - 68"
Bow tip protectors		
	1 per bow	
Arm guards		
	24	Regular length
	6	Long length



Bow stands - ideal for placing the bows when they are not being used during the training session.

Suggested equipment inventory for class of 24 archers (including adults and children):

Finger tabs		
	10	Right-hand, small
	10	Right-hand, medium
	8	Right-hand, large
	3	Left-hand, small
	3	Left-hand, medium
	2	Left-hand, large
	(or use ambidextrous tabs)	

Quivers

28 units

Finger slings

10	Small
10	Medium
8	Large

Bow sights

25 units

Arrow rests

32	Right-hand
12	Left-hand

Nock locators

36 8- and 10-strand

Clothing shields

3	Right-hand, small
4	Right-hand, medium
5	Right-hand, large
1	Left-hand, small
2	Left-hand, medium
2	Left-hand, large

(or use ambidextrous ones)

Qty	Shaft size	Length (inches)
Aluminum arrows		
1 dozen	1416	24
2 dozen	1516	25
2 dozen	1516	26
1 dozen	1616	26
2 dozen	1616	27
2 dozen	1616	28
6 dozen	1716	28
1 dozen	1716	29
6 dozen	1816	30
6 dozen	1916	31
Wood		
1 dozen	< 35 lbs	24
5 dozen	< 35 lbs	26
4 1/2 dozen	< 35 lbs	28
1 1/2 dozen	< 35 lbs	30
6 dozen	30-40 lbs	
Carbon		
3 dozen	Club	26
3 dozen	Club	27
3 dozen	Club	29
1 dozen	Club	30
1 dozen	Club	31

11.3.1. Bows

Select bows carefully. The bow weight, or draw weight, can never be too light for initial sessions. Once the archer learns proper technique and has developed some "archery muscles", he/she can graduate to a bow with the proper weight for the type of shooting he/she wishes to do.

To start with a too heavy bow will be not benefit and likely hinder proper form development. There are several test to find a correct balance between the archer condition and the bow draw weight. Here you have some examples:

A) The 30 second test, hold the bow at full draw. If an archer could not do it, this bow is too heavy for him/her.

B) Make a hold of 10 second, and then rest other 10 second. Do it 10 times. If an archer can not do this exercise, this bow is too heavy.

In both exercises, if it is too easy for the archer, this bow is too light for him.

Below is a chart that suggests the bow weight to use at the archer's draw length.

Bow weight for beginner archers:

Children 6 - 8	about 10 lbs
Children 8 - 12	about 12 lbs
Boys 12 to 14 years	15 to 20 lbs
Girls 12 to 14 years	12 /16 lbs
Boys 15 to 17 years	16/18 to 18/22 lbs
Girls 15 to 18 years	15 /18 lbs
Men	16/18 to 20/24 lbs
Women	16/20 lbs

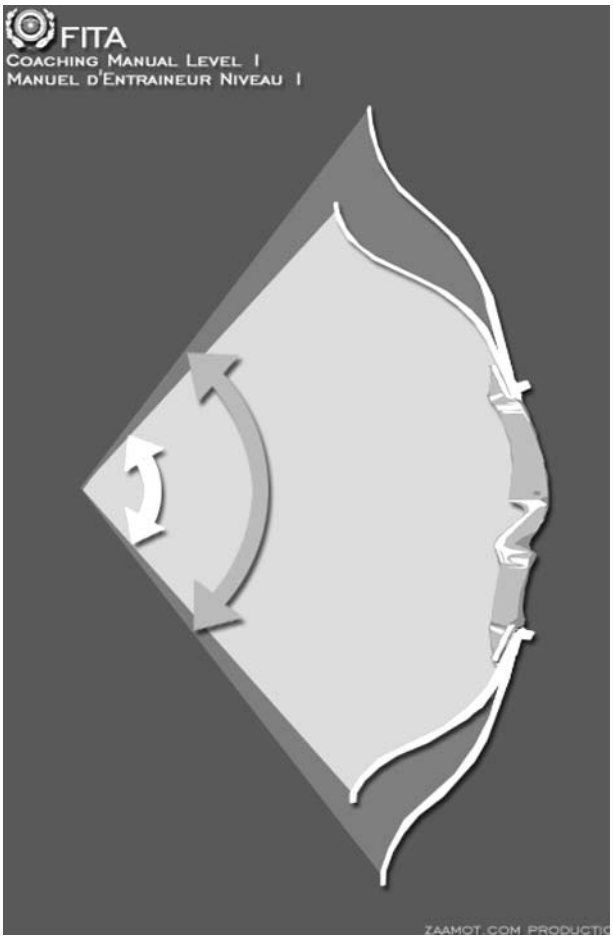
* Weight in lbs at the archer's draw length

Note: Due to these low weights small children will not be able to shoot long distances. Even if they could, it is recommended to start in short distances at the beginner level.

Recurve bow weights are measured at draw lengths of 28" to the back of the bow (26 1/4" from the nocking point on the string to the pivot point of the bow grip, plus 1 3/4", for the width of the window). To estimate the actual weight at any other draw length, add or subtract two (2) lbs per inch of draw above or below the marked weight.

Example: A bow marked 24 lbs at 28" would be 28 lbs at 30", and 20 lbs at 26".

The length of the Recurve bow is measured from tip to tip along the bow, when the bow is unstrung. Most manufacturers make Recurve bows 62" to 70" long. When teaching archers, it is better to use a bow that is too long, rather than too short. Short bows are difficult to pull at longer draw lengths, and the angle of the string at full draw may pinch the archer's fingers making it difficult to release properly. As well, shooting a bow that is too short may damage the bow.

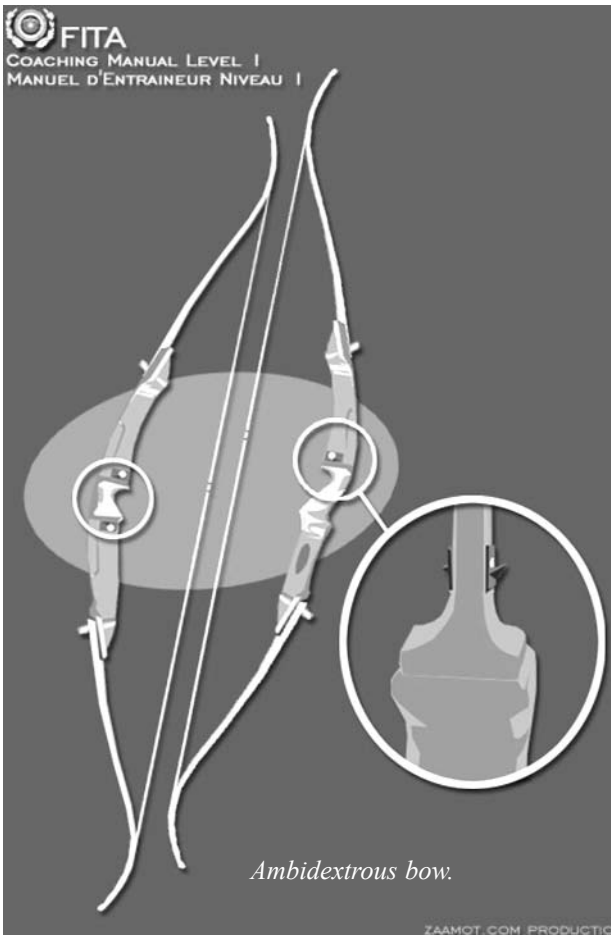


The string angle is sharper on a short bow than with a longer bow.

Arrow Length	**Bow Length**	
	Wood	*Fiberglass*
18" - 20"	Not under 52"	Not under 42"
21" - 23"	Not under 56"	Not under 48"
24" - 25"	Not under 60"	Not under 54"
26" - 27"	Not under 66"	Not under 62"
28" - 29"	Not under 68"	Not under 64"
29" - 30"	Not under 70"	Not under 66"

Ambidextrous bows

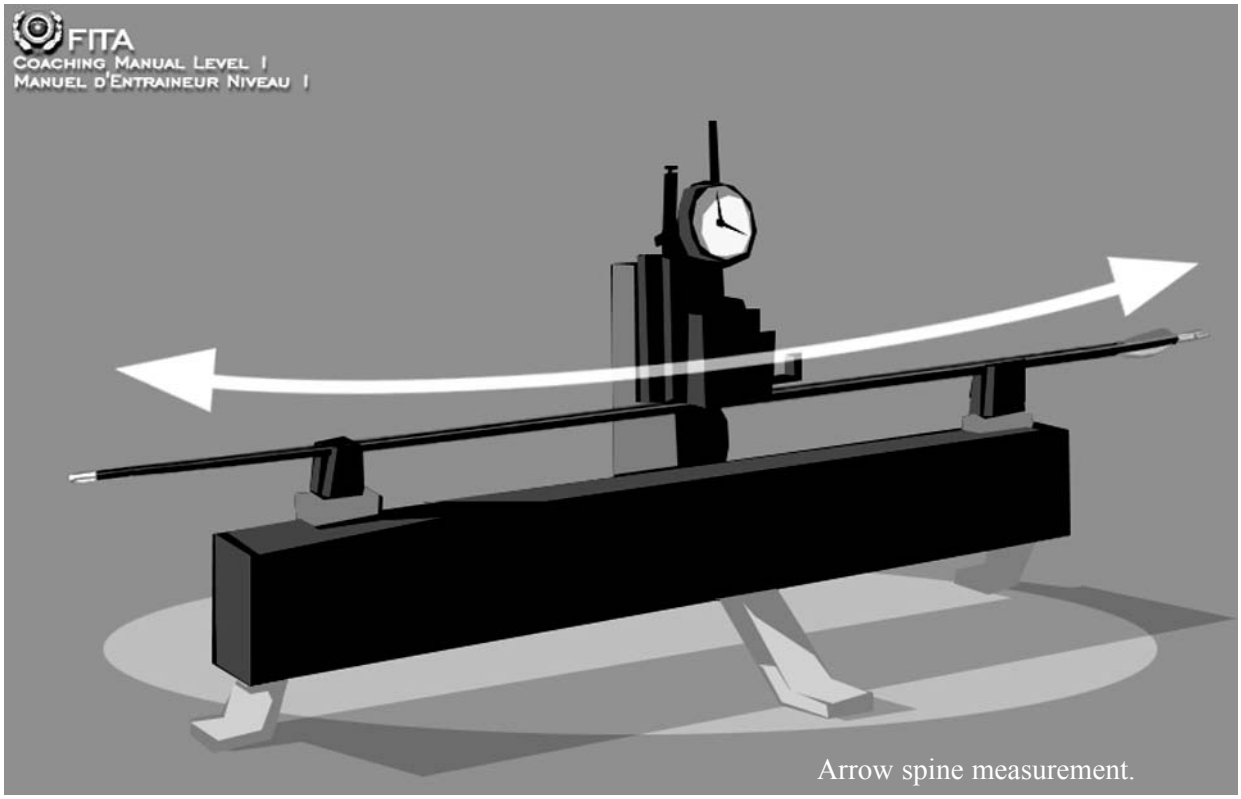
A few companies manufacture bows that can be used by either right or left-handed people. These bows are highly recommended for group instruction. Most bows of this type have 2 sight windows and can be used by left or right-handed archers by turning them over. These bows work very well for the archer learning basic form. They are not recommended for competition. When shooting the bow right handed, simply ensure that the bow window is on the left side of the bow, and vice versa for the left handed archers.



Ambidextrous bow.

11.3.2. Arrows

Arrows are made of a variety of materials: wood, fiberglass, aluminum, and carbon or a carbon/aluminum combination. Wood arrows are not recommended for beginners, because they break without warning, provoking serious injuries and they are difficult to repair. Fiberglass arrows are more expensive and stronger than wooden ones. These are not recommended at the beginner level because they are too heavy for light bows. Aluminum and carbon (or composite of them) arrows are the most popular and are very versatile. They are very closely matched and can be purchased in many sizes and



Arrow spine measurement.

weights. This type of arrow requires some maintenance, especially straightening. To reduce the amount of maintenance we recommend shafts in XX75, or better alloy. Carbon arrows are light, cannot be bent so they do not require straightening, and less maintenance is required. However, they can shatter and cannot be repaired.When pulling carbon arrows from a target butt always use an arrow puller to protect your hands from any cardon shards that damage may have caused to break loose.

CAUTION: Do not shoot a crack or damaged arrow.

Try to match each archer's set of arrows. Each archer should have a set of three to six arrows. Each set should be marked or crested for easy identification. Each arrow in the set has the same length, size and composition.

The major technical criteria are: weight, spine and length. Weight is determined in grains and is the total weight of the arrow complete and ready for use (nock, points and vane including). Arrows that are lighter fly faster. Most factory made arrows are closely enough matched for a beginner group to perform well. Spine is a measure of the static amount of bend, in thousandths of an inch, when placed between two supports and depressed at its middle with an 880 gramme weight. The arrow bends as soon as it is released, and the spine, sometime called stiffness, of the arrow determines if the arrow is properly matched to the bow draw weight. An arrow that is not stiff enough tends to bend too much and flies poorly. An arrow that is too stiff will also fly not well and without accuracy. It is important that each arrow in a set has the same spine so that each arrow in the set flies the same. Generally, it is better to shoot arrows that are a bit too stiff rather than too weak. All arrows are marked to indicate their weight and spine.

Length is measured, in inches, from the bottom of the slot in the nock to where the shaft is cut, and should be within two mm or less for a matched set. A greater difference affects the aiming process, the draw length, the weight, and the point of balance of the arrow. Also the set is no longer matched, and will not group. Arrows that are too long are satisfactory to shoot. Arrows that are too short are NOT safe.

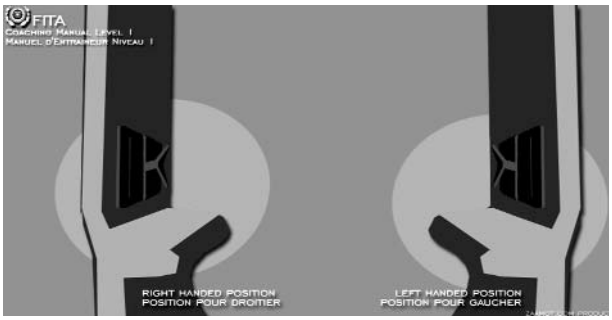
11.3.3. Bow strings

Bow strings for this level (beginners) are most often made of Dacron. Some inexpensive bows come with a braided string that is tied at one end and a loop at the other. These strings should be replaced with Dacron strings whenever possible. Dacron strings come in a variety of colors, and last a very long time. Usually beginner level bows are

not built to be used with other string material. When ordering new strings from a local dealer, look on the bottom limb and if it has an A.M.O. (Archery Manufacturers Organization) number, give the dealer that number and he will know how long to make the new string. If there is no A.M.O. number, then measure the length of the bow while it is unstrung and give that length. Eight Dacron strand strings fit very well to beginner level bows. Recurve strings are usually three inches less than the bow's A.M.O. length. (Compound string length is usually written on the lower limb).

11.3.4. Arrow rests

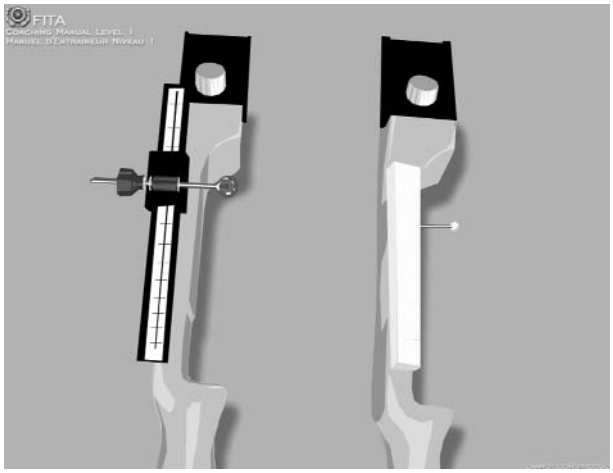
The use of an arrow rest is important as it reduces the area of the bow the arrow touches, creating the least amount of friction when the arrow begins to move as it is released. Arrow rests made from wire are expensive. Arrow rests made from plastic are recommended. The arrow rest should be glued onto the window directly above the pivot point of the handle, and should be aligned squarely, perpendicular to the string.



Ambidextrous arrow rest.

11.3.5. Sights

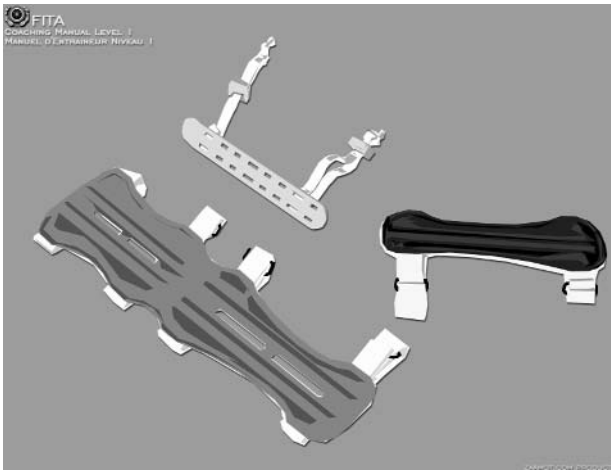
A sight is made of a main sight bar with an adjustable elevation bar (vertical), a side windage adjustment (horizontal), and a pin. Sights are not required for the initial sessions, though they may be used. The archer may become obsessed with correcting shots by moving the sight, instead of concentrating on shooting form. There are many simple inexpensive sights available. It is possible to make an inexpensive sight with a 1.2 x 13 cm strip of 3 to 5 mm cork sheet, felt, or weather stripping, glued to the back of the bow. Use a pin with a large colored head as an adjustable bar (dot). This works quite well, but can move very easily. When attaching the sight to the bow, ensure the sight is vertical. Make sure the arrow does not hit the sight when released and make also sure that is well tightened.



Two entry level sights.

11.3.6. Arms guards

An arm guard should be stiff enough to remain flat on the arm, or over clothing. A better quality arm guard has a stiffener sewn into the guard to ensure flatness. To fit properly the arm guard should have two straps. The model with three straps can be used by beginners. This type covers the arm beyond the elbow where beginners sometime get hit by the string. The cross band, elastic strap arm guard can bulge with wear, causing string clearance problems. Arm guards can be used on either the right or left arm as required.

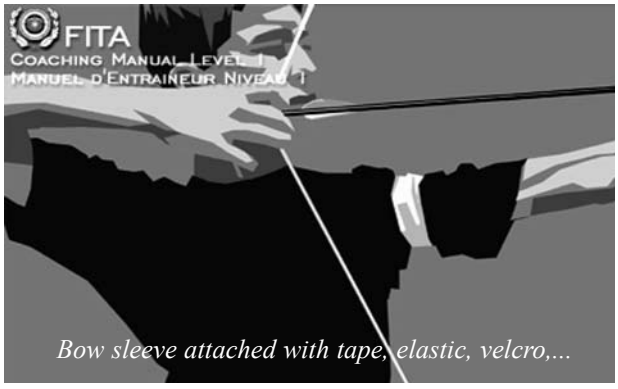


Different styles of arm guards.

11.3.7. Chest guard

Bow sleeve attached with safety pins

Pins or some tape can be used to keep loose clothing from the path of the bowstring.

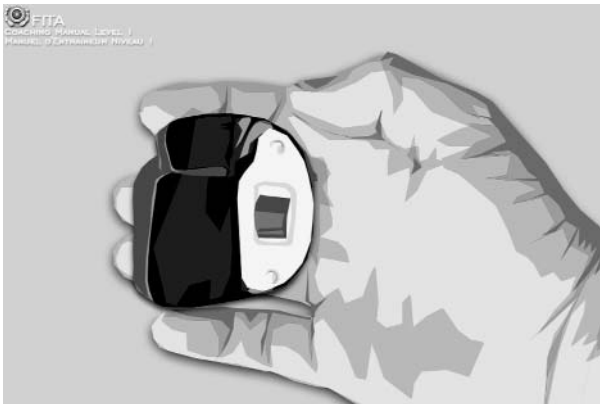


Bow sleeve attached with tape, elastic, velcro,...

Clothing attached with a loop made from elastic band.

11.3.8. Finger protection (finger tabs)

The purpose of a tab is to protect the fingers and to ensure a smooth uniform surface to effect a clean release. A little talcum powder ensures a smooth no stick surface, and extends the life of the tab. Finger tabs are not used for initial instruction. This device is introduced as soon as the archer feels a finger irritation. Without this device the beginner will be more comfortable. Not wearing a tab allows for better string finger positioning. However, later the archer will achieve a cleaner release with a tab. Finger tabs are preferable to shooting gloves as they present fewer fitting problems. The tab allows the archer to feel the string and the arrow this helps control in the early stages. Have about 20% left-handed tabs available. The inexpensive double sided plastic tab, serves quite well at the beginner level. This type of tab can be used for either right or left-handed shooters and comes in small, medium and large sizes. The size of the hole should be such that the tab catches behind the second knuckle and resists being pulled off by pressure from the outward end of the tab. The tab should be big enough to cover the drawing fingers when bent to engage the string. Any surplus slows the string on release and cause arrow flight problems.



Fingers tab not exceeding the width of the fingers. There is a need of small size for children or adapt properly the size to the childs hand and fingers.

11.3.9. Quivers

There are two types of quivers suitable for group instruction: the belt or side quiver, and the ground quiver. Pocket quivers are sometimes used, but they are not suited to the beginner level. Belt quivers can be made to act as either left or right-hand by reversing the hook. They are suitable for indoor and outdoor shooting. Ground quivers come in two different types, indoor and outdoor. The indoor types have a flat base that does not mark the floor and is heavy enough to support the arrows. The outdoor type has a metal spike on the bottom so it can be driven into the ground to prevent the wind from tipping it over. Some ground quivers also serve as bow supports and have two curved prongs at the top to rest the bow. Floor quivers should be placed about 30 cm ahead of the right foot when at the shooting position on the line, for right-hand archers; left-hand archers use the left foot. There are five disadvantages to using a ground quiver:

- coming back from the butt to the shooting line archers must carry their arrows in their hands, this is sometimes unsafe;
- they must be moved when moving the shooting line;
- it increases the space per archer, on the shooting line;
- two are required, one for indoor and outdoor; and
- they must be placed in exactly the same place each session to facilitate uniformity of the nocking procedure during the shooting process.

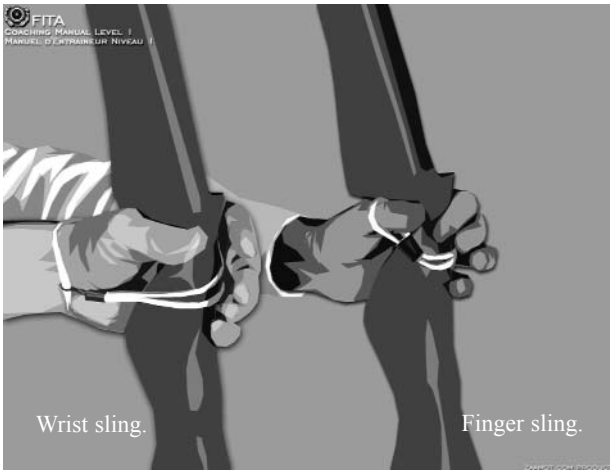
Provided that a quiver comfortably holds six arrows, it is large enough. The extra size sometimes offered in catalogues has no advantage at this level.

11.3.10. Wrist or finger sling

Introduce the wrist or finger sling during a bow hand exercise (see Chapter 7, in 7.1.2.3), not during the first few practice sessions. We recommend the following types:

- Cord: fixed around the wrist, and passing through the fingers and in front of the riser; and
- Finger sling: fixed around the thumb, and either the forefinger or middle finger.

We do not recommend the bow sling be affixed to the riser because the bow moves so much that very often the archer will stretch his fingers, or grab the bow.



Two popular types of slings.

11.4. Equipment care

11.4.1. Maintenance

- Store bows unstrung, laying flat. Do not stand them up.
- Do not dry fire a bow, that is, shoot it without an arrow.
- Avoid exposure to extreme temperatures such as the inside of a car in the summer.
- Transport all equipment in proper cases.
- Check the limbs of solid fiber glass bows frequently. If there is light colored, almost white, streaks in the fiberglass, and pieces of the glass start to break away, the bow should be disposed of.
- Periodically, check the limbs of composite bows for cracks, especially the horizontal ones. If any are found the bow should not be used. A competent bowyer might be able to fix the crack limbs.
- Periodically, check to see that the limbs are not twisted and that the string lies in the middle of the limb when the bow in strung. If it does not, take the bow to a knowledgeable dealer for repair.
- Maintain the correct brace height (the distance between the deepest part of the grip and the string). It should range from 20 to 23 cm, with 21.5 cm being the average.
- Periodically check the limb nocks for sharp edges or uneven surfaces that can cause string wear.
- Frequently check arrows carefully for cracks, splits and splinters, especially near the points. Dispose of them if even the slightest fault is found.
- Check aluminum arrows for straightness, straighten them if necessary.
- Frequently check nocks carefully for cracks, nicks and that they are firmly attached. Replace the nock even if the slightest fault is found.
- Check the points for burrs or bluntness, replace, or file them as necessary.
- Store wood arrows in a cool, dry place to prevent warping and cracking.
- Store arrows in a proper case, not a quiver, to prevent damage to fletchings.
- Replace fletchings that are badly damaged. However, an arrow with damaged and even missing fletchings will still shoot satisfactorily, at close distances.
- Sights should be checked and loose screws replaced. Damaged sight pins should be replaced or repaired.

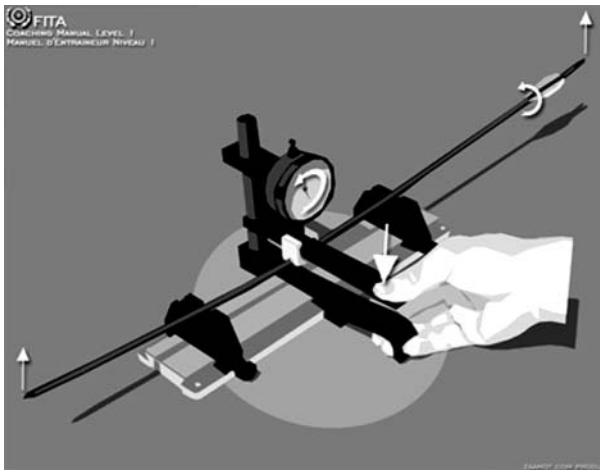
● Do not store solvent, insect repellents in a bow case. If they should spill or leak, limbs may be ruined.

Recommended tackle box contents:

Accessories	Equipment maintenance
Whistle	Adhesive tape
Adhesive tape	Masking tape
Spare finger tabs	Felt markers (1 big, 1 thin)
Spare armguards	Spare arrow rests
Spare clothing shields	Spare bow sight parts
Rubber bands	Allen wrenches
Target pins	Pliers
Screw drivers	Spare bowstrings
Towels	Cord bow stringer
Baby powder to dry palms	
String wax	Spare nock locators
Pencils	Nocking pliers
Eye patch, or headbands	
Scorecards	Spare fletching
Golf tees	Fletching cement
Drying cream	Spare nocks
Clothing pins	Bow square
Measuring tape	Serving (tool and thread)
Fletching cement: epoxy, Superglue and hot melt	

11.4.2. Arrow repairs

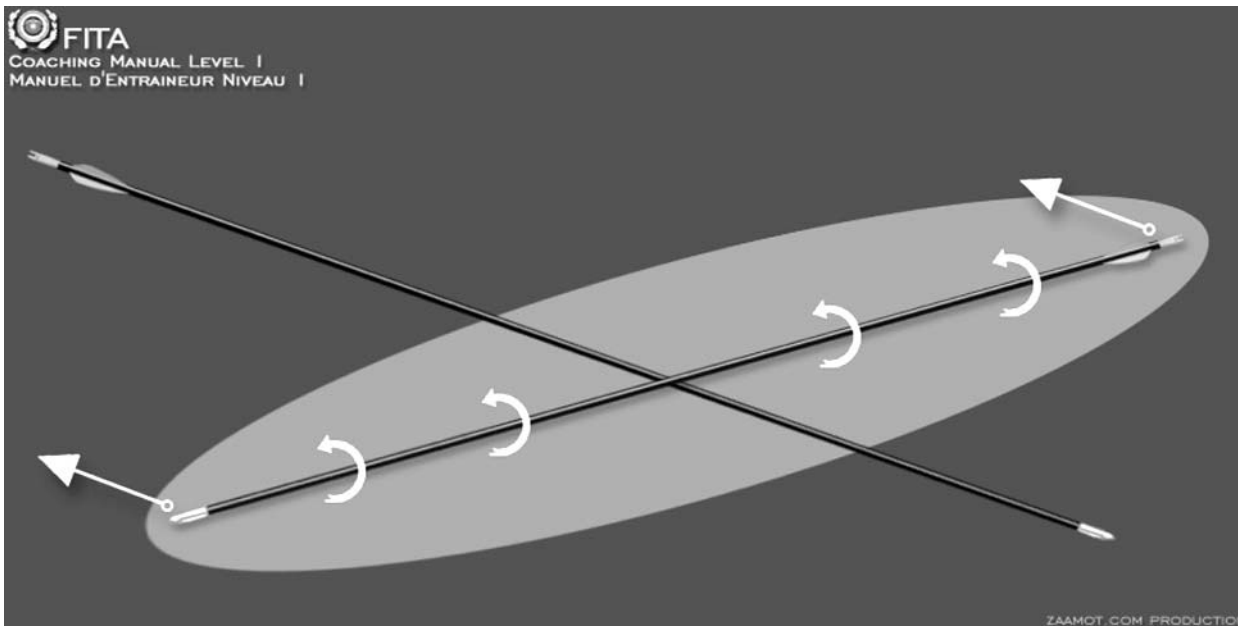
Arrows should always be straight. Usually small bends in aluminum arrows do not affect a beginner's accuracy. Check by eye, down the shaft, or rotate and note wobble or vibration. Rolling the shaft along a table can also be used to check straightness.



Straighten an aluminum shaft with a straightener.

Always check shafts for damage such as splits, chips or compression lines as these make the arrows dangerous to use and inaccurate. If there are no splits in a wooden or aluminum shaft, a shaft straightener can be used. Straightening can be done by hand, but requires much experience. Be careful because sometimes a shaft can break during the process.

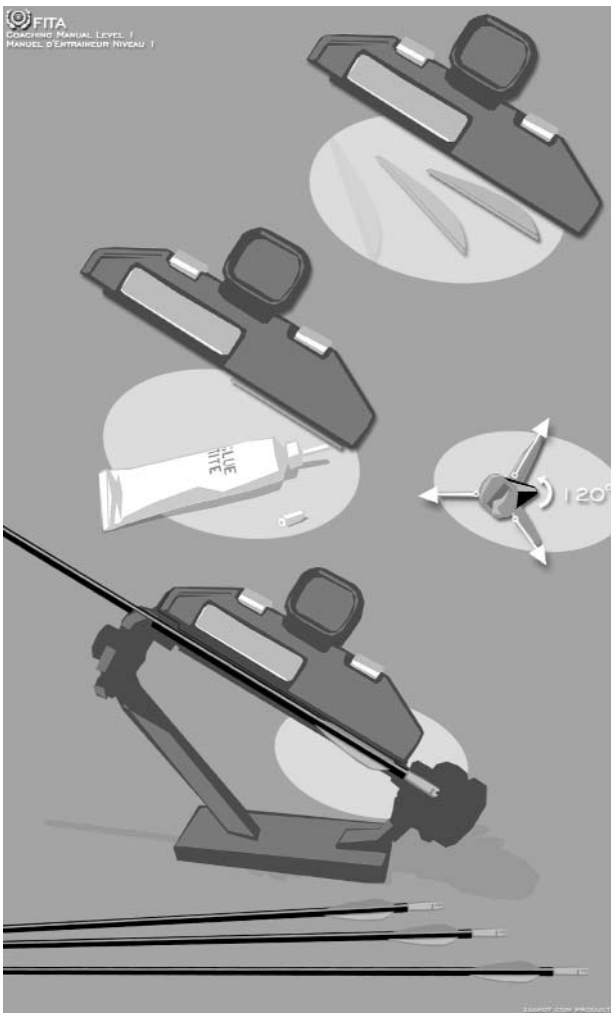
When arrows are ordered in bulk for instructional classes, an extra supply of nocks and fletchings should also be ordered to ensure that they will be the same type and color as the originals. Feathers or vanes can be replaced with a fletching jig. Without



Fast rotation: a popular principle to check the arrow straightness.

this device it is difficult to keep the vane straight on the shaft until the glue is dry. Most archery dealers re-fletch arrows, which is less expensive than buying new ones. Ideally your club should own a fletching jig. (See picture "Fletching a shaft").

Nocks often need replacing as they can be hit by other arrows and split. They come in various sizes, designs and colors. All the nocks on a set of arrows must be the same size and type. Color is important to identify the arrows on the target. If part of the old nock is left on an aluminum shaft it should be carefully removed by heating and pulling it off gently with pliers. Be very careful with the swage. For wood arrows scrape, or sand, off the old glue. Be careful not to remove any wood, as this causes the new nock to sit crooked on the shaft. Clean aluminum arrows with an acetone based cleaner, when the shaft is dry, make sure that a new nock fits properly and apply a thin coating of fletching cement around the swage, and lightly but firmly, press the nock into place. To index a nock, line up the index (or bump moulding line) directly behind the cock feather. If there is no index, then the groove in the nock should be at right angle with the cock feather, when the nock is in place and the surplus glue has been removed from the base of the nock, check it for correct line. Rotate the shaft quickly on the finger tips or on the side of a table, to assure that the nock is lined up with the shafts centre line and check for wobble. Slight adjustments can be made while the glue is still wet. Stand the arrow in the storage rack to dry for half an hour before using.



Fletching a shaft.

From time to time points need to be replaced. Minor point damage can be smoothed down with a fine file, or sand-paper. Except for wooden arrows, points are usually glued in with a hot melt cement such as Ferr-L-Tite. The point must fit flash with the shaft.

INSTRUCTIONS from EASTON MAINTENANCE GUIDE

Removing points (or/and inserts)

When removing a metal point (insert and point in one piece) or an insert and point in two pieces, you must:

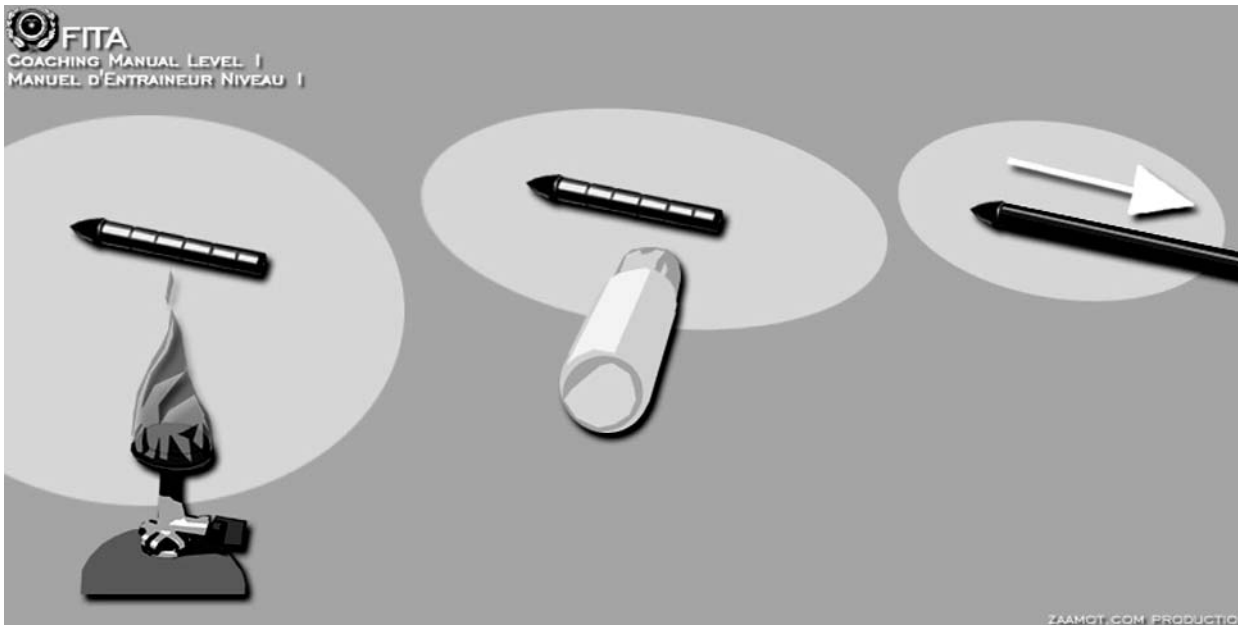
1 - Lightly heat the exposed end of the point for 3-5 seconds over a small gas flame.
CAUTION: Do not overheat the component or the shaft.
2 - Immediately grip the point with a pair of pliers.
3 - Twist and pull out the point (and insert if any).
4 - If the point or insert cannot be removed, reheat for 3-5 seconds and try to remove again.
5 - Repeat procedure step 4 until adhesive softens enough to remove the component.

Installing points and insert in the shaft

Material needed for installation:

- 91 % isopropyl alcohol
- paper towels
- cotton swabs
- Hot-melt (special for archery)
- Torch or burner

The instructions that follow can be used for one piece points or for aluminum insert with a screwed point in.



Glueing a point.

After cutting your shaft to length as described, follow the point installation procedure carefully to prevent overheating the point. Overheating points can destroy the shaft's epoxy bond between the carbon and the aluminum tube (in an aluminum/carbon shaft), or change the endurance of the aluminum in this area (if there is an aluminum shaft) or destroy the epoxy bond that glues the carbon fibers (in a carbon arrow). For glueing the points and insert, use hot-melt adhesive.

1.- Clean approximately two inches inside the point end of the shaft using a cotton swab dipped in 91 % alcohol. Repeat the process until a fresh cotton swap is free of cutting dust residue or other contaminants. Let the shaft dry thoroughly before bonding.

2.- Carefully heat a stick of hot-melt adhesive over a small gas flame; then apply a ring of hot adhesive to inside of the point-end of the shaft.

CAUTION: Do not apply heat directly to the shaft. The melting point of hot-melt adhesive is low enough that the shaft will not be damaged during installation and high enough to keep the point securely bonded during the frictional heating caused when the arrow penetrates the target mat. Arrow points can come out in the target mat if lower melting temperature hot-melt adhesives are used.

3.- Hold the end of the point with your fingers. (Do not hold with pliers because it is then possible to overhead the point.) Heat the exposed portion of the point shank or insert until you feel it getting warm. It should be just hot enough Hot-melt the adhesive.

CAUTION: Do not overheat the points. If the point becomes too hot to hold in your fingers, it is too hot to put in the shaft. Set the point on a noncombustible surface until cool.

4.- Heat the hot-melt adhesive and apply a generous layer of adhesive to the shank of the point or insert.

5.- Without delay, while the adhesive is still fluid, push the point and/or insert into the shaft with rotating motion until it seats against the end of the shaft. To assure an even distribution of adhesive, rotate the point 2 more revolution after it has seated against the shaft.

NOTE: Do not force a point and/or insert into a shaft. If it does not seat fully, reheat the point immediately for 2-3 seconds and try pushing it in again.

6.- With a paper towel quickly wipe off excess adhesive while it is still hot.

CAUTION: Do not apply heat directly to the shaft (at any time) because it could destroy the carbon fibers and change the endurance of the aluminum

in this area. Don't overheat the points, because it could also cause damage in the shaft.

If the head of the shaft is damaged, it is advisable to cut the shaft down, to fit in with the next standard length of arrow in stock. It is difficult pulling the arrows from the target if the points are larger than the shaft.

Extended arrow.

11.4.3. Arrow rests

Arrow rests should be kept in good shape and repaired or replaced as needed. Check that the adhesive is still keeping the arrow rest firmly in place. Check for cracks and wear in the portion of the rest that sticks out and holds the arrow. It is the first area of deterioration. Make sure the portion on which the arrow sits on has not been bent downward. Teach beginners to take care of this item. Do not allow the bow-hand, especially the forefinger to touch the arrow shaft, when the arrow is sitting on the rest.

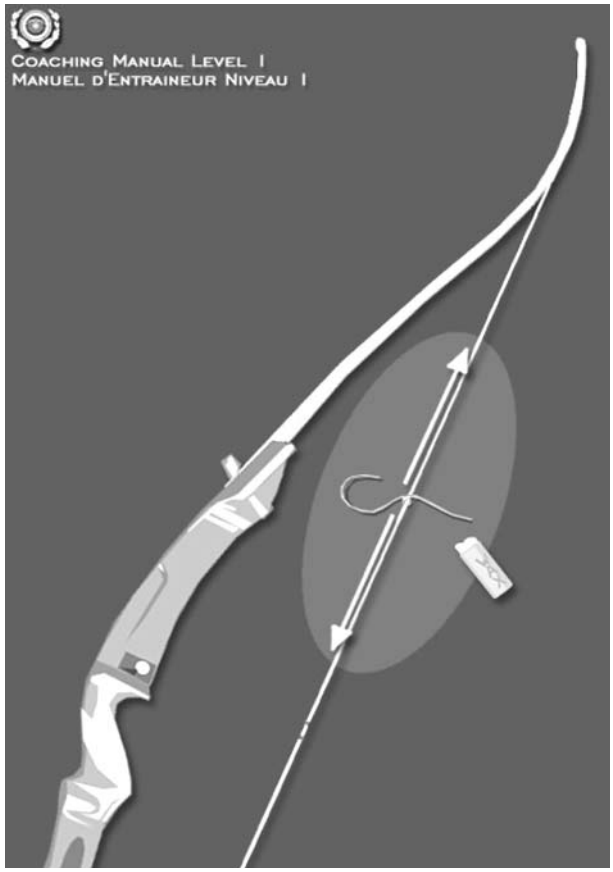
11.4.4. String repairs

Strings are subject to considerable wear and should be checked frequently. Look for the following:

- strings whose color changed or become frayed;
- loose strands in between served string sections; and
- servings that become separated.

Strings with any of these characteristics should either be repaired or replaced.

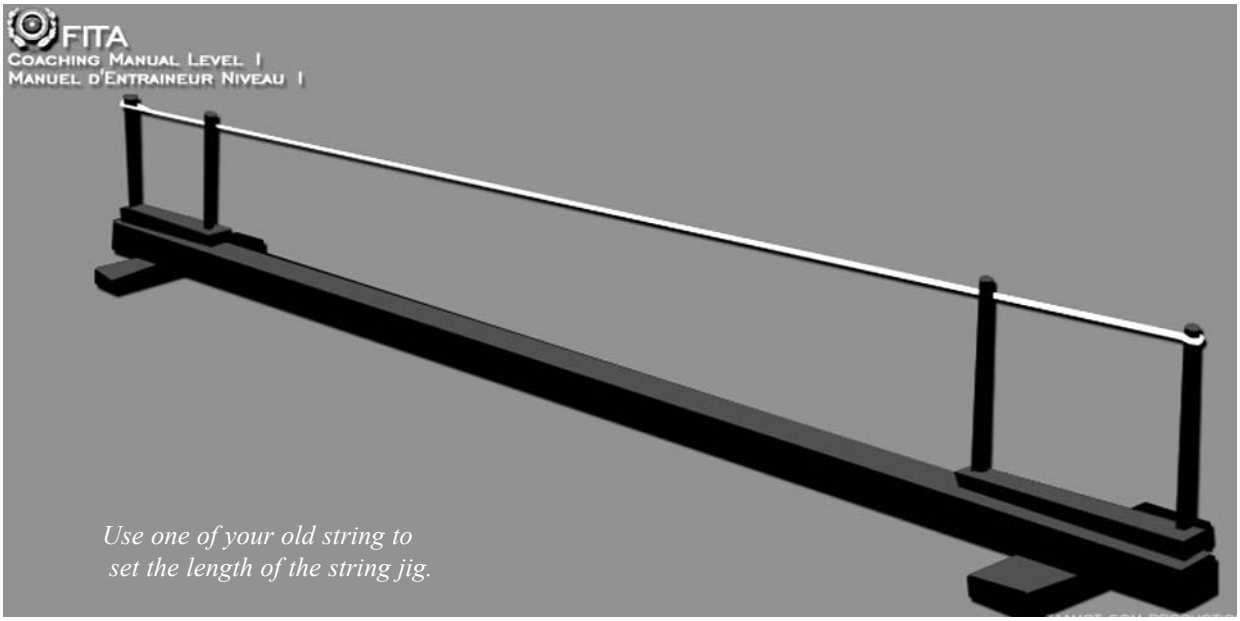
Replacement of serving and nocking points can be done periodically to extend the useful life of the string. Worn strings should be replaced before breakage occurs, worn centre servings should be renewed and the nocking point checked for correct height. Occasionally the string should be lightly waxed. To take off the excess, and to make the wax penetrate the string, simply rub with a coarse piece of cloth, a soft leather, or strand of Dacron. No wax should be allowed to get on the serving.



Smooth out a string with a strand.
CAUTION: Take care do not overheat the string from friction.

11.4.5 Making a string

A beginner's bow should use Dacron, the other materials diminish the life of the string and the bow considerably. Whatever the material used, the basic method to make a string remains the same, but watch for the number of strands. There are different models of supports (circular, square, and rectangular)
The materials and tools needed to make a string are:



- a spool of Dacron
- serving (exists in braided nylon or monofilament)
- string server
- scissors
- 2 markers (each a different color)
- a ruler
- 2 wood planks, roughly 10 cm long (optional depending on type of support)

AND

- patience
- time
- care
- the will to make a good string, even if it means starting over.

Installation onto the support device

If you already have a bowstring to the length of the new one you are about to make it will be easier to make the new one to the correct length at the first attempt.

If you do not already have a string which is of the correct length there are procedures and measurements which will to help get close to the length of string required. This will be discussed a little later.

If you have a string that is the correct length.

Turn the string jig post carrier ends so that they are in line.

This part depends on the length of the string, but undo between 10 and 15 of the twists. Place it on, and adjust the string jig so that there is no sag on the string. Do not have the string too tight as this will have an effect on the string length that is being made.

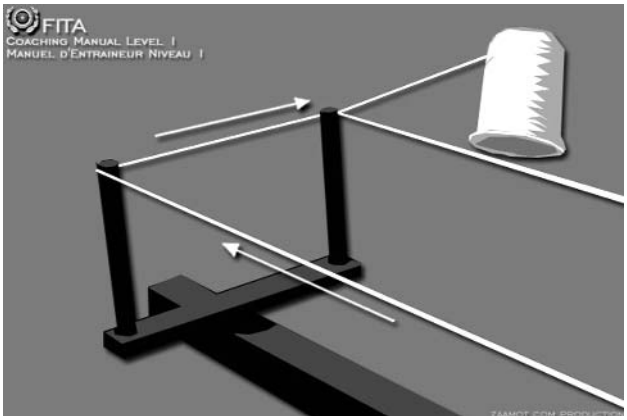
If you do not have a string that is the correct length.

Set the sting jig to a length that is 3½ inches (9 cm) shorter that the length of the bow. This measurement depends on the make of the bow but it will bring you close to the required length for subsequent string making.

Take the old string off the jig.

Turn the jig ends so they are square to the line of the jig. Loosely tie one end of the string material to a string post about 2 centimeters below the groove on the post which takes the string material. Then wind the string material round the posts (keeping to the groove at the top of each post) making sure the rotation starts by going round the post that is the nearest to the post the string material is tied to. The secret to a good, reliable string lies in the equal tension of each strand. If the tension is not equal between all strands, the string breaks because the pressure was held only by a few strands. As the pressure of beginner bows is always less than 25 lbs, we recommend making strings using Dacron with eight strands.

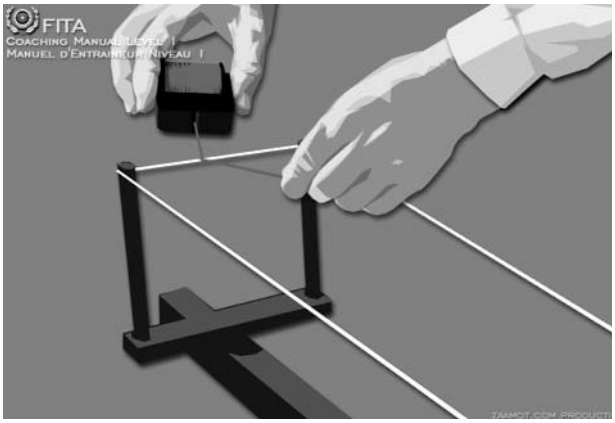
If you are making an 8 strand string go round the jig 4 times, If you are making a 10 strand string then the need will be to go round the jig 5 times. Always make sure the finishing end is tied lightly to the post that is past the post to which the start of the string material was tied. This allows an overlap of the string material that is secured under the loop serving.



Wind the string material round the posts.

Serving the loop.

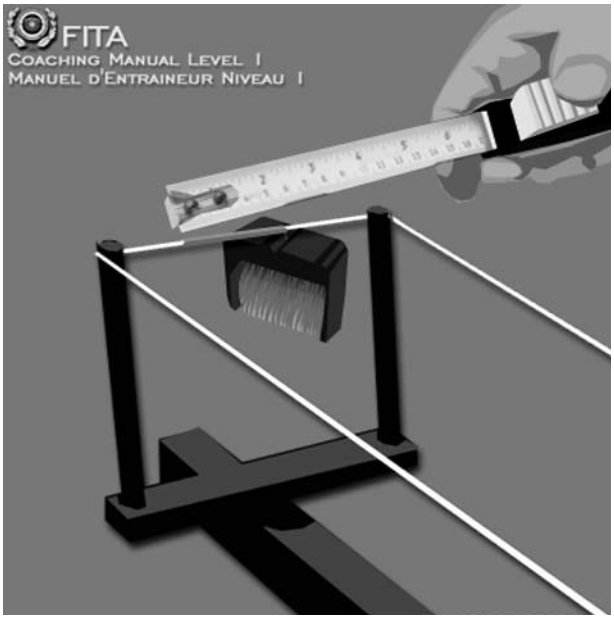
Make the first loop to be served the end of the jig that has the string material overlap, this will be beneficial and stop those ends coming loose as the string manufacture continues. Untie the starting end that was tied 2 centimeters down the first post and loop it round the post groove under the windings. All servings must be wound on the string in the same direction, this will ensure that they will not come loose when twists are added to the string for active use. I prefer to serve from right to left having the serving spool coming toward me from under the string. If all servings are completed this way they will all be in the same direction.



Start by serving over the starting end.

Length of serving for the loop.

How long the serving should be before it is made into a loop depends on the width of the limb over which it has to slide when stringing the bow. For my bow I find that 6 centimeters is correct for the loop on the lower limb and 8 centimeters for the upper limb.



The lenght ot the serving for the loop depends on the size of the limb tip.

Making the loop.

When the correct length of serving has been reached turn the jig swiveling end 90 degrees and slide the string round the jig so that the served section is now round the outside post. The end still attached to the serving tool should be about 4 millimeters shorter than the end where the serving had been started; this will allow 4 millimeters of serving overlap giving a neat join to the loop.

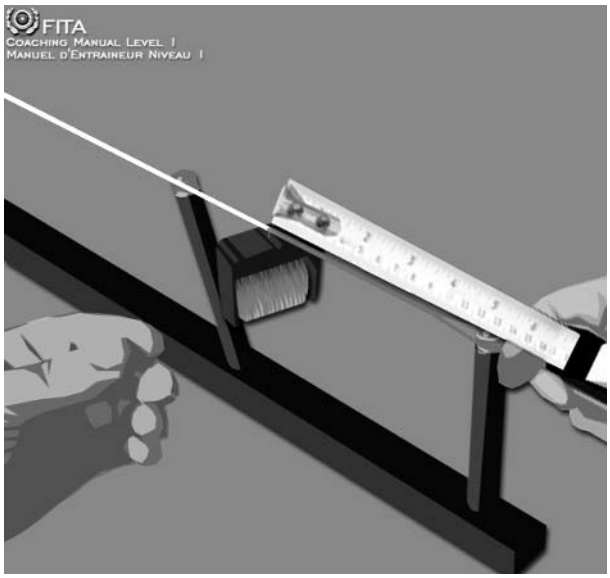
When the correct length of serving has been reached, turn the jeg and continue to serve.

Nevertheless by equalizing the two sides of the serving instead of scaling it, a thin re-enforcement that can easily be guided in the neck of the bow limbs is obtained.

Continue serving the now joined loop in the same direction as before. Make sure the two loose ends of the string material are held along this section and served over. After about 6 centimeters they should be cut off, make sure that there are at least 4 winds of serving between cutting off the first loose end and cutting off the second loose end. This will stop having a small step along the serving, which may possibly wear and cause the serving to break during use.

Serving to the correct length.

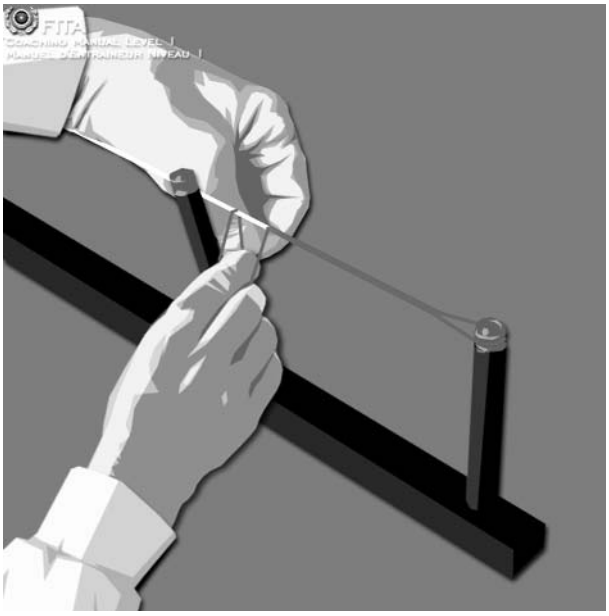
Wind the serving on to within 1 centimeter of the desired length i.e. about 10 or 12 centimeters (this measurement depends on the limb Recurve curvature). Keeping the tension on the serving, pull the serving tool away from the string and cut the serving thread leaving about a 45-centimetre length for finishing off the serving.



The length of serving after the loop depends of the limb curvature.

Making a neat end to the serving.

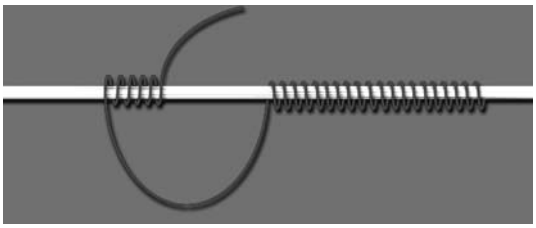
Pass the tail end of the serving over the string with the left hand about 3 centimeters from the end of the serving; make a loop holding this with the fingers of the right hand. Using the left hand pass the tail end to the thumb and forefinger of the right hand. Then keeping the loop tight bring the tail end through the loop under the string and pass it on to the left hand.



End preparation by making a loop (bridge).

Serving back through the loop.

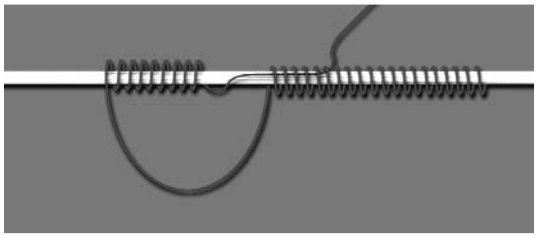
Continue passing the tail end of the serving over the top of the string with the left hand to the thumb and forefinger of the right hand, bringing it through the loop and passing it back to the left hand. This part of serving will be running through the loop and toward the serving already done with the serving tool.



Serve back in the loop (under the dridge) manualy.

Locking off the tail end.

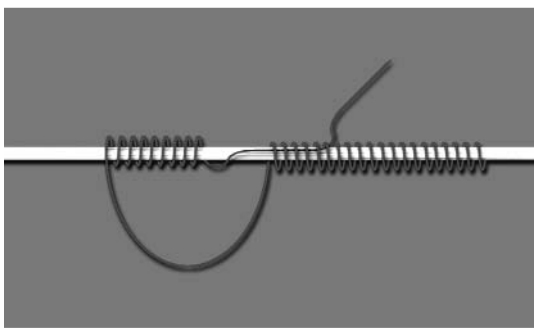
Make this part of serving for about twelve turns or until about 1 centimeter long. Place the tail end under the loop of serving thread just as it comes off the end of the serving already completed with the serving tool, and lock it there by keeping pressure on the loop.



Serve back at least one centimeter and secure the tail end.

Finishing off the serving.

Once the tail end has been secured, keeping the loop tight, wind it round the string continuing on from the serving already done with the serving tool. In doing this the serving will get longer and the part that was wound through the loop will get shorter.

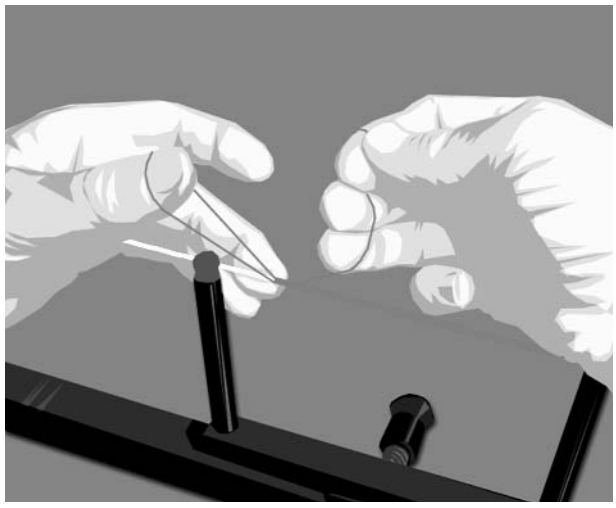


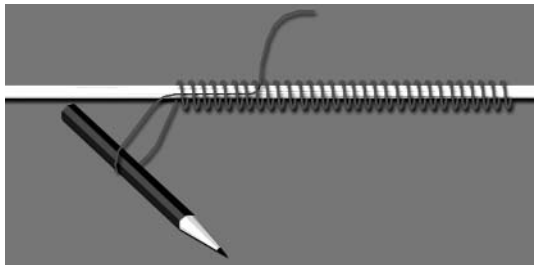
By serving manualy the right part over the tail end you unserve the left part.

Pulling the end through.

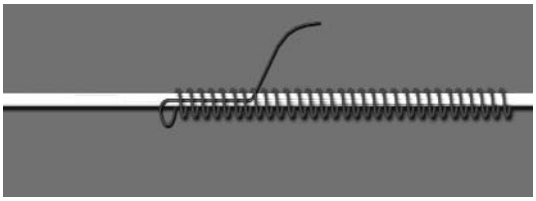
When all of the winds on the loop end have been wound off, still keeping the loop tight, pull the tail end until the loop has completely gone. The thumb of the left hand can be used or even a pencil can be placed under the loop to maintain the tension whilst the tail end is being pulled through.

By pulling, the end strand can twist on itself and "refuse" to pass under the server. Use a pen to guide it through (#7).





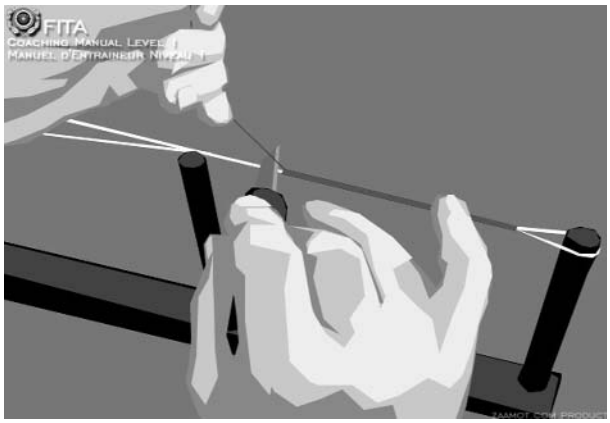
Pull the tail end under the manualy served part.



Detail of the end of the served portion.

Cutting off the tail end.

When the tail end has been pulled through and the serving is nice and tight the tail end can be cut off. To do this place a knife flat on the serving section that has just been wound back to meet the serving that was done with the serving tool then gently cut off the tail end. If the knife is placed on the serving which was done using the serving tool the serving where the tail end comes out may inadvertently be cut, as this will be a little proud of the main serving due to the tail end being underneath it.



Cut off the tail end.

Completing the other end of the string.

When the first end of the string is complete turn the string jig round and do exactly the same the other end. Bear in mind that the top loop of the string must be large enough to slip over the top limb when stringing the bow. By serving both ends in the same way the servings will be correct when the string is twisted for fitting to the bow.

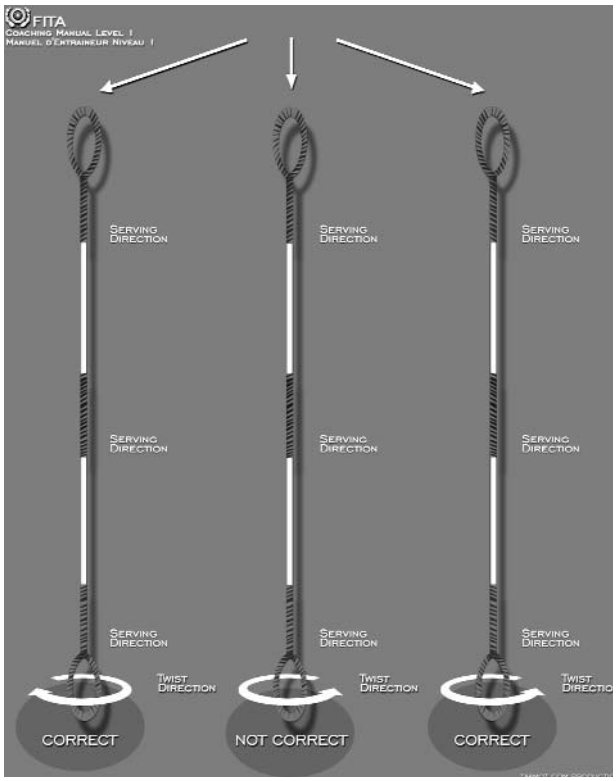
Twisting the string in the correct direction.

When both end loops of the string are completed the string should be fitted to the bow so that the centre serving can be added. To do this fit the top loop over the top limb and slide it down about 10 centimeters. Take hold of the loop for the lower limb and twist it for 10 to 20 turns (make sure that the turns are in the correct direction otherwise the end servings may come loose).

Twisting the string makes the strands unified.

The direction of twist shown is the correct direction for the direction of serving shown in this document.

If the string is twisted in the opposite direction to the serving, the serving will possibly come loose and may move during use. All three servings must be wound on the string in the same direction.



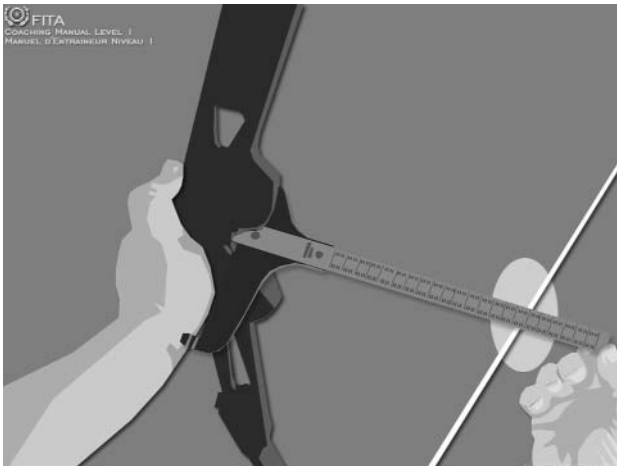
Twist the string in the direction that will tighten the serving, if the string is twisted in the wrong direction the serving may come loose during use.

Some people serve their strings in a different direction, or way, than shown in this leaflet. These three diagrams may help in determining the direction the string should be twisted to stop any of the servings coming loose during use.

11

Getting the correct bracing height.

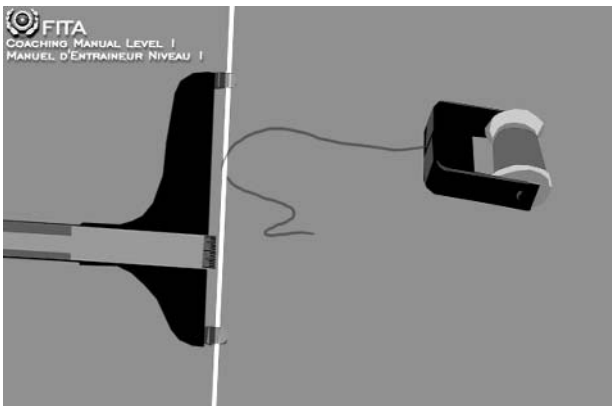
If the new string is not to the correct length for a given bracing height then the length may be adjusted by adding or reducing the number of twists in the string. The minimum recommended is approximately 1 full turn every 7.5 centimeters, there is no maximum but remember the more twists in the string it will take longer to settle to its working length. It will also be fatter which may give a reduced performance.



Brace height measurement.

The centre serving.

With the bracing height set to the desired height the centre serving can be applied. Choose a serving material with a diameter to give the correct fit for the size of nocks to be used. This will save having to build up the nocking area to get a good fitting nock, or vice versa, having to replace the serving because the nock is too tight. Start the serving at a height above the desired nocking point position to give adequate string protection; I allow a height of 6.5 centimeters. The serving should be served in the same direction that the end loops were served i.e. from right to left taking the serving spool over the top of the string and away from you.

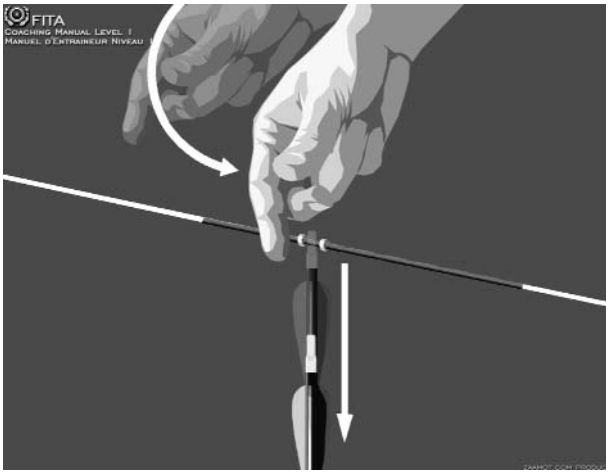


Locate where the string serving will be and fix the start end of the serving.

Serving the required length.

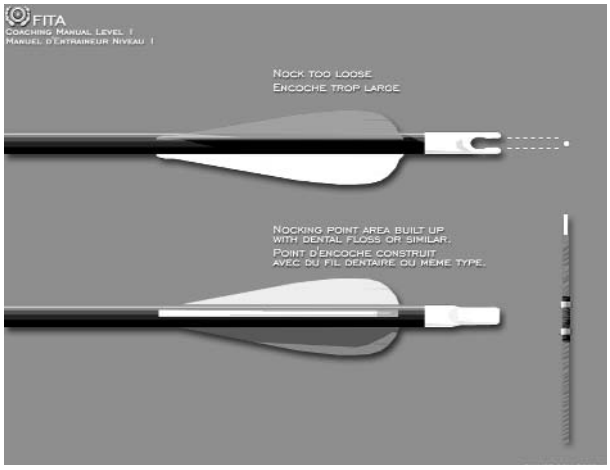
When the serving is 1 centimeter shorter than the required length, i.e. about 16 centimeters (this length depends on the individuals preference) continue to finish off the serving exactly the same as the top and bottom servings were finished. Remember the serving gives protection to the string should it contact the armguard during the completion of the shot. It also has a bearing on the tuning of the bow, the lighter the serving the faster the string will travel and heavier the serving the slower the string will travel. Different lengths and weight of the centre serving can be used for fine tuning the bow.

After serving few centimeters hold the bow horizontally and place the arrow on the string so that it is hanging straight down. If the center serving is a good fit the arrow should fall off the string when the string is give a light tap with a finger.



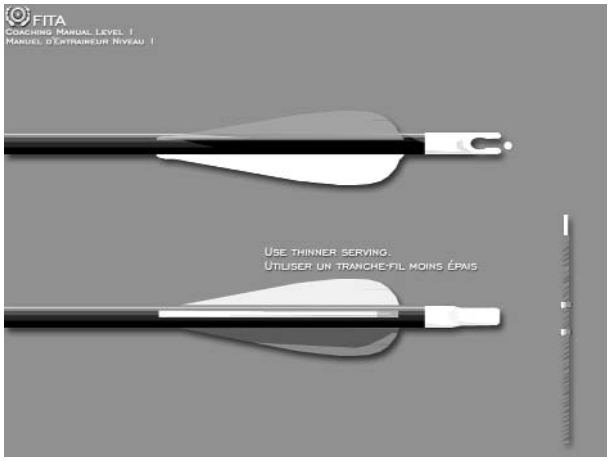
Tip for checking the diameter of serving.

It is very important to have a good fit between the arrow nock and the center serving. Sometimes nocking point enlargement is necessary to ensure a proper nock fit when small strings are used on light weight bows. This may be achieved by adding a second layer of very thin serving, or dental floss, over the area of the nocking point, approximately 2 cm long. A little fletching glue can be wiped over this area as the serving progresses, but take care not to use too much as it makes the string stiff at that point. The best way is to add some strands of Dacron under the serving when making the string. These additional strands must be kept stretched as you serve around them.



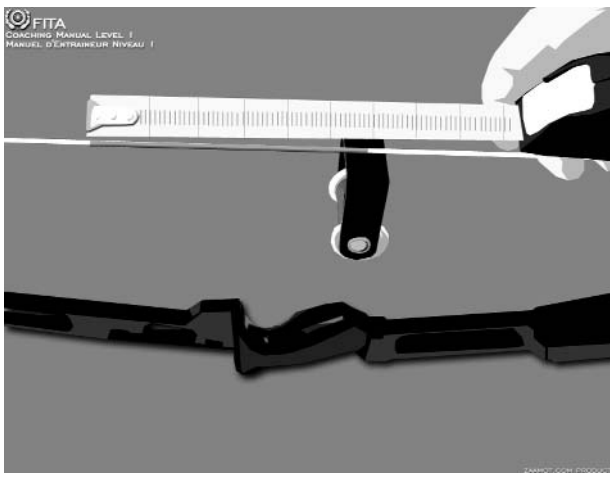
Too thin serving.

If the nock is too tight on the string then a thinner serving material can be used.



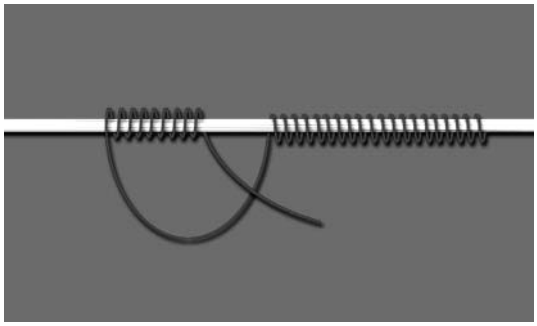
Too big serving.

It is usually easier to start the serving on the right and to work toward the left, with the serving spool coming toward me from underneath the string.



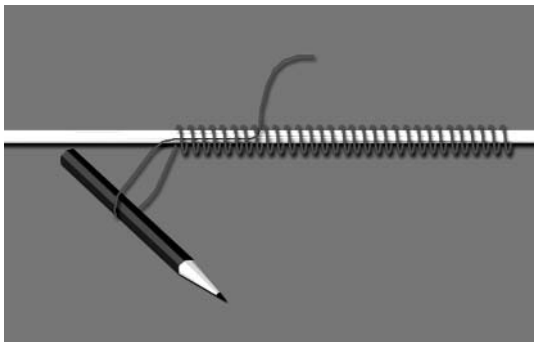
Serving down the center serving.

When the serving is 8 to 10 millimeters short of the required length, pull about 30 centimeters of serving off the spool - make a loop and serve back toward the serving through the loop just made. This serving does not need to be tight but the spool must be turned around the string in the same direction as the serving was applied. Make sure that the loop is always kept tight otherwise the serving on the right of the loop will come loose, which will cause a problem when the string is in use.



As for the loop, finish the center serving with a reverse serving over the tail end.

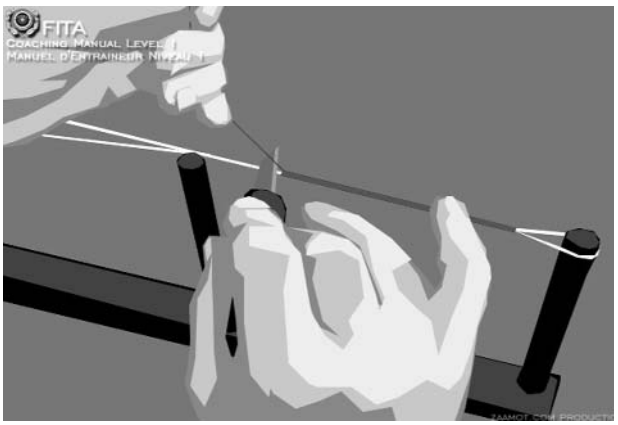
When this reverse serving is about 8 to 10 millimeters long bring the serving on the serving spool out and trap it under the right hand side of the loop. Continue the serving by turning the right side of the loop toward you from underneath the string, (the same direction as the spool was used earlier). As this is done the serving on the left-hand side of the loop will get shorter. Reduce the tension of the server before unrolling the end strand. This allows it to detach easily.



Pull the loop of the tail end under the reverse serving.

When all the serving is all off the left-hand side of the loop keep the loop tight; holding a pencil in the loop keeping a little pressure on the serving can do this. Then pull the serving tail until the entire loop has gone, make sure there is a little pressure on the

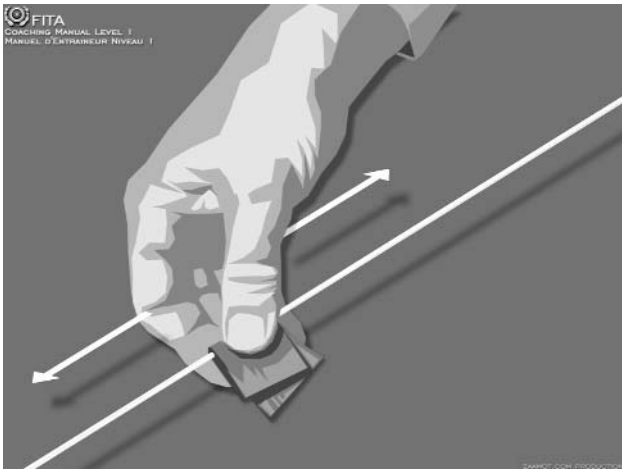
loop right up till it disappears. When this stage is reached the end tail can be removed with a knife or scissors.



Cut the tail end and the string is made!

Bedding in the wax.

Before bedding in the wax have the brace height 3 millimeters higher than the required final height as bedding in the wax will increase the string length thus lowering the brace height. Take a piece of leather; fold it round the string and rub up and down the full length of the string. Most string materials do not need extra wax applied to the string before undertaking this task, but if the string material is un-waxed then a few rubs of a Bees wax block on the string will be necessary before the string is rubbed with the piece of leather.



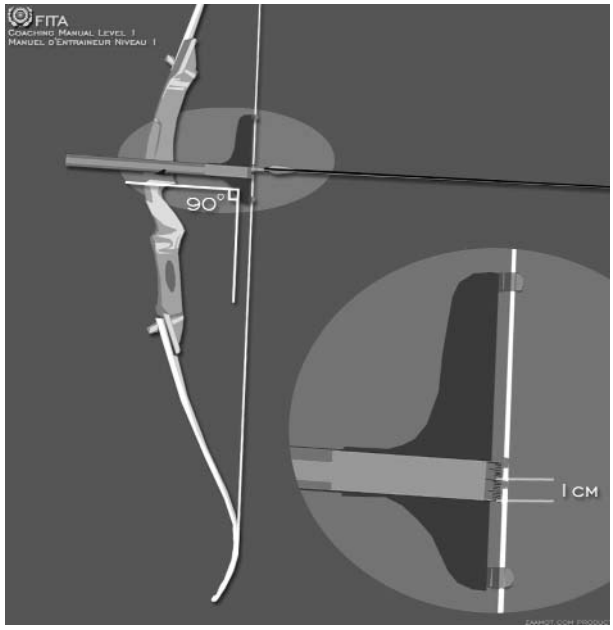
Another way to smooth out a string.

Testing

- Measure brace height and establish the nocking point.

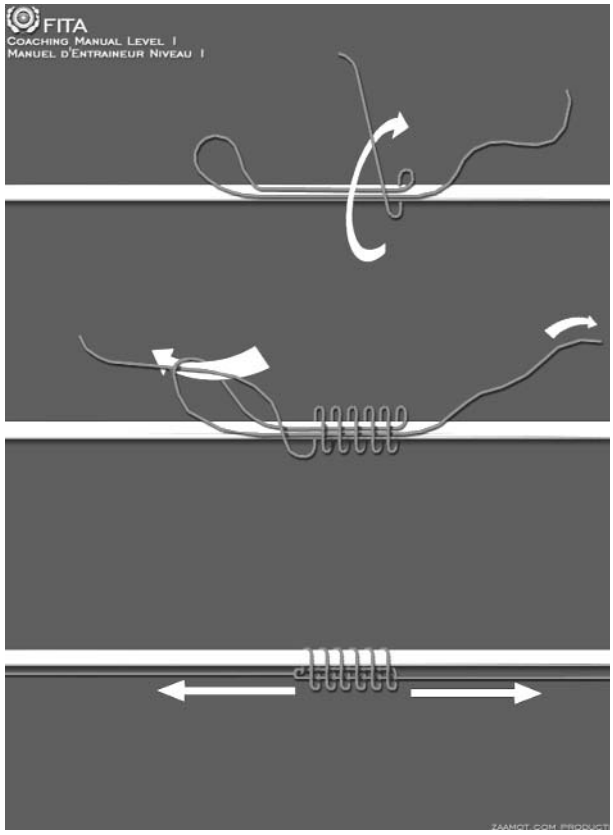
11.4.6. The nocking point

The correct height of the nocking point depends on many things. A suggested starting point is to have the nocking point maintain the bottom of the nock at about 1 cm higher than where the shaft makes an 90 degree angle with the string.



Nocking point location.

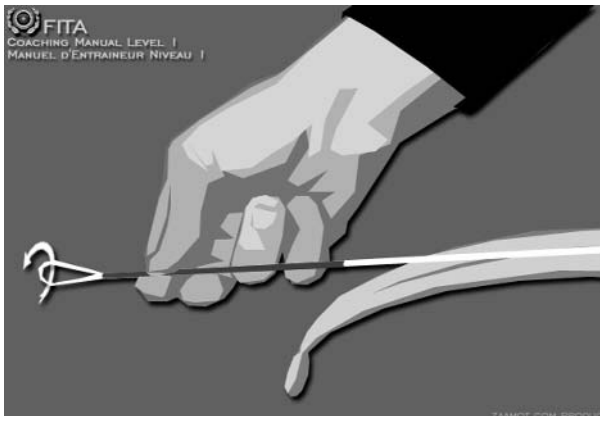
Nock locators may be added in two ways. A manufactured nock-set is available that is clamped on the string with special pliers.



Hand made nocking points.

Another method is to use standard heavy thread with fletching cement to form a small neat ring around the serving. This knot must be firm and uniform. Apply another thin coat of glue over the entire nock locator, then leave it to dry. The nock locators may be above and below the nock.

- After shooting about 30 arrows, re-measure the brace height. It has most likely decrease.
- Adjust the nocking point if necessary.



Brace Height adjustment.

11.4. Purchasing equipment

The following are some general guidelines to use when purchasing bows for use in the classroom:

- consult a neutral adviser who is experienced in the field to ensure you purchase wisely;
- maintain uniformity of the type of bow, this enables you to more effectively control the supply of materials, and parts for the repairs;
- a bow a few inches longer is usable and often desired, while one that is too short is usually hard to draw and awkward to shoot, and may be outgrown quickly;
- bows with a long bow window are desirable;
- Recurve bows are easier to draw than straight bows;
- follow the bow length/draw length charts when buying a bow;
- purchase or make spare strings to ensure, correct size for repairs;
- purchase 20 -30% left hand equipment, tabs & bows;
- at least one arm guard is necessary for each bow. Preference should be given to medium sizes with some small and large ones;
- some left hand tabs will be necessary. Tabs are easily lost or worn out and not expensive so be sure to have a good supply on hand. Encourage archers to buy their own tabs;
- matched arrows are preferable for a group;
- purchase 6 arrows for each bow as some will often be awaiting repair;
- have several sets of arrows of different lengths for each bow;
- purchase spare nocks and fletchings to ensure correct size and color for later repairs;
- purchase arrows unpainted, uncrested, and use colored tape to divide them into sets. As arrows break new sets can be easily created;
- ensure compound bows have and average draw length and a peak weight light enough for the average archer;
- encourage archers to purchase a tab, an armguard, and arrows as soon as possible, these items are fairly reasonable in price and when archers have their own, they always fit and fewer get lost; and
- if your club cannot afford several lengths of arrows, purchase a quantity of arrows uncut at 30" lengths.

INFORMATION - INFORMATION - INFORMATION

FITA Registered Events

The list of FITA registered events is available from :

http://www.fita.ch/personal/pcalendar_public_front.asp

It is up to your National Archery Federation to update this calendar. The FITA Rules state that an event must be notified to the FITA Office at least one month before the first day of that event. Member Associations can comply with this rule by placing their events directly on the website. A spreadsheet format is available as a download so that groups of event scan be easily loaded.

FITA has delivered a password to each of its Member Associations to access to: **http://www.fita.ch/personal/login.asp**

Member Associations should contact the FITA Office if they have lost their access code and /or password.

Other information from the FITA Website at:

http://www.archery.org/

Chapter # 12

The disabled archer

12.1 Introduction

A real effort should be made to introduce people with a disability of any kind to archery, an activity that allows them to achieve on an equal basis with others. Each one of these individuals has a right to enjoy the sport and, as a coach, you should do your best to help them.

Archery, as a recreational and competitive activity, offers an excellent opportunity for physically challenged and able-bodied to participate on an equal basis. Effective shooting can be experienced by those with physical limits in their lower limbs and, with the arrival of compound bows, by those with physical limits in upper body function as well. There is a variety of specialised equipment available to assist the physically challenged archer. However, there are also people with other kinds of disability, such as visual or hearing impairment, who could also enjoy archery.

Do not be afraid to talk to the archer about his/her disability. He/she is the best person to inform you about any limitations in movement which may affect the way in which you teach. If the archer's disability includes some difficulty in communicating then there will almost certainly be someone with him/her who can interpret. If you are concerned about any medical issues, then you should consult someone in the medical profession. You may find that you have to adjust either the archery technique or equipment to suit the particular person that you are coaching.

It is recommended that you spend some time talking to the potential archer in order to find out as much as you can about the individual's situation. It may be, for example, that a particular condition may mean that the person will tire very quickly and lessons should be shorter than normal.

People take up archery for many different reasons and it is useful to find out, at an early stage, what the archer wants from the sport. They may just want to have fun and enjoy shooting. However, if they have aspirations to become really good and be selected to represent their country at International Disabled events such as the Paralympic Games, then the coach needs to be aware of the rules which govern these events. These are detailed under section 12.12

12.2 Types of disability

There are lots of different people with disabilities in the world and almost all of them are able to do archery. They can be broken down into four main categories.

- Physical disabilities
- Sensory disabilities
- Mental disabilities
- Various illnesses

Within each of these categories, there will be a wide range of disabilities. The coach will not necessarily have to know about all these disabilities but will find it easier to look at the way an archer shoots so the following categories can be used.

- Archers with limited or no use of arms See 12.3
- Standing archers with some balance problems See 12.4
- Archers with a visual impairment See 12.5
- Archers with mental disabilities See 12.6
- Archers shooting from a wheelchair See 12.7
- Archers shooting from an ordinary chair or stool See 12.8
- Archers with communication difficulties See 12.9
- Archers with a combination of difficulties See 12.10

12.3 Archers with limited use of arms

12.3.1 Bow arm

12.3.1.1 If the bow arm is amputated, the archer can be fitted with a prosthesis with a device to hold the bow. He/she may well have one which is used for normal everyday tasks and which can be adapted for this purpose. Alternatively, the archer can be taught to shoot the other way round - see 12.3.2.1

12.3.1.2 If the bow arm is very weak and the archer has no grip in their fingers, the bow can be strapped to the hand. This strapping has to be very tight in order to keep the bow in the correct position but should be checked frequently to make sure that it is not cutting off the blood flow to the fingers.

12.3.1.3 If the bow arm is weak so that the archer cannot hold the arm out towards the target, an elbow splint can be used.

12.3.2 Drawing arm

12.3.2.1 If the drawing arm is missing, a prosthesis can be fitted, as in 12.3.1.1. This can have a hook fitted which hooks round the string and the archer twists the arm in order to release the hook from the string. Alternatively, the archer can draw the bow with his/her teeth. A number of archers do this. A piece of leather is attached to the string on either side of the nocking point in a similar fashion to the D loop on compound strings. The archer holds this in his teeth and opens his/her mouth to release. This "tab" needs to be checked frequently as the archer will bite through it eventually.

12.3.2.2. If the drawing arm is weak and there is no grip in the fingers, the method used for many years and still useful for beginners is to strap a hook to the hand and the archer hooks this on the string to draw, releasing with a twisting motion. Many archers prefer to use the kind of release aid used by compound archers. If the archer does not have sufficient dexterity in the fingers to release in the usual way, the release aid can be adapted so that it is released in coming in contact with part of the jaw etc.

12.3.3 Depending on which arm is affected, it may be beneficial to suggest that the archer shoot left-handed rather than right-handed (or vice versa) even though his/her eye dominance may be the other way round.

12.4 Standing archers with balance problems

Balance problems in a standing archer can have a number of causes such as one leg longer than the other, polio, one artificial leg, etc. There are a number of solutions to this. The archer may well have a shoe which is built up to compensate for a disparity in leg length. If not, the coach can suggest putting a block (of wood, for example) under the shorter leg to create a good, upright stance. If the archer's balance is very poor (which could be a safety issue if he/she were to fall over when it was windy) it is worth suggesting that they shoot from a chair or stool placed on the shooting line.

12.5 Archers with a visual impairment

As with all the other categories, this covers a wide range of people. Some will have sufficient vision to shoot in the same way as able-bodied archers but some will have no vision at all and this section is primarily concerned with the latter. Talk to them to find out if they were blind from birth or had lost their sight at a later date as this will make a difference to the way they perceive the world. Someone who has never been able to see may not know what "red" is, for example. Allow the archer to feel all the equipment so that they can paint a mental picture of it.

This must always be a one to one session; safety is paramount both for archer, coach and other archers. Very often, initial shots can be made with the "hands on" principle, with the permission of the archer. Work with them; draw with them, release with them, and guide the bow hand. Let them get the feel of shooting. It has often been asked what pleasure is gained in archery for a blind person to such a visual sport. In fact, the archer will develop the ability to know how accurate the shot is from the sound as all of us are aware of the different sound the arrow makes when hitting the gold rather than the white.

12.5.1 Position on line.

Able-bodied archers are able to look in order to place themselves in the same position on the line. Visually impaired archers need something which they can feel. A pair of horseshoes attached to the ground (with target pins outdoors or with tape or blue-tak indoors) will enable them to place their feet inside them and be in the same position whenever they return to the shooting line.

12.5.2 Sighting

There are two main ways of sighting and by far the most common is the tactile device.

12.5.2.1 Tactile sights

A very basic tactile sight would be something like a camera tripod with the adjustable handle in a position to press on the back of the knuckles. A plastic container filled with water hung from the lower cross strut of the tripod gives stability. The inventiveness of the coach can now take over to improve this arrangement but the contact on the back of the bow hand is the important thing.

Tactile Aiming Aid for a right handed archer.

This determines the elevation of the bow and, hence, the distance the arrow will travel, as well as the side to side travel. It is important to remember when adjusting the sighting aid that it is moved away from where the arrow has gone rather than "following the arrow" as with a normal sight. More sophisticated versions of this are used by the more experienced archers and additional advice can be sought from the International Blind Sports Association (IBSA).

12.5.2.2 The "Iris" system

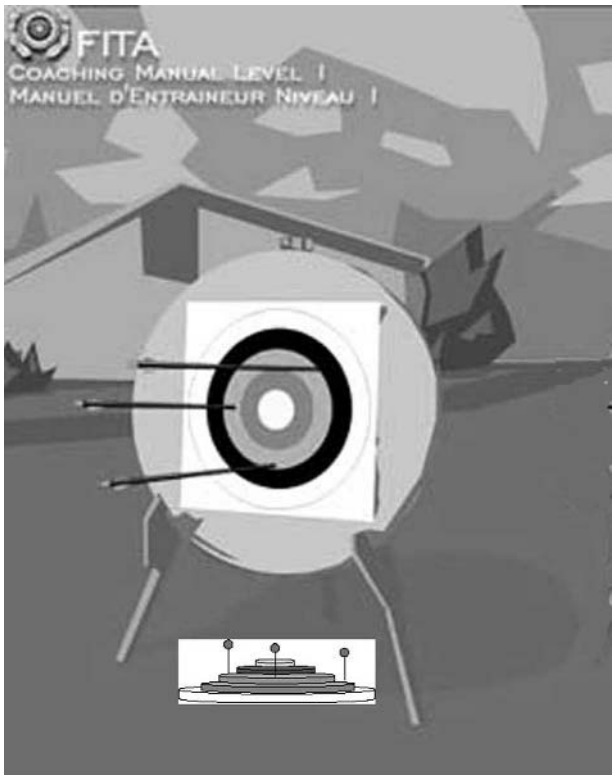
Another aid is the French "Iris" system. This is an electronic device with a small "sender" clipped into the bottom of the boss. In place of the sight a "receiver" looking very much like a torch receives the signal and is fed to the archer via earphones. A battery pack and belt completes the set. The archer listens for the highest note of sound and shoots his arrows. This allows the blind archer to be completely independent. Adjustment of this sight is by "following the arrow" as with a normal sight. There are a couple of drawbacks to the system, one being that it is expensive and is, therefore, probably only for the dedicated and, secondly, the bow must be held at full draw whilst searching for the sending signal. This problem is somewhat overcome as the French system is designed to be shot at 30 m maximum and bow weight would be around 20-25 lbs draw weight. However, tests have been carried out with great success in different countries to double this distance and more.

12.5.3 Assistance

All visually impaired archers, when using tactile sights, will require an assistant to tell them where their arrows are going so that sight adjustments can be made. After the end is shot, the assistant will guide the archer back to the waiting area before scoring and collecting the arrows.

12.5.4 Scoring

A piece of foam rubber, cut into a circle, can be taken to the target when scoring. Round headed pins can be pushed into this in the positions where the arrows have struck the butt and this can be taken back to the archer so that he can feel where his arrows have gone. It is not recommended that the archer goes to the target as he/she could trip over arrows in the grass or walk into arrows sticking out of the butt. However, the archer should be allowed to go up to the targets before the shooting so that they can feel the butts and know what they are like.



The helper sticks small pins into the foam rubber miniature hand held target mimicking the position of the arrows that the blind archer has shot. This is then taken back to the blind archer so that he/she can feel the location their arrows had landed and what score each arrow had made.

12.6 Archers with mental disabilities

This is again a very wide group. You must assess their abilities on an individual basis and determine the best course of action. The mentally challenged archer will most likely require individual attention 100% of the time. If you are the only coach in your club, this may require the archer's parent or another volunteer to be trained as an assistant to look after this individual. If this is not possible, you will simply not be able to afford the luxury of coaching this archer. Remember you cannot let this one individual disrupt the other archers, directly or indirectly, by taking your complete attention. If the archer is able to accept and carry out instructions there is no reason to be excluded, but safety must always come first. These archers may have physical disabilities as well which can be addressed in the usual way but they are also likely to:

- Have a short attention span
- Become easily frustrated
- Show extreme emotions

Tremendous patience is required as instructions may have to be repeated many times. The archer is also likely to:

- Turn round suddenly at full draw
- Run up to the target before the signal

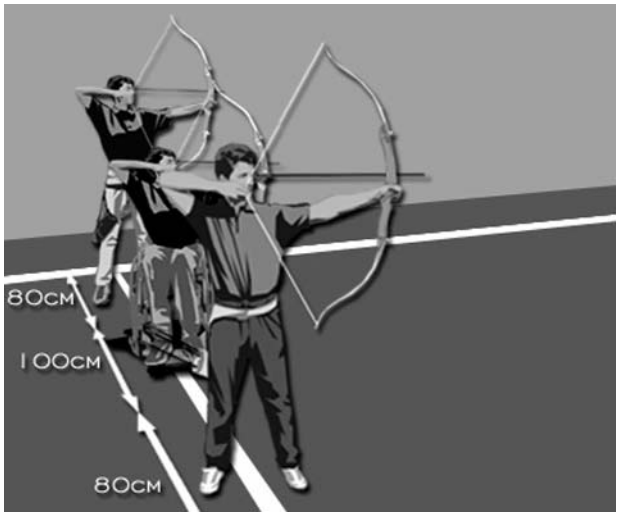
In extreme cases, it may be necessary to decide that safety considerations preclude the person from being able to take part.

12.7 Wheelchair archers

12.7.1 Chair position

The wheelchair should be placed so that the archer's shoulders are in the same orientation towards the target as for a standing archer. Just as a standing archer's foot position can be at 90 degrees to the target or angled towards the target, so the chair can be angled towards the target if the coach feels that this is more beneficial.

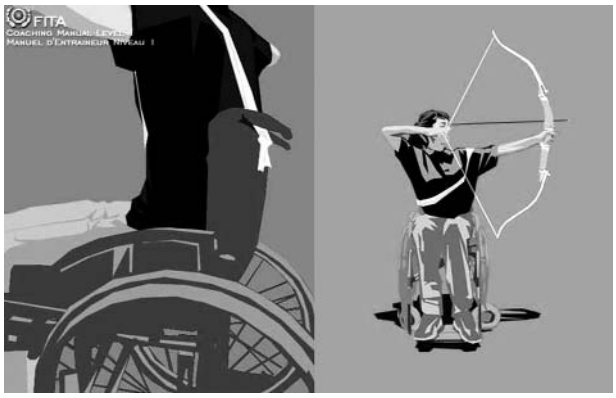
Make sure that the archer applies the wheelchair brakes. Outdoors, the ground may be very uneven. Try to ensure that the archer has all four wheels in contact with the ground so that the chair is stable.



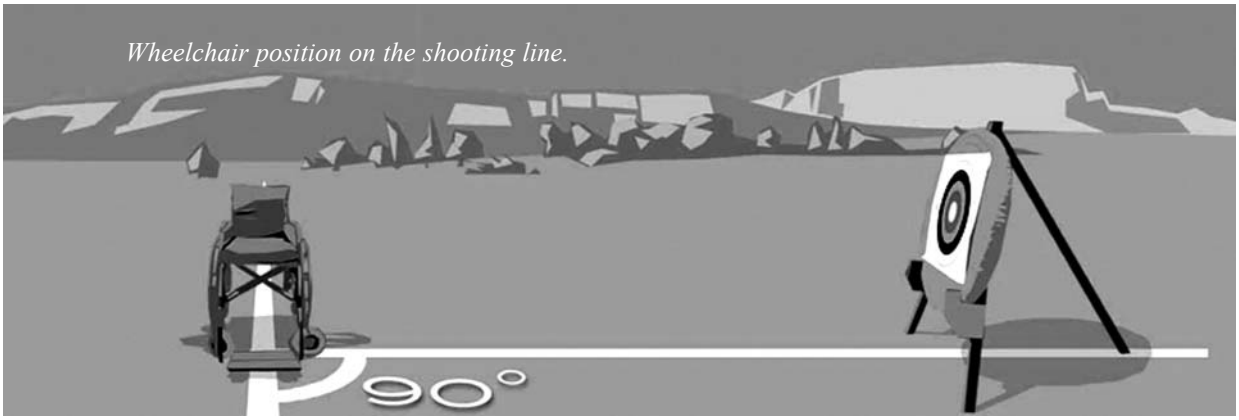
Extra room must be allocated to a wheelchair archer on the shooting line.

12.7.2 Archer's sitting position

An area that requires attention is maintaining a consistent sitting position in the chair. Sitting balance varies considerably with wheelchair users. Those with very poor balance will benefit from a chest or lap strap to gain the extra support required for drawing the bow. Even those with better balance may wish to use a chest strap initially until they



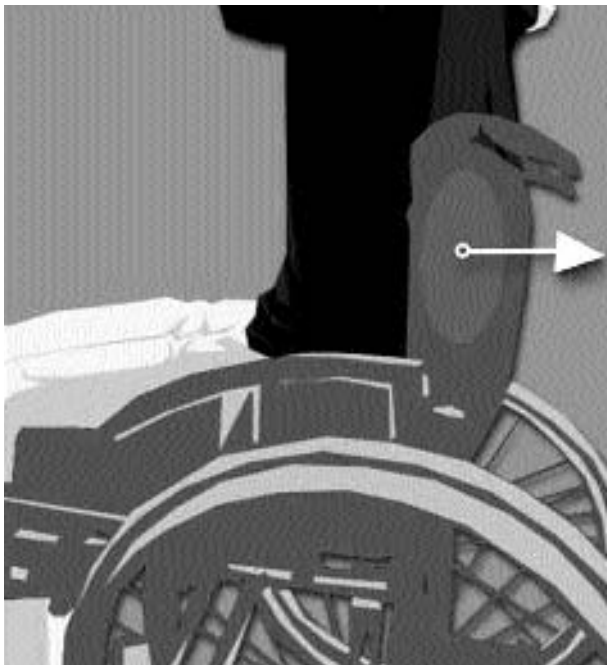
Strapped Wheelchair archer.



Wheelchair position on the shooting line.

have gained sufficient confidence for the coach to remove it.

Those subject to severe spasms in the legs may wish to have their legs strapped. The chair back should be no higher than just below the shoulder blades in order that the muscles used to draw the bow are not restricted. It is important that the archer finds a comfortable position that offers good support because to shoot consistently they must position themselves exactly the same in the chair for each arrow shot. You can assist the archers to find some points of reference and teach them to check their position often against those references.



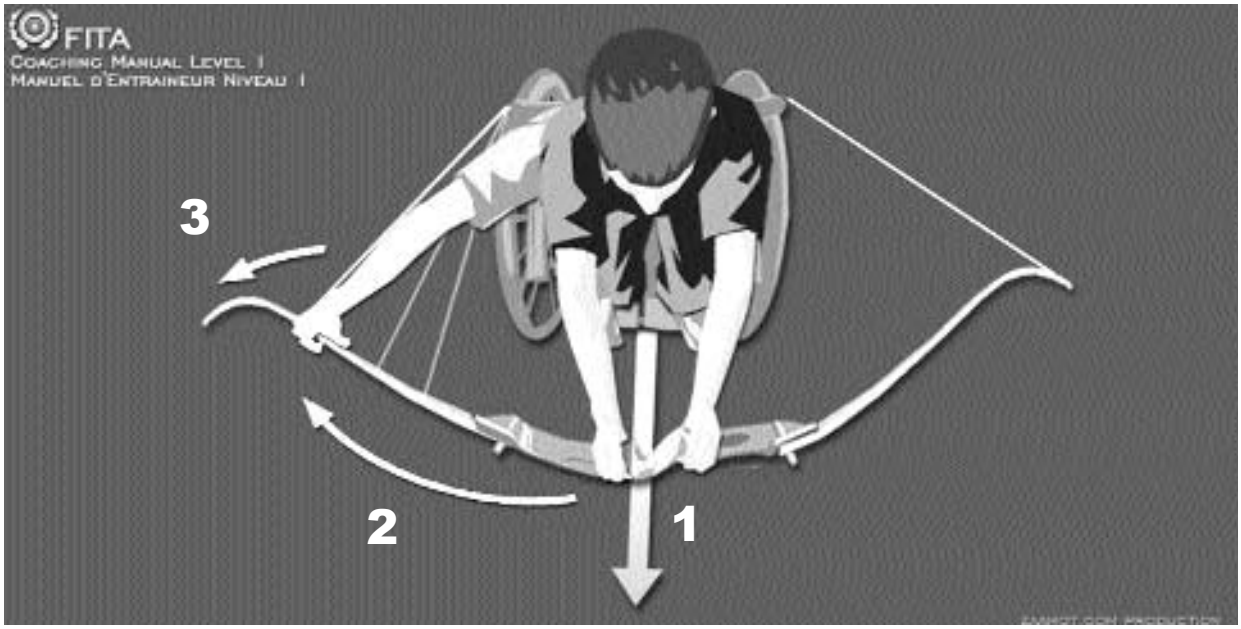
Coaches must assist the archers to find some points of reference on the chair.

The archers will have a tendency to lean back away from the target to compensate for a lack of balance as they draw the bow. You should watch for this, particularly as the archer becomes tired. This fault may also cause further problems with string clearance at the chest and the wheelchair. The archer can achieve more stability by leaning on the chair back.

12.7.3 Equipment

The archer may require a shorter bow than usual because he/she is closer to the ground. When the bow falls forward on release, it will tend to hit the wheel of the chair so some form of padding to the wheel is required to prevent damage.

Padded wheel preventing bow limb damage.



Bracing a bow from a wheelchair.

12.7.4 Stringing the bow

Many wheelchair archers string their own bows. This is usually done by putting the stringer on the bow and then looping it round the back of the chair. The archer can then push forward on the bow riser in order to tension it and put on the string.

12.7.5 Shooting

In most cases, this is the same as for able-bodied archers but, often, the draw will start higher because of the archer's position. Other modifications will only be required if the archer has additional difficulties with hands or arms. See section 12.3

12.7.6 Scoring and collecting

Indoors, wheelchair archers will often choose to score and collect the arrows themselves, although they may have difficulty pulling out arrows in the higher part of the target. Outdoors, it is difficult to push chairs across uneven grassy fields so they will need someone to score and collect arrows. At competitions, this is usually done by other people on the same target. At international competitions, it is done by the coach.

12.7.7 String clearance

One of the difficulties experienced by wheelchair archers, particularly when shooting at the shorter distances, is clearance of the string against parts of the chair which are nearest to the target, in particular, the wheel.

String clearance is an issue for the wheelchair archer.

The following steps can be tried to help with this.

12.7.7.1 Remove the arm rest of the chair on the target side.

12.7.7.2 Remove the hand rim from the wheel on the target side or replace the wheel with one without a hand rim (this spare wheel can be kept specially for archery)

12.7.7.3 Cant the wheels slightly. Most wheelchair users will know how to do this on their particular chair.

12.7.7.4 Place a 13mm board under the cushion of the chair to raise the archer slightly.

12.7.7.5 Get the archer to sit more towards the target side of the chair. Make sure he/she moves their whole body and does not just lean towards the target.

12.7.8 The chair back

The archer will need to get some support from the back of the chair if balance is poor. It is better if there is a slight sag in the back of the chair rather than having it very taut. The height must be sufficient to give the archer support but not so much that it restricts the movement of the shoulder blades. The archer must not, under international regulations, support his/her bow arm on the back or handle of the chair.

12.7.9 Some points to remember

Try to talk to the archer at his/her eye level, not always standing above him/her.

Discuss changes you wish to make in the chair position and let the archer make them, if possible.

Remember that, under international rules, wheelchair archers with very little manual dexterity (such as tetraplegics) are allowed to have an assistant to nock their arrows and adjust their sights so it is all right for you to do this, if the archer wishes.

Wheelchair archer shooting indoors

12.8 Archers shooting from an ordinary chair or stool

These archers will be likely to have more stability than wheelchair archers as they have their feet on the ground, which gives them a much firmer base. It would be helpful to them to leave the chair/stool on the shooting line throughout the session so that they do not have to keep repositioning it.

The main purpose of the chair/stool is to give the archer the stability which he/she lacks when standing unaided. (Most will require a stick or crutch in order to be able to walk.) The archer should be positioned on the seat to emulate, as far as possible, a standing archer. The height of the chair/stool is usually critical and advice may need to be sought from a physiotherapist to ensure that this is correct. The archer will be unlikely to require support from the chair back (unlike the wheelchair archer) and can be taught in the same way as an able-bodied archer.

12.9 Archers with communication difficulties

While this category can shoot in exactly the same way as able-bodied archers, the coach will have to modify his/her methods of teaching in order to be able to communicate effectively.

12.9.1 Hearing impaired archers

Depending on the severity of this condition, various steps can be taken.

If the archer can lip read, make sure that you face towards them when giving instructions so that he/she can see your lips.

If verbal communication is not possible, it may be necessary to write down what you wish to say, backed up by gestures.

It is very important, from the safety point of view, that the archer is able to know when it is safe to shoot and/or collect. The audible signal usually given may not be appropriate.

12.9.2 Speech impaired archers

Many of the same principles apply as for hearing impaired. If you have real difficulty in understanding the archer, he/she may have to bring someone with him/her who can interpret for you.

12.10 Archers with a combination of disabilities

It is very common for someone to have more than one of the disabilities detailed above. For example, tetraplegics will be confined to a wheelchair but will have impaired use of hands and arms. In these cases, you will need to refer to more than one of the above sections.

12.11 Other medical issues

Although not strictly classed as a disability, there are a number of medical conditions which an archer may have which the coach should discover. Conditions such as asthma, epilepsy, haemophilia, rheumatism etc. may affect one of your archers. If you have talked to him/her before you start and have made yourself aware of this, you can consult someone in the medical profession to ensure that you know the appropriate course of action to take in any circumstance (for example, if one of your archers had an epileptic fit).

12.12 International Rules

The governing body for international events for the disabled is the International Paralympic Committee (IPC). The rules for archery are decided by the Archery section of IPC. The IPC rules state that international events will be governed by the rules of FITA with the additions and amendments contained in the IPC rule book. This rule book is currently (November 2002) being re-written but should be available by January 2003. The rules will then be able to be obtained from IPC headquarters in Bonn. The amendments currently being written are only minor so below is a summary of the parts which may affect a coach, if he has an archer who is good enough to be selected to shoot for his/her country. For more details, you will need to contact IPC.

12.12.1 Classification

In order to allow archers to shoot against others with similar disabilities, archers are grouped into classes with separate divisions for men and women. At present, these classes are only for the physically disabled, although discussions are taking place with a view to including the visually impaired in the future. There is also a minimal disability rule so that, for example, a person with only one finger amputated would not be considered disabled enough to shoot internationally. International classifiers are used to ensure that archers are placed in the correct class and satisfy the minimal disability rule. If you wish to have your archer classified, you would need to get in touch with IPC to find out where you could arrange to have this done.

12.12.2 Competition format

The competition format is exactly the same as that of FITA, the world championship consisting of a FITA round followed by an Olympic round and the Paralympic Games consisting of a Ranking round followed by an Olympic round. As with FITA, compound bow users compete at World Championships but not at the Paralympic Games.

12.12.3 Rules for wheelchairs

A wheelchair of any type may be used provided it subscribes to the accepted principle and meaning of the word wheelchair and is not propped or jacked up in any way.

No part of the wheelchair may support the bow arm while shooting.

No part of the chair back or its vertical support may protrude forward more than half way across the trunk(ecept in the case of W1 archers - see 12.12.4).

No part of the chair may be less than 110 mm. below the armpit while shooting at any distance.

The wheelchair must not exceed the shooting space on the line allowed by FITA.

12.12.4 W1 archers are wheelchair archers with additional disabilities, such as tetraplegics. They may, within the recurve class, shoot a compound bow, providing that the bow has only the same sort of sights as recurve bows (in other words, they cannot have peep sights or telescopic sights). These archers may use a release aid because of their impaired use of fingers. They may use any amount of body support/strapping to maintain body stability as long as no support is given to the bow arm while shooting and they maintain the clearance of 110 mm between the chair and the bow arm. They may have an assistant to nock their arrows and adjust their sight providing that this assistant does not give them any coaching assistance.

12.12.5 Ordinary chairs/stools

A chair/stool of any type may be used provided it subscribes to the accepted principle and meaning of the word chair.

No part of the chair may support the bow arm while shooting. No part of the chair may be in contact with the trunk of the archer at less than 220 mm. below the armpit while shooting at any distance.

The area of contact with the ground, framed by the legs of the chair and the foot of the archer must not exceed the size of 60 cm x 80 cm.

12.13 Conclusion

Finally, do not be frightened of coaching archers with a disability. It can be very rewarding for you, as a coach, to see the enjoyment that a disabled archer can have in his/her shooting, particularly if you have had to overcome some difficult challenges to reach that point.

Chapter # 13

Games

INTRODUCTION

Games provide a great way to practice skills while having fun. While the archers are playing the games remind them about the elements of form that they are working on. Start with the target butts close (10-15 metres) and move back as the archers improve. Team games are best for new archers so that the more experienced archers can help the novice archers. Make the objects or faces big to begin with and then progressively smaller, and keep them in the middle of the target so that they don't waste time looking for arrows that miss. Make sure the archers follow the range rules and end the game while they still want to continue. They will want to come back for more!

The following are the categories of games you will find in this chapter:

ENJOY!

BALLOON GAMES

Balloon games are generally the most popular of all archery games. There are many variations to develop skills and there are many ways to ensure success.

- Equipment: Balloons sized according to archer ability (i.e. big for beginners, smaller for advanced), target butts, tape or pins to attach balloons to butt, bows and arrows.
- Game objective: Hit balloons according to directions.
- Shooting distance: 10, 15, 20 metres according to archer ability.
- Skill emphasized: accuracy, self-evaluation and counter aim.

Balloon Burst

● **Balloons:** Some (5 or 6) balloons (coloured and numbered) per team on a target butt.
For novice archers, place balloons farther apart, for advanced archers, closer together.

● **Number of archers and arrows:** teams of two (three arrows each), teams of three (two each).
● **Objective:** Be the first team to hit all balloons in sequence.
● **Rules:** Shoot balloons in number sequence, one archer after another. If an archer misses, the next teammate continues. If a balloon is hit out of sequence, the team is eliminated for that round.

Balloon Score

● **Balloons:** different colour and size balloons.
● **Objective:** hit the balloons that are worth more points depending on size and colour.

● **Number of archers:** two to four individuals per target or one team of two or three per target.
● **Number of arrows:** three arrows for each archer.
● **Rules:** Assign values to the balloons according to size (the smallest scores the most) or colour.
Shoot until a team or individual reaches a designated score or until no balloons are left.

Balloon Shoot

● **Balloons:** Several balloons on a target, closer together for novice archers.

● **Number of archers:** various, up to 3 at a time per target.
● **Objective:** Hit any balloon for a prize.
● **Rules:** Hit a balloon to win a prize (candy, etc.).
● **Variations:**
1. The smaller the balloon that is hit, the bigger the prize.
2. Shoot in teams, one archer at a time per team. The first team to hit all balloons is the winner.

Don't Pop the Balloon!

● **Balloons:** six to eight balloons on a target face appropriate for distance and ability of archers.
● **Objective:** score as many points without popping a balloon.
● **Number of archers:** minimum of two.
● **Number of arrows:** three arrows per end, 10 ends.
● **Rules:** each archer shoots a FITA scoring round of 30 arrows. If an archer pops a balloon, they lose all accumulated points and start again. The winner is the one with the most points at the finish of the 10th end. Balloons are replaced as they are hit.
● **Variation:** if an archer pops a balloon, arrows for that end are not scored.

Honolulu Fishing

● **Equipment:** butts, bows, arrows, an 80 cm face for each team with drawings of different sized fish on back, red and blue balloons, and score cards.
● **Objective:** shoot as many fishes as possible without hitting a balloon.
● **Shooting distance:** variable according to archer ability.
● **Number of archers:** minimum of two teams of two archers each.
● **Number of arrows:** three arrows for each archer on team, ten ends.
● **Rules:** assign values to the fish according to size, the smaller fish score higher. Pin a red and a blue balloon on the target. Each team shoots on its own target and tries to hit as many fish as possible. For each fish hit, score the assigned points. If during an end a blue balloon is hit, representing a shark attack, that team's score is reduced to zero and they start over. If a red balloon is hit, the team receives a bonus of 30 points. Balloons are replaced after each end. The winning team is the one with the highest score after 10 ends.
● **Skill emphasized:** accuracy management and attention to the overall shot.

Mystery Balloon

● **Balloons:** one balloon per archer. Instructor blows up balloons and secretly labels them with the names of archers in the group.
● **Number of archers:** up to eight per target.
● **Number of arrows:** three each.
● **Objective:** be the archer whose name is on the last balloon left.
● **Rules:** Archers line-up one behind another and shoot one at a time at the balloons. Stop the game when one balloon is left. The archer whose name is on that balloon is the winner.
● **Variation:** Tell the archers which is their balloon and put balloons closer together. Now they try to hit all but their own balloon to stay in the game.

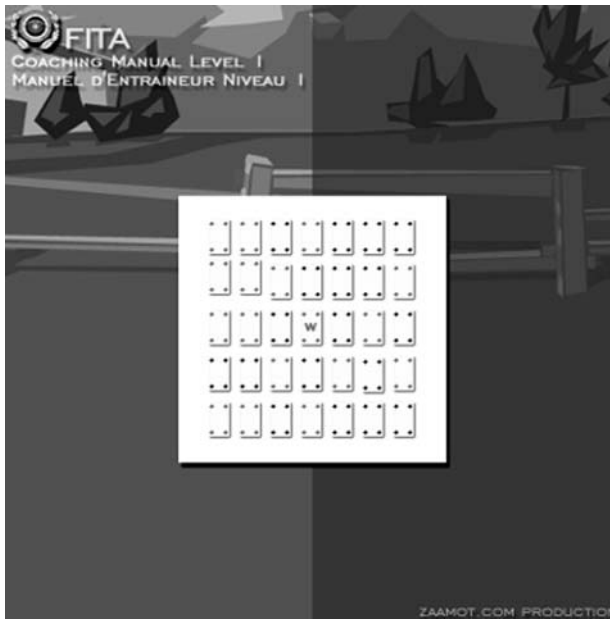
CARD GAMES

Concentration

- **Equipment:** butts, bows, arrows, and sixteen cards (3 X 5 or 4 X 6) with eight pairs of numbers or pictures drawn on the back. Cards are placed in rows face down on the target butt.
- **Game objective:** to be the first team to find and remove all the pairs on their target.
- **Shooting distance:** 15 to 20 metres, depending on archers' ability
- **Number of archers:** one team of two per target.
- **Number of arrows:** two arrows per archer.
- **Rules:** starting by a whistle, each team begins shooting at the cards. Any card that is hit may be turned over and memorized and then turned face down. If two cards match, they may be removed from the target. The first team to remove all cards from the target is the winner.
- **Skill emphasized:** accuracy, memorization, and attention to the overall shot.

Poker.

- **Equipment:** butts, bows, arrows, and target face with drawings of 24 cards, 4 suits of each: 9, 10, Jack, Queen, King and Ace.



- **Game objective:** shoot the best possible hand.
- **Shooting distance:** variable, depends on archer ability.
- **Number of archers:** individuals.
- **Number of arrows:** five each, seven ends.
- **Scoring:**

One pair	2 points
Two pairs	3 points
Three of a kind	5 points
Straight	10 points
Full House	20 points
Four of a kind	30 points
Flush (same suit)	50 points
Straight Flush	100 points.

- **Rules:** Each archer scores according to the cards hit. The highest score after 7 ends is the winner.
- **Variations:**
  1.- The centre of the face is a joker or wild card.
  2.- Subtract 50 points when an archer has no hand.

- **Skill emphasized:** looking for maximal accuracy and to counter aim.

DART GAMES

Mickey

● Equipment: butts, bows, arrows, and a target face drawn like a dartboard.

● Target description: the target face is divided into sectors each having a number from one to twenty:

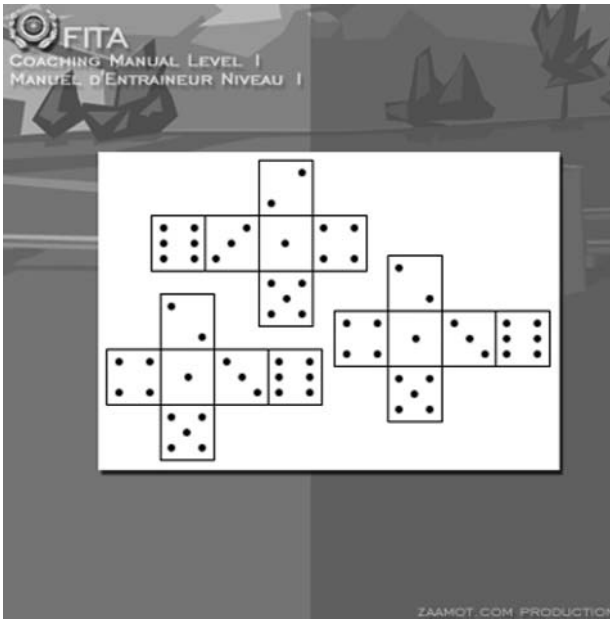
==> Zone 1: doubles zone
==> Zone 2: singles zone
==> Zone 3: triples zone
==> Zone 4: centre (25 points)
==> Zone 5: double centre (50 points)

● Game objective: each team must shoot three arrows in each of the following zones: 20, 19, 18, 17, 16, 15, doubles, triples, and double centre.
● Shooting distance: variable, depends on archer ability.
● Number of archers: individuals, teams of two, teams of three.
● Number of arrows: individuals, six arrows; teams of two, three arrows each; teams of three, two arrows each.
● Rules: points are scored in any particular order. The team or individual to finish first wins.
● Skill emphasized: looking for maximal accuracy, to self evaluate accuracy limits, and to counter aim.

DICE GAMES

Match the Dice

● Equipment: butts, bows, arrows, 80 cm target face and two dice.
● Game objective: score the exact number of points as shown on the dice.
● Shooting distance: depends on archers' ability.
● Number of archers: minimum of two individuals.
● Number of arrows: one to three, archer chooses how many to shoot.
● Rules: throw the dice. Shoot the same number of points as shown on the dice, using the following values: Yellow equals 5 points, Red equals 4 points, Blue equals 3 points, Black equals 2 points and White equals 1 point.
Each time the result conforms to the roll of the dice, award one point.
● Variation: archers score the same value as shown on the dice.
● Skill emphasized: counter aim and attention to the overall shot.



Suggestion for dice games:
You can use a face like the following one that has been designed for the 421 game. Just draw as many "dice" as you need.

Yam or Yahtzee

This is a game that is played by throwing five dice. A score sheet is available in most toy stores.
Instead of throwing dice, have the archers shoot for the target rings that they need as follows:
Gold equals 6, Red equals 5, Blue equals 4, Black equals 3 and White equals 2, Space outside of the target rings equals 1.

● Equipment: butts, bows, arrows, and 80 or 60 cm target faces.
● Game objective: score the most points in 6 ends.
● Shooting distance: depends on archers' ability.
● Number of archers: minimum of two individuals.
● Number of arrows: five for each archer.
● Rules: Shoot for the best points possible on the score sheet. Each objective on the score sheet may only be scored once. Should an archer fail to realize an objective, i.e. failing to hit a Full House, they could use it for another objective, i.e. 3 Fours. If there are no objectives available, it scores a zero. The scoring objectives are as follows:

Objective / Score
- Ones / number of arrows in the one zone x 1 point.
- Twos / number of arrows in the two zone x 2 points.
- Threes / number of arrows in the three zone x 3 points.
- Fours / number of arrows in the four zone x 4 points.
- Fives / number of arrows in the five zone x 5 points.
- Sixes / number of arrows in the six zone x 6 points.
- Full house / three in one zone, two in another score 25 points.
- Straight / five arrows in 5 consecutive zones score 40 points.
- Short straight / four arrows in sequence score 30 points.
- Chance / score total of all arrows.
- Yam or Yahtzee bonus / score 50 points.

● Skill emphasized: accuracy and overall attention to the shot.

● Variation: draw 5 columns on a poster board. In each column draw the six faces of a dice.
In each end, the archer shoots an arrow per coumn in the die's face. If a second arrow hits the same column, it will not score.

ELIMINATION GAMES

Elimination games should be used in moderation and for more experienced and mature archers. Those eliminated are often the same archers and they could get bored or de-motivated and not show up to practice. Used moderately, elimination games make practice sessions exciting, develop management of stress and accuracy, and are FUN! Whatever the game being played, make sure the archers keep focused on skills learned in the practice session. It is best to run elimination games more than once in a session to give archers a "second chance." Matching archers by ability also makes the games more fun and exciting.

Australian Archery

- Equipment: butts, bows, arrows, and an 80cm face.
- Game objective: qualify for the following end, avoiding elimination.
- Shooting distance: depends on archers' ability.
- Number of archers: small groups.
- Number of arrows: one for each archer.
- Rules: each archer has only one arrow. After each end, the arrow furthest from the centre is eliminated. Continue until one archer is left.
- Skill emphasized: accuracy management, stress management and self-evaluation.
- Variation: each archer shoots three arrows and the lowest score is eliminated.

Elimination of the worst arrows

- Equipment: butts, bows, arrows, 80 cm target face.
- Game objective: keep arrows as long as possible.
- Shooting distance: various, depends on archer ability.
- Number of archers: any number. Group archers by ability up to eight per target. Archers shoot two at a time, one arrow per end.
- Rules: Example for 8 archers (adjust the sequence for the number of archers):
  - During the first end the seven worst positioned arrows are removed from shooting.
  - During the second end the six worst positioned arrows are removed.
  - During the third end the five worst positioned arrows are removed.
  - During the fourth end the three worst positioned arrows are removed.
  - During the fifth end the two worst positioned arrows are removed.

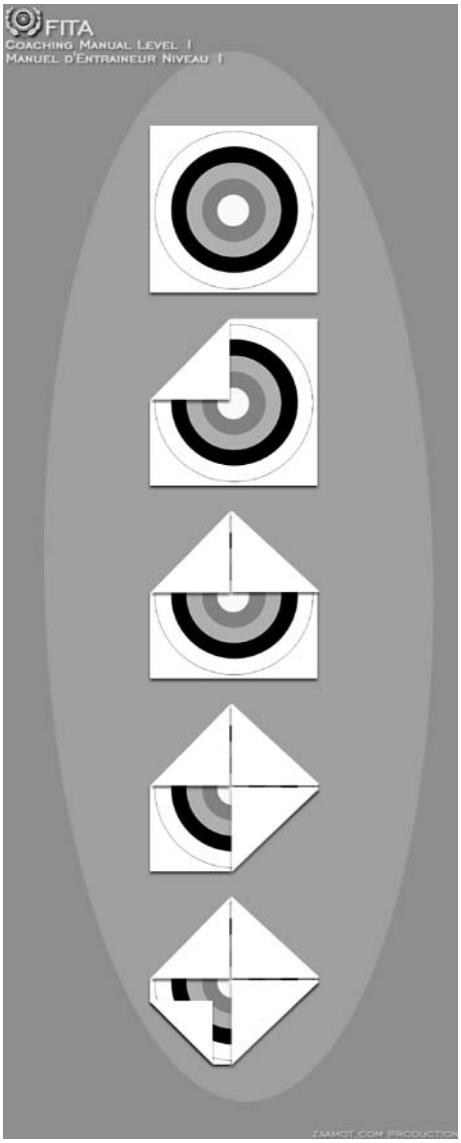
  The remaining arrow wins.

- Skill emphasized: accuracy and self-discipline.

REDUCED TARGET FACE

Folded corners

● Equipment: butts, bows, arrows, and a target



face suitable in size for the distance and ability.

● Game objective: keep arrows to the very end or have the highest score.

● Shooting distance: appropriate for age and ability of archers.

● Number of archers: individuals, any number.

● Number of arrows: three per archer, up to 5 ends.

● Rules: Any arrows not hitting within the agreed zone i.e. 6 zone to 10 zone, they lose and cannot shoot again. Keeping score adds to the pressure.

1. Begin by deciding what the agreed zone will be for the game or use all ten rings. Shoot an end of three arrows at the open face. Keep track of the score.

2. For the second end, the top left corner of the target is folded in so that the point of the corner is touching the centre of the 10 zone, (pinhole). The archers will shoot again using only the arrows that were within the scoring zone of the last end. Again losing any arrows falling outside the visible scoring zone.

3. For the third end, the top right hand corner of the target is folded in so that the point of the corner is touching the centre of the 10 zone, (pinhole). You should now only see the lower half of the target face. The archers shoot again using only the arrows that were in the scoring zone of the last end, losing any arrows falling outside the visible scoring zone.

4. For the fourth end, the bottom right hand corner of the target is folded in so that the point of the corner is touching the centre of the 10 zone, (pinhole). You should now only see the lower left quarter of the target face. The archers shoot again using only the arrows that were in the scoring zone of the last end and losing any arrows falling outside the visi-ble scoring zone. By this time some of the archers may have been eliminated as they have exhausted their three arrows. The others may have reduced their number of arrows down to two or one.

5. For the fifth end, the bottom left hand cor-ner of the target is folded in so that the point of the corner is touching the edge of the 10 zone. You should now only see a narrow right angle strip of target face. The archers will shoot again using only the arrows that were in the scoring zone of the last end. Again losing any arrows falling outside the visible scoring zone. By this time most of the archers will have been eliminated as they have exhausted their three arrows. These may now watch the archers still competing, which adds a little more pressure.

6. The winner is the archer that stays in the competition the longest or who has the highest score.

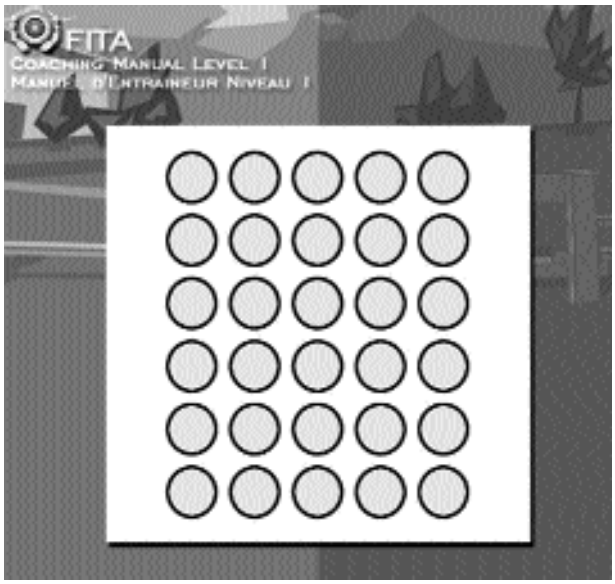
● Skill emphasized: stress and accuracy management.

Shrinking Target

- Equipment: butts, bows, arrows, 40 cm target faces or sheets of paper of equivalent size.
- Game objective: keep arrows to the very end.
- Shooting distance: depends on archer ability.
- Number of archers: any number of individuals, grouped on a target by ability.
- Number of arrows: three arrows for each archer, the number of ends depends on available time.
- Rules: each archer shoots three arrows. After each end eliminate the arrows not hitting the target. Then fold the sheet in two, repeatedly, until the only thing remaining is a small square, or all arrows have been eliminated. The archer with an arrow left wins.
- Skill emphasized: overall attention and accuracy.

Spot Shooting

- Equipment: butts, bows, arrows, target with 30 spots or adhesive dots sized according to archer ability, i.e. larger for beginners.



- **Game objective:** hit the spots according to the specified requirements for each end.
- **Shooting distance:** variable, depends on archer ability.
- **Number of archers:** teams of three.
- **Number of arrows:** three arrows each, seven ends.
- Rules: The archers aim at the spots. On the first end the archers are required to hit three spots. On each of the following ends, add a spot to the requirement finishing with nine spots on end #7. Each team starts with two jokers and is eliminated once the two jokers are used up and the requirements have not been met.
- Variation: a team may not count a hit on a spot that has already been hit by another team.
- Skill emphasized: accuracy and attention to the overall shot.

String Cutting

- Equipment: butts, bows, arrows, 60 or 40 cm face, and an 80 cm string.
- Game objective: to get the best grouping.
- Shooting distance: 15 to 20 metres, depending on archers' ability.
- Number of archers: individuals, teams of two or three.
- Number of arrows: individuals, three arrows each; teams of two, two arrows each; teams of three, one arrow each.
- Rules: each archer shoots three arrows at the target. After each end, use the string to circle the arrow grouping of each archer and then cut the string at the point where the circle is complete. The team, or archer, no longer capable of circling the arrows is eliminated. Finish by ranking the archers by string length (the winner having the longest string).
- Skill emphasized: accuracy, and self-evaluation.

Master of the Target

- Equipment: butts, bows, arrows, 60 or 80 cm five-colour face.
- Game objective: keep arrows to the very end.
- Shooting distance: 10 to 20 meters, depending on archers' ability.
- Number of archers: any number, up to four per target.
- Number of arrows: three or four per archer.
- Rules: Each archer shoots four arrows at the target face. Starting with the whole target face, eliminate another colour each end until they reach the centre (all gold).
- Arrows that hit outside the zone are eliminated. An archer without arrows is eliminated. If many archers make it to the gold zone, the arrow closest to the centre determines the winner.

● Skill emphasized: accuracy and self-evaluation.

SPECIAL ARROW GAMES

Flu-flu Games

A flu-flu is an arrow with large untrimmed feathers that restrict the distance it will travel.

Long distance Shooting

● Equipment: butts, bows, arrows, flag, flu-flu arrows with blunt tips and a field that is 50 metres wide by 100 metres in length. For arrows without flu-flu's, the field should be at least 300 metres in length.

● Game objective: shoot as far as possible, using the flag shooting principle.

● Shooting distance: variable, depends on archer ability. Experiment to find the best flag distance.

● Number of archers: individuals, any number.

● Number of arrows: six arrows, variable number of ends.

● Rules: each archer shoots six arrows, aiming toward the flag. Only the one travelling the furthest distance counts. Each best arrow is worth five points.

● Skill emphasized: attention to body position, follow-through, and release.

Pyramid

● Equipment: butts, bows, flu flu arrows, blunt arrow tips, table, and tin cans.

● Game objective: knock down pyramid as quickly as possible.

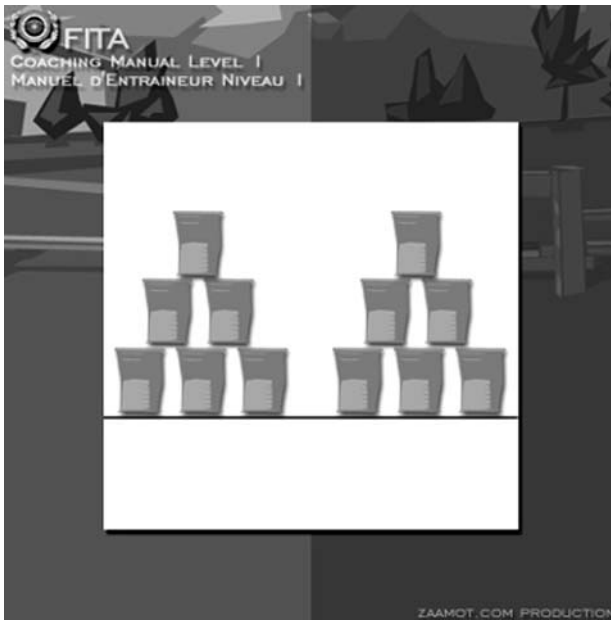
● Shooting distance: 10-20 metres, according to archer ability.

● Number of archers: individuals, teams of two or three.

● Number of arrows: individuals, six arrows each; teams of two, three arrows each; and teams of three, two arrows each.

● Rules: place one or more six tin can pyramids on a table. All archers take turns shooting the prescribed number of arrows. The first one to make the pyramid fall down wins.

● Skill emphasized: attention to the overall shot.



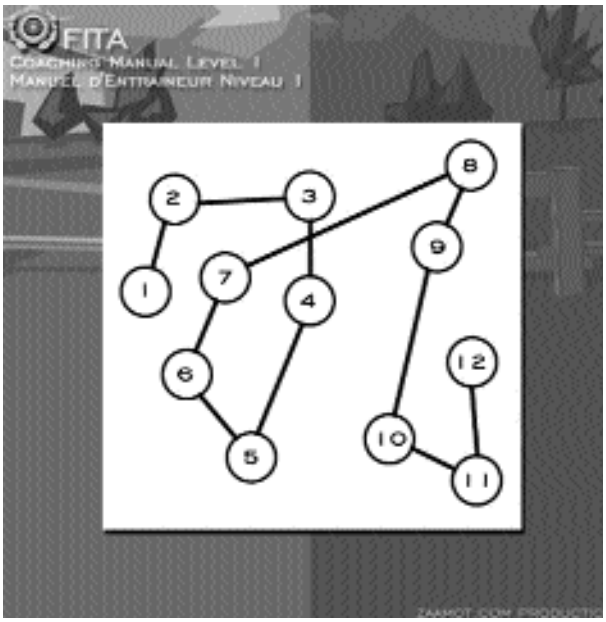
SPORT GAMES

Bowling

- Equipment: butts, bows, arrows, and 80 cm target faces.
- Game objective: to simulate a bowling game.
- Shooting distance: depends on archers' ability.
- Number of archers: one to several individuals.
- Number of arrows: a maximum of two per archer for each end.
- Number of ends: as many as necessary to fill a bowling score sheet.
- Rules: the archer shoots an arrow. If the archer gets a ten, a strike is scored and no other arrow needs to be shot. If the archer gets something other than a ten, then a second arrow is shot to get a spare. If the score does not total ten then the higher of either arrow is scored.
- Skill emphasized: accuracy management, stress management and attention to the overall shot.

Golf

- Equipment: butts, bows, arrows, golf target face.



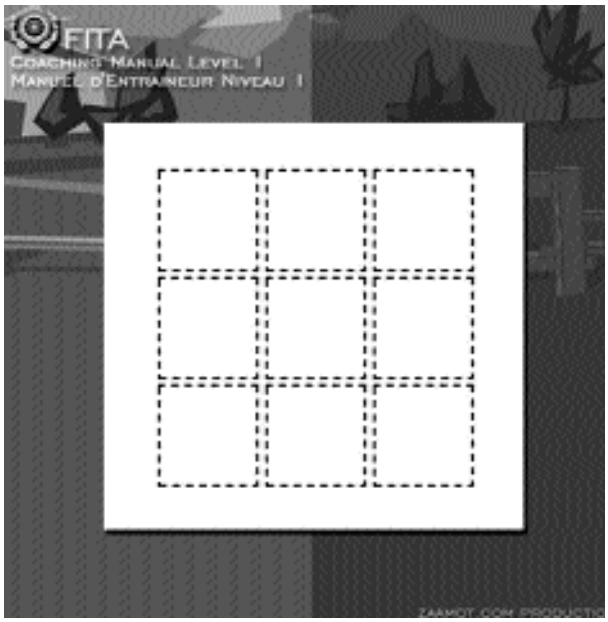
- Objective: complete a round on the golf target face or, in succession, shoot an arrow in each "hole" numbered from one to 12.
- Shooting distance: variable, depends on archer ability.
- Number of archers: individuals, teams of two, or teams of three.
- Number of arrows: individuals or team members, three arrows each.
- Rules: scoring is based on the number of arrows it takes to hit the "hole." Starting with hole #1, each archer or team is allowed three shots at the same hole, and must go on to the next hole if the target has not been hit. If the target is hit with the first or second arrow, the remaining arrow(s) is not shot.
- Scoring: score 100 points if hit with first shot, 50 points for second shot, and 25 points for third shot.
- Skill emphasized: looking for maximal accuracy and to counter aim.

Tennis

- **Equipment:** butts, bows, arrows, 80 or 60 cm face.
- **Game objective:** same as in tennis, to win a set of games.
- **Shooting distance;** 15 to 20 metres, depending on archers' ability.
- **Number of archers:** two.
- **Number of arrows:** one for each archer.
- **Rules:** to play this game it is necessary to know the rules and scoring in tennis. The first archer to win six games wins a set. A game is scored as follows: 15/30/40/game. The first serve is granted by luck of a draw, then the serving alternates with each game played. Archer A who won the serve plays first throughout the game # 1. Archer A shoots and tries to hit the centre of the target. Archer B shoots in turn and tries to better the score. If Archer B succeeds, the score is 0/15, if the server - Archer A - succeeds, the score is 15/0. Archer A continues to serve first through the first game, then Archer B serves first during the second game. The game is continued like tennis.
- **Skill emphasized:** accuracy management, stress management and attention to the overall shot.

TIC-TAC-TOE GAMES

Tic-tac-toe games are normally played with pencil and paper. The two opponents take turns using an X or an O, trying to be the first to complete a line, horizontally, vertically or diagonally. In archery,



individuals or teams can play with variations of the number of boxes to fill. This is a quick and easy game to play at the end of a class.

- Equipment: butts, bows, arrows, and square cardboard, or the back of a target face.
- Game objective: hit squares according to directions. Only the first arrow in a square will count. If an archer or team member hits a line, they may choose which square it is in.
- Shooting distance: depends upon archer ability.
- Face size: 40 cm for advanced archers, 80 or 60 cm for novice/intermediate archers.
- Number of archers: individuals or teams of three
- Number of arrows: 4 per individual, or 3 for each team member
- Skill emphasized: accuracy, counter aim, and attention to the overall shot.

Traditional Tic-tac-toe

- Rules for individuals: Two individuals per target. Decide who goes first and take turns shooting at the squares, only one arrow per square. Winner is first archer to shoot three in a row. An archer can block a row for the opponent by shooting an arrow in that row.

- Rules for teams: Each team shoots alternately at the same target. First team to complete a row is the winner.

Modified Tic-tac-toe

- Rules for individuals: Each individual has their own target. Starting by a whistle, archers shoot at the same time at the squares. First archer to complete a row, or fill all the squares, wins.

- Rules for teams: Each team has its own target. Line up one behind another (using rules for the Olympic Team Round) and shoot one at a time, starting by a whistle. The first team to fill all the squares, or fill the most squares, wins.

Noughts and Crosses

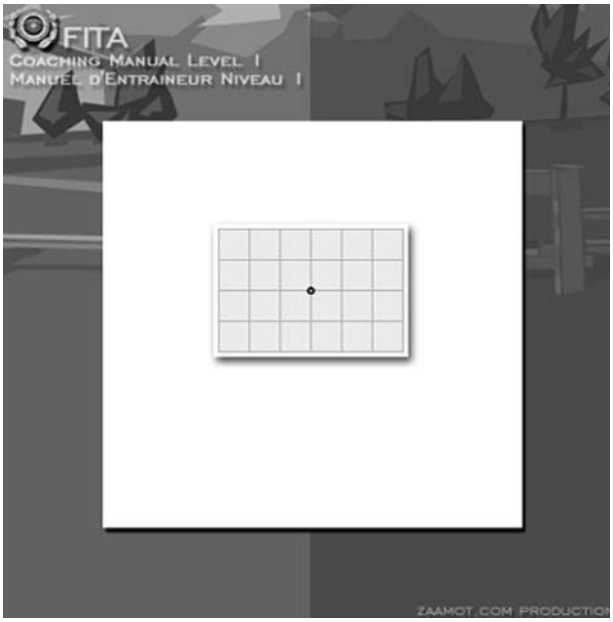
- Equipment: butts, bows, arrows, face with twelve circles drawn, 4-8 cm in diameter.
- Game objective: align three arrows either horizontally, vertically, or diagonally and prevent the opponent from doing the same.
- Shooting distance: depends on archers' ability.
- Number of archers: individuals, teams of two or three.
- Number of arrows: individuals, six arrows; teams of two, three arrows each; teams of three, two arrows each.
- Rules: after each end, four results are possible.
  - Two alignments of three arrows 100 points
  - One alignment of three arrows 50 points

- One alignment of two arrows 10 points
- No alignment minus 50 points

● Skill emphasized: looking for maximal accuracy, and to counter aim.

MISCELLANEOUS GAMES

Best Arrow



● Equipment: butts, bows, arrows, and black bulls-eye (3 to 5 cm in diameter) inside a white square.
● Game objective: shoot the arrow as close to the bulls-eye as possible.
● Shooting distance: depends on archer's ability.
● Number of archers: individuals.
● Number of arrows: three arrows each, four ends.
● Rules: Each archer aims at the bulls-eye. After each arrow is shot, the impact location is marked with the archer's initials. The winning arrow is the one that is closest to the centre after four ends.
● Skill emphasized: looking for maximal accuracy.

Even and Uneven

● Equipment: butts, bows, arrows, and 80 cm faces.
● Game objective: score as many points as possible.
● Shooting distance: variable, depends on archer ability.
● Number of archers: individuals.
● Number of arrows: three arrows each, six ends.
● Rules: each archer shoots three arrows at the target, knowing that:
  - Each arrow embedded in an even zone is counted twice (i.e. eight equals 16 points)
  - Each arrow in an odd zone is counted once (i.e. nine equals nine points).

The maximum score is 60 points.

● Skill emphasized: accuracy, and counter aiming.

Find FIDO

● Equipment: butts, bows, arrows, and sixteen 3 X 5 or 4 X 6 blank cards, size depends on ability of archers.
● Game objective: find the missing dog under one of the cards.
● Shooting distance: 15 to 20 metres, depending on archers' ability.
● Number of archers: individuals, teams of two, or teams of three.
● Number of arrows: three per archer.
● Rules: draw a picture of a dog, FIDO, on the back of one of the cards. Place the card with the dog, face down, on the target butt. Randomly place the other 15 cards on the target butt. Individuals or teams must hit a card to turn it over. The first to find FIDO is the winner. Move the cards and play again. Make up a story about why FIDO is lost.
● Skill emphasized: accuracy and attention to the overall shot.

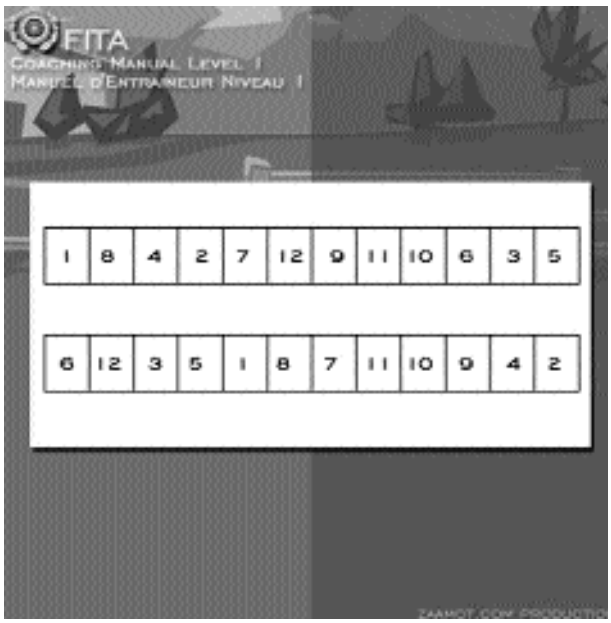
Horse Races

● Equipment: moveable butts, bows, arrows, and a 60 cm face.
● Game objective: to be the first target to reach 20 metres.
● Shooting distance: start at 10 metres and play until 20 metres is reached.
● Number of archers: two per team, one team per target.
● Number of arrows: four per archer
● **Rules:** Archers shoot four arrows at the target. Each archer may eliminate the lowest scoring arrow to allow for sight change. Targets are moved back, by archers' paces, toward 20 metres or forward toward the shooting line as follows:

Arrows hitting the gold
two paces toward the 20 meter line
Arrows hitting the red
one pace toward the 20 meter line
Arrows hitting the blue
no paces
Arrows hitting the black
one pace toward the shooting line
Arrows hitting the white
two paces toward the shooting line
Arrows missing the face
three paces toward the shooting line.

Combine the value of the six arrows left in the target to see how many paces the target is moved.

● Skill emphasized: sight adjustment, accuracy and self-evaluation.

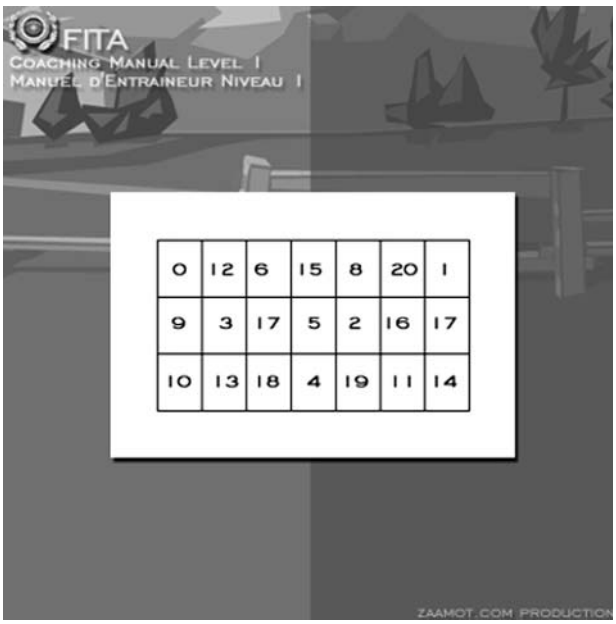


Line Race

● Equipment: butts, bows, arrows, and target face with numbers drawn randomly in two lines.

● Game objective: be the first to go consecutively through the row of numbers.
● Shooting distance: variable, depends on archer ability.
● Number of archers: individuals, or teams of two.
● Number of arrows: individuals, three arrows: teams of two, three arrows each.
● Rules: each archer goes through the row from lowest to highest number, not shooting at the next number until the preceding one is hit. If an occupied section is hit, the archer starts again.
● Skill emphasized: looking for maximal accuracy, counter aim, and technical components that maintain a constant shooting height.

13



Lottery

- Equipment: butts, bows, arrows, target with 20 numbered squares.

- Game objective: hit the chosen numbers.
- Shooting distance: 10, 15 or 20 meters depending on archers' ability.
- Number of archers: individuals, teams of two, or three.
- Number of arrows: individuals, six arrows; teams of two, three arrows each; teams of three, two arrows each.
- Rules: six numbers are chosen to hit. Archers or teams use six arrows to hit those numbers. Score by total numbers hit, or add the score of the numbers hit. An archer or team that misses the same number twice, must try for another number. Team members shoot one after another, one arrow at a time.
- Skill emphasized: accuracy and counter aim.

Low Score

- Equipment: butts, bows, arrows and 80 cm faces.
- Game objective: to have the lowest score after 6 ends.
- Shooting distance: 15 to 20 meters, depending on archers' ability.
- Number of archers: individuals.
- Number of arrows: three per archer
- Rules: archers shoot and score three arrows aiming for the lowest scoring rings. A miss counts as eleven. The archer with the lowest score after six ends is the winner.
- Skill emphasized: counter aim and self-evaluation.

Open Contract

- Equipment: butts, bows, arrows, and 80 cm target faces.
- Game objective: match the score predicted prior to each end.
- Shooting distance: depends on archers' ability.
- Number of archers: minimum of two.
- Number of arrows: three per archer, six ends.
- Rules: each archer shoots three arrow ends. Before each end, the archer predicts the score out loud. Scoring:
  - An archer who gets a lower score than the one announced gets no points.
  - An archer who equals the announced score

gets twice the amount of points.
- An archer who surpasses the announced score only gets the amount of points predicted.

● Skill emphasized: self-evaluation.

Prediction

This game is a variation of 'Open Contract.'
● Equipment: an 80 cm face divided in as many equal sized sections as there are archers at the target.
● Game objective: matching actual shooting scores, with self-made predictions.
● Shooting distance: depends on archers' ability.
● Number of archers: minimum of two individuals, up to four at a target.
● Number of arrows: three per archer for each end.
● Rules: assign a section to each archer. Before each end the archers write their predicted point total on a score sheet. Scoring:

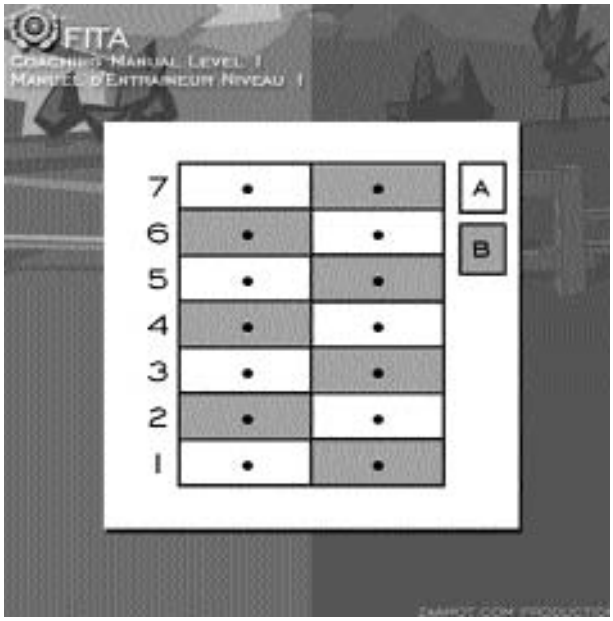
- All arrows embedded in the archer's section, even if they happen to be opponents' arrows, count for the owner.
- If the archer's point total is lower than the prediction no points are given.
- If the archer's point total is equal to the prediction, twice the predicted point total is awarded.
- If the archer's point total is higher than the prediction, only the predicted point total is awarded.

After each end, ask for new point predictions.
● Skill emphasized: counter aim and attention to the overall shoot.

Rectangle Race

● Equipment: butts, bows, arrows, target with 14 rectangle drawings in a row colored alternately to represent each archer.

● Game objective: embed three arrows in sequence in each rectangle. Archers will cross back and forth, staying in their colored rectangle, from #1 to #7.
● Shooting distance: variable, depends on archer ability.
● Number of archers: individuals, minimum of two.
● Number of arrows: three arrows each.
● Rules: draw to see which archer starts and in which color rectangle.
● Each archer must embed three arrows in their

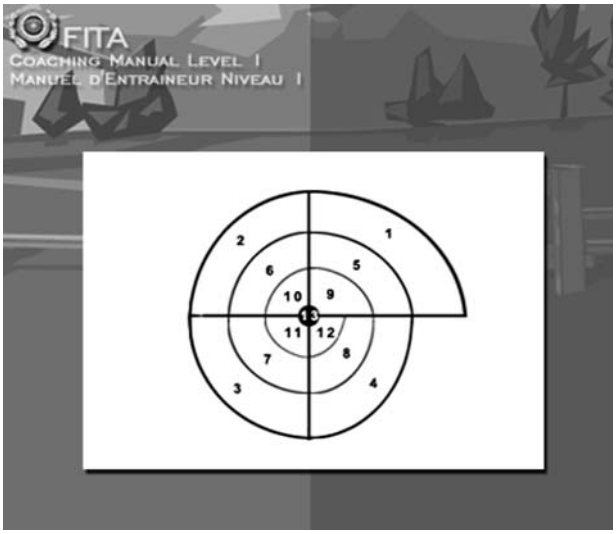


rectangle #1 before they can move to the second rectangle. The one who gets to rectangle #7 first wins.
● Skill emphasized: attention to the overall shoot, self-evaluation, and counter aim.

13

Reverse Shoot

- Equipment: butts, bows, arrows, and 80 or 60 cm target faces.
- Game objective: to shoot the highest score with face values reversed.
- Shooting distance: 15 to 20 meters, depending on archers' ability.
- Number of archers: individuals.
- Number of arrows: three per archer, five or six ends, depending on time available.
- Rules: the value of the scoring rings is reversed so that the 10 ring would be one point, the nine ring would be two points, and the one ring would 10 points. A miss is still a zero. Keep score and the archer with the highest score wins.
- Skill emphasized: accuracy, counter aim and self-evaluation.



Snail

- Equipment: butts, bows, arrows, 60 or 80 cm face turned over and divided and numbered as above, tracing over the lines on the reverse side.
- Game objective: be the first to make it to the center of the shell (13).
- Shooting distance: 15 - 20 meters, depending on the archers' ability
- Number of archers: individuals, or teams of two.
- Number of arrows: individuals, three arrows; teams of two, three arrows each.
- Rules: hit the numbers in increasing order. After each end, the arrows that are not in order are eliminated.
- Skill emphasized: accuracy, and counter aim.

Two out of Three

- Equipment: butts, bows, arrows, 80 cm target face.
- Game objective: score as many points as possible.
- Shooting distance: variable, depends on archer ability.
- Number of archers: individuals.
- Number of arrows: three arrows each, ten ends.
- Rules: each archer shoots three arrows at a target, that varies in size depending on the ability of each participant. After each end, count the points in the following manner:

  - End #1: the archer counts two best arrows.
  - End #2: the archer disregards the best arrow and counts the other two.

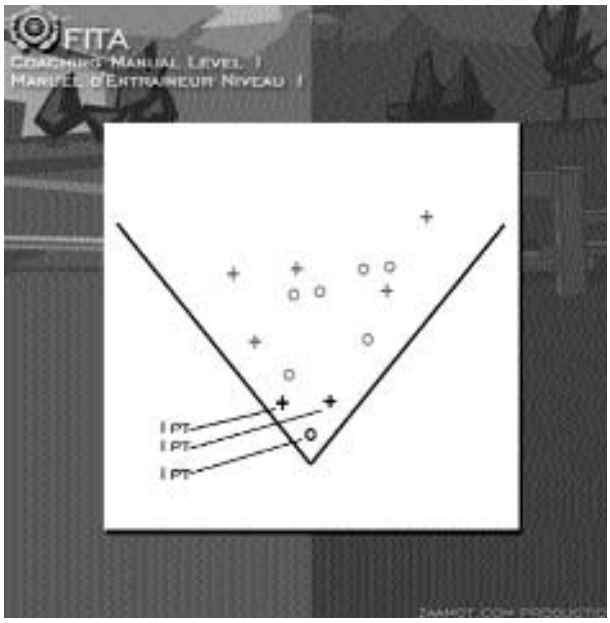
The scoring system alternates after each two ends.

- Skill emphasized: attention to shooting form and self-evaluation.

Up, Up and Away

- Equipment: butts, bows, arrows, 60 or 80 cm face.
- Game objective: shoot an arrow in each one of the 10 zones in sequence.
- Shooting distance: depends on archers' ability.
- Number of archers: individuals, teams of two, and teams of three.
- Number of arrows: individuals, three arrows; teams of two, three arrows; teams of three, two arrows.
- Rules: each archer starts by shooting at the outside ring, zone #1. They cannot proceed to the next zone until they have hit the prior one. The one who reaches zone #10 first is the winner.
- Skill emphasized: accuracy, counter aim and self evaluation.
- Variation: after each end, the target face shrinks by a ring. All arrows missing the target face are

eliminated. The first team, or archer, to reach 10 or hold on to the arrows the longest wins.



"V" Shoot.

- Equipment: butts, bows, arrows, target with drawings.

- Game objective: hit the lowest interior part of the "V".
- Shooting distance: variable, depends on archer ability.
- Number of archers: individuals, or teams of two.
- Number of arrows: three arrows each for individuals or team members, six ends.
- Rules: each archer shoots three arrows in the "V"; only the closest three arrows to the "V" tip count. One point is given for every arrow. After six ends, add up the scores and determine the winner.
- Skill emphasized: attention to the overall shoot, self evaluation, and counter aim.

W ord

- Equipment: butts, bows, arrows, and one target face per team with big letters drawn on it.

- Game objective: reconstruct the word drawn randomly before the game. Use archery words to teach parts of equipment or archery terms.
- Shooting distance: variable according to archers' ability.
- Number of archers: teams of three or four.
- Number of arrows: teams of three, four arrows each, teams of four, three arrows each.
- Rules: each archer is free to shoot at any given letter providing it can be found in the drawn word. The first team to hit all the letters in the word wins.
- Skill emphasized: looking for maximal accuracy, and to counter aim.

You are the Bacon

- **Equipment:** butts, bows, arrows, face with drawing of a pig.
- **Game objective:** get as many points as possible, or hit each part of the pig.
- **Shooting distance:** variable, depends on archer ability.
- **Number of archers:** individuals, or teams of two.
- **Number of arrows:** individuals, three arrows each; teams of two, three arrows each, six ends.
- **Rules:** keep score as follows:

Tail	12 points
Nose	11 points
Groin	10 points
Forelegs	8 and 9 points
Hind legs	7 and 6 points
Ears	5 points
Head	4 points
Shoulder	3 points
Thigh	2 points
Body	1 point

If all body parts are hit, 25 extra points are awarded.

- **Skill emphasized:** looking for maximal accuracy, to self evaluate accuracy limits, and to counter aim.

PROGRESSIVE ACHIEVEMENT PROGRAMS

For archery groups that come for an extended period of time, long-term achievement programs keep the archers excited to return and help them set goals. Scoring programs can be as simple or as sophisticated as your time and age group will allow. Many countries provide programs for archers to progress at their own rate by score, distance and target face size. If you don't have a program to follow, use the suggestions below to make up your own.

Ribbon Awards

- Equipment: Target butts, faces sized according to archer ability, colored ribbons for awards to wear on the quiver.
- Objective: earn ribbons according to arrow placement in the target.
- Shooting distance: varies according to archer ability.
- Number of archers: any amount.
- Number of arrows: six per archer.
- Rules: Archers earn ribbons according to where they shoot the arrows as follows:

White ribbon:	six arrows anywhere on the target face.
Black ribbon:	six arrows inside the black ring or better.
Blue ribbon:	six arrows inside the blue ring or better.
Red ribbon:	six arrows inside the red ring or better.
Yellow ribbon:	six arrows inside the gold or better.

- **Variation:** Use a chart to indicate progress instead of ribbons.
- **Skill emphasized:** accuracy and self-evaluation.

Star Chart

- Equipment: Target butts, faces sized according to archer ability, poster board for chart and adhesive stars. Write the names of all the archers down the left side of the chart.
- Objective: accumulate stars on a chart for the number of arrows shot in the gold or 10-ring over a period of time.
- Number of archers: any amount.
- Number of arrows: three or six arrow ends.
- Rules: During a week or longer session of archery lessons, keep track of archers' progress by putting a star by their name for every arrow that lands in the gold while practicing or scoring. For a more advanced program, use different colored stars to indicate the number of arrows in the gold. Green for one arrow, black for two, blue for three, red for four, silver for five and gold for six arrows in the gold at a time.
- Variation: Use the 10-ring for the star chart instead of the entire gold.
- Skill emphasized: accuracy and self-evaluation.

Scoring Rounds

- Equipment: Target butts, bows and arrows, indoor or outdoor target faces. Score cards, progress chart, and certificates or patches for awards.
- Objective: Archers advance through a series of awards by reaching new scoring levels.
- Number of archers: any number.
- Number of arrows: round of 30 arrows, 3 arrows per end for indoor; round of 36 arrows, 6 arrows per end for outdoor.
- Rules: Shoot a round of arrows in tournament-like conditions, double scoring, to reach a designated score. Leader can develop up to 10 levels to achieve. Archers receive a certificate, patch, medal, etc. when they reach that level.

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Glossary

Some words from this glossary are not in this Coaching Manual. On another hand, some words from the Manual should have been in this Glossary. FITA is open to any suggestion for improving this Glossary for the best education of new archery coaches. Just inform us what should be change, added or remove.

Thank you beforehand for your contribution

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A

Actual draw length: The arrow length needed by an archer, measured from the bottom of the slot in the nock to the back of the bow.

Actual draw weight: The energy required to draw the bow to the actual draw length (measured in pounds).

Anchor point: A location on the archer's face to where the string hand comes at full draw to give consistency to shooting. Also known as "reference point".

Arbalest: A machine crossbow.

Arbalist: A person who shoots a crossbow.

Archer: A person who shoots a bow and arrow.

Archer's paradox: The initial stages of flight in which the arrow flexes to clear the bow.

Arm guard: Protects the arm from the bow string; usually leather or plastic and worn on the inside of the forearm.

Arrow: A projectiles shot from a bow.

Arrow plate: An attachment on the side of the bow to give single point contact to the arrow and provide smooth arrow passage.

Arrow rest: A device on the bow to provide a contact point; also a resting point, or shelf to support the arrow

Arrow shelf: A horizontal projection from the bow window upon which the arrow can lay in the absence of an arrow rest.

Arrow straightener: A mechanical device used to detect and eliminate bends in aluminium arrows.

B

Back (of bow): The side of the bow facing away from the archer.

Bare shaft An arrow shaft without fletchings.

Bare-bow: A class of shooting where the bow has a single string and the bow is held with one hand and the string is drawn and released with the fingers of the other hand. No sighting marks or protruding stabilisers are permitted.

Barrelled arrow: An arrow that has a greater cross section in the middle and tapers down at the ends.

Basic technique: The fundamental technique of shooting a bow and arrow. Usually the style taught to a person on their introduction to archery.

Bast: (target butt) This is a coil of twisted straw that is behind the target face and to which the face is attached.

Belly (of bow): The surface of the bow facing the archer during shooting.

Black: The fourth scoring colour on the target face.

Blue: The third scoring colour on the target face.

Blunt: Pile/point - such as used for Popinjay or shooting small game.

Bobtail arrow: An arrow that has the greatest cross section at the front of the arrow and tapers down toward the back.

Bodkin: A type of arrow head used in ancient times for penetrating armour.

Body alignment: The relationship of the archer's legs, hips, trunk and shoulders.

Boss: (see bast), This is a coil of twisted straw that is behind the target face and to which the face is attached to stop arrows.

Bouncer: An arrow that hits and bounces back off the target scoring zone instead of remaining in the target.

Bow arm: The arm that supports the bow.

Bow efficiency: The ratio of kinetic energy received by the arrow to that stored by the bow.

Bow hand: The hand that supports the bow.

C

Bolt: The missile-like shaft that is shot from a crossbow.

Bow scale: A device that measures the draw weight of a bow at any stage of the draw.

Bow sight: A device attached to the bow and assists the archer in aiming.

Bow sling: A strap attached to the bow through which the archer slips the bow hand, thereby preventing the bow from being dropped upon release.

Bow square: A device that attaches to the bowstring and lies on the arrow rest to measure the bracing height and nocking point location.

Bow string: The string of a bow usually made of synthetic material.

Bow stringer: A device an archer uses to assist in stringing the bow.

Bow window: The cut out section on the arrow side of the bow to allow the arrow to pass through or near the centre line of the bow.

Bow: An object being bent with a string placed from one end to the other holding the object bent and under tension.

Bowyer: A person who makes or repairs bows.

Braced: A bow that has had a string fitted ready for shooting.

Bracer: Protects the arm from the bow string; usually of leather or plastic and worn on the inside of the forearm of the arm that holds the bow. (see armguard).

Bracing height: The distance between the string and pressure point (or the place indicated by the manufacturer) when the bow is strung.

Broadhead: A multi-edged sharp arrow point used in hunting live game.

Bull's-eye: The area on the target face with the highest scoring value.

Butt: A device onto which the target face is placed and which stops the arrow so that the arrow value can be scored.

Button (pressure): A device that fits to the bow and protrudes just above the arrow rest which can be adjusted to assist with obtaining true arrow flight.

Cam: A wheel like device mounted on the limb tip of a compound bow, used to decrease the amount of weight held on the bow string at full draw.

Cant: To hold the bow tilted off vertical while shooting.

Cast: The ability of the bow to propel an arrow and the degree of efficiency with which this is achieved.

Centre serving: The serving on the central area of the bow string which protects the bow string from wear.

Centre shot: A bow which is designed to allow the arrow to take a position central to the limbs.

Chest guard: (chest protector) A protective device that covers the side of the archer's chest that is nearest to the bow which keeps clothes out of the path of the string during shooting.

Clicker (draw length check): A device attached to the bow which gives an audible indication when the arrow has been drawn to the desired draw length.

Closed stance: A shooting stance where the line of the shoulders is more than 180 degrees taking a line from the shooting position to the centre of the target.

Coach: A tutor or teacher of sporting activities.

Cock fletching: The fletching on the arrow at right angles to the slot in the nock. This fletching is usually a different colour to the other fletchings on commercially made arrows;

Composite bow: A bow that consists of different parts or materials.

Compound Bow: A bow where the string is attached to pulleys, wheels or cams in order to increase the kinetic energy when the bow is being used.

Course: The range on which Field archery rounds are shot.

Creep: Letting the shooting hand edge forward before release.

Cresting: Painted rings just in front of the fletchings for decoration or identification.

Cross hair: A sight which has two fine lines that cross at right angles; the intersection of the lines is used for lining up on the given aiming point.

Crossbow: A bow that is fitted with a stock, and is shot similar to a rifle.

D

Deflexed riser: A riser with a slight bend built in during construction that bends away from the archer for added stability.

DFL (draw force line): This is the line between the pressure point of the hand on the bow, the string fingers and the drawing elbow.

Director of shooting: The judge in charge during a tournament.

Dominant eye: The eye which is dominant /favoured by the archer for aiming when both eyes are open.

Draw: The act of pulling back the bow string thus storing energy in the bow.

Draw (Flemish): The use of only the index and second fingers to draw the bow, the index finger above the arrow and the other beneath the arrow.

Draw (Mediterranean): The use of the first three fingers to draw the bow, the index finger above the arrow with the other two below the arrow.

Draw (Thumb): The use of the thumb around the string just below the arrow. The thumb is locked in position by closing the index finger round the end of the thumb. The arrow would be on the same side of the bow as the hand that is drawing the string.

Draw weight: The force required to draw the bow, measured in pounds.

Draw: To energise the bow by pulling the string.

Draw-force curve: The curve as charted with the increase of weight during the draw being one axis, and the measured draw length being the other axis.

Drift: Caused by a slight breeze where the arrow flight path wanders slightly left or right during its travel to the target.

Drop away rest: An arrow rest/launcher that drops away clearing the path for the arrow as the bow string is released. (Mainly used on compound bows).

E

Eccentric pulley or wheel: A cam like wheel mounted on the limb tip of a compound bow, used to decrease the amount of weight held on the bow string at full draw.

End: A specific number of arrows shot before the archers go to the target to score and collect their arrows.

F

Fadeout: The point where the non-working part of the limb that connects to the riser fades out to the working part of the limb.

Field archery: A type of archery shot outdoors in an undulating wooded area with targets of varying sizes and of varying predetermined distances. The archers walk from target to target.

Field captain: A person controlling the shooting along all or part of the shooting line, and responsible to the judge.

Field point: An arrow point that is usually heavier than a target point and with the diameter of the front section smaller than the arrow shaft.

Finger tab: A piece of leather worn on the drawing hand to protect the fingers and give a smoother release to the string.

Finger sling: A piece of leather, plastic or rope looped at each end through which the archer slips the thumb and finger after taking hold of the bow, permitting a loose grip. It also prevents the bow from being dropped upon release.

Fishtailing: A horizontal back and forth motions of the nock of an arrow during its flight to the target.

Fistmele: The distance between the bow grip and string when the bow is strung as measured by the closed hand with the thumb extended. The measurement is made between the width of the clenched hand and the extended thumb.

FITA standard arrow: An arrow not exceeding the specification of the XX75 alloy or its equivalent.

FITA standard bow: A basic one piece or take down bow with wood and or glass fibre limbs. It can have a simple sight and a non-adjustable arrow rest. The tab or finger protection must exclude any form of stiffening or locating platform. The un-braced bow complete with its accessories must be capable of passing through a hole of 12.2cm diameter.

FITA Star: A special tournament run under FITA rules at which an archer may win a FITA Star award. These are awarded to archers achieving a score for the first time in the following category - 1000 (star), 1100 (star

on black shield), 1200 (Star on blue shield), 1300 (star on red shield), 1350 (star on gold shield) and 1400 (star on purple shield).

FITA: Fédération Internationale de Tir à l'Arc. The international governing body of archery.

Flemish twist: A method of assembling a bow string end loops by twisting the material similarly to that of making a rope. It eliminates the use of "serving" the string loops.

Fletching jig: A mechanical device that is used for accurate and consistent fletching of arrows.

Fletchings: The feathers or plastic vanes fitted to the arrow.

Flight archery: Shooting for maximum distance for the type and weight of bow being used.

Flinch: To move either the bow or release arm just prior to the release, usually caused by anticipating the clicker or fear of hitting the arm.

Follow through: The backward movement of the drawing hand after the release has been executed.

Foot markers: Small objects placed in the ground to mark the place where the individual places their feet to assist with consistency of stance.

Footing: A hardwood section that is sliced onto the front of a wooden arrow shaft to give extra strength and durability.

Freestyle: A class of shooting where the bow has a single string and the bow is held with one hand and the string is drawn and released with the fingers of the other hand.

Freeze: A shooting flaw where the archer aims outside of the gold (bull's eye) and cannot move the sight aperture into the centre. Also, an inability to release an arrow.

Full draw: The position reached when the string has been pulled back to the anchor point (reference point) prior to the release.

G

Gold: The first (centre) colour of a target face.

Grain: A very small amount of weight, used to identify Pyle and insert weight. 437 grains is equal to 1 ounce.

Ground quiver: An arrow holder that sits on or sticks into the ground; may also hold a bow.

Group: The pattern of an archer's arrows as they appear in the target.

H

Handle: The centre section of a bow usually called the "riser".

Hanger: An arrow that does not penetrate the target but hangs down the face.

Heeling (the bow): A term used when the archer puts the majority of pressure on the lower part of the grip (with the heel of the hand) when at full draw.

Holding: Maintaining a steady bow position at full draw during aiming.

Hen fletchings: Fletching other than the index fletch. Sometimes called the shaft fletchings.

I

Index fletching: The fletching that is mounted on the arrow that situated at right angles to the nock slot (as for archers shooting off the fingers).

Index fletching: The fletching that is mounted on the arrow that situated in-line to the nock slot (as for archers shooting a compound bow using a release aid and arrow launcher).

Instinctive: A method of shooting in which no aiming method is used. The archer just looks at the target and shoots.

J

Judge: The person responsible for the application of the rules of shooting during a tournament.

K

Kisser button: A small disc, or similar, which is fitted to the bow string and is drawn to the lips, or other reference point before loosing.

Kyudo: The traditional Japanese form of archery.

L

Laminate: A bow laminated from two or more kinds of wood or similar material.

Launcher: An arrow rest where the arrow rests on top of a pronged extension just under and inline with the arrow. Can be sprung loaded or drop away.

Left hand archer: An archer who holds the bow in the right hand and draws with the left hand.

Left hand bow: A bow with the window cut out on the right hand side when viewed from bow's string side.

Let down: When drawing the bow; it is to return to the pre-draw position without releasing the bowstring.

Let-off: The weight reduction from the peak weight to the holding weight on a compound bow.

Level: A device attached to the sight to help the archer maintain a vertical bow position. Very common on compound bows, not permitted on recurve bows.

Limbs: The parts of a bow that bend when the bow is drawn and gives the propelling force to the arrow.

Longbow: A bow popular in England in the middle ages, usually 6 feet or more in length and made of Yew wood or similar.

Loop: The woven or served eyes at the ends of a bow string that fit into the notches at the tip of the limbs when the bow is strung.

Loose: The action of the hand at the point of release.

Low wrist: A bow hand position where the hand is flat against the bow grip and the pressure during the draw is through the forearm bone.

M

Mark: The precise place the archer is aiming to hit.

Mat: A device onto which the target face is placed and which stops the arrow so that the arrow value can be scored.

Mass weight: The weight of any piece of equipment placed on a weigh scale; usually used in reference to the bow.

Minnowing: Similar to "fishtailing" but the movements are less severe but much faster.

Monofilament: A single strand of material which is used for the centre serving on the string.

N

Nock locator: A stop on the bowstring against which the arrow nock is placed.

Nock: This is a device fitted to the back of the arrow that has grove in it which fits onto the string. Also, it is the groves at the extreme ends of the limbs in which the loop ends of the bow string fit.

Nocking point: The marked place on the bowstring where the arrow nock is placed before drawing and releasing.

O

Open Stance: A shooting stance where the line of the shoulders is less than 180 degrees taking a line from the shooting position to the centre of the target.

Over bowed: Using a bow that is too strong for the individual.

Over braced: A bow that has a bracing height greater than the manufacturers' recommendation, or a bow that is fitted with a string too short for optimum performance.

Over draw: A device fitted with an arrow rest that protrudes inside of the bow allowing for shorter arrows to be used. Sometimes used on compound bows.

Overdrawing: To pull the string further back than optimum, at full draw.

P

Pass through: An arrow that hits the target but passes right through.

Peak weight: The highest weight achieved during the drawing of a compound bow.

Peaking: A shooting flaw where the archer moves their head at release in order to watch the flight of the arrow.

Peep-sight: A plastic or metal device attached to the string and has a small hole which the archer looks through to line up the front sight with the target. Also, required to give clarity to a magnifying front sight.

Perfect end: An end in which all arrows land in the highest scoring zone.

Petticoat: An outer cloth on some target faces where the target pins are placed to hold the face on the target

mat. Also known as the "Skirt".

Pyle: (Also spelt pile). The metal tip attached to the head of the arrow shaft. Also known as the arrow point.

Pinching: Squeezing the arrow nock with the fingers whilst at full draw.

Pin-hole: The exact centre of the gold ring in the target face that are used in competitive events.

Plucking: A shooting flaw in which the string hand is pulled out and away from the anchor point (reference point) the moment of release.

Point: The metal tip attached to the head of the arrow shaft. Also known as the "Pyle".

Point of aim: This is the place or the object at which the archer aims, when they sight over the tip of the arrow. This may be above, below or on the target depending on the distance of the target and the cast of the bow.

Poker: A colloquial name for a long rod stabiliser.

Popinjay: A type of archery where the target (birds) are placed on mast, the archers stand under the mast and shoot upwards to knock the "birds" of the perch.

Porpoising: The up and down movement of an arrow in flight, usually caused by a wrongly positioned nocking point.

Powder pouch: A container for talcum or similar powder often used to dry an archer's hands or applied to the finger tab for a smoother release.

Practice bow: A bow with a light draw weight, usually used when teaching beginners.

Prep-line: A position the archers take prior to raising and drawing the bow for shooting.

Pressure button: A device that fits to the bow and protrudes just above the arrow rest which can be adjusted to assist with obtaining true arrow flight.

Pressure point: The place on the bow grip where the pressure is taken when at full draw.

Q

Pull: To remove arrows from the target

Quiver: A holder for arrows that may be worn by the archer or placed on the ground. This may also be mounted on the bow particularly when hunting.

R

Range: The distance to be shot.

Range: The place where shooting takes place.

Rebound: An arrow that that hits and bounces back off the target instead of remaining in the target scoring zone. Recurve bow: A bow with limbs tips that are curved forward.

Red: The second scoring colour on the target face.

Reference point: A location on the archer's face to where the string hand comes at full draw to give consistency to shooting. Also known as "Anchor point".

Reflexed: A riser or bow limbs that curve away from the archer (convex).

Release: To allow the bow string to leave the fingers.

Release aid: A hand-held device that attaches to the bowstring and used to draw and release the string minimising the string deflection on release.

Right hand archer: An archer who holds the bow in the left hand and draws with the right hand.

Right hand bow: A bow with the window cut out on the left hand side when viewed from bow's string side.

Riser: The centre section of a bow onto which the limbs are attached.

Round: The number of ends shot at designated distances and sizes of targets to obtain a standard score.

Roving: A form of shooting in open country where the archer shooting nearest to the mark will select the next mark to aim at, such as a tuft of grass, tree stump or patch of bare earth etcetera.

S

Self: A bow or arrow that is made from a single piece of wood, thus they are called self bows or self arrows.

Serving tool: A mechanical device to assist in winding serving material onto the bow string.
Serving: Thread wrapped around the bowstring at its centre and on the loops to protect the string and reduce wear.

Shaft fletchings: Fletching other than the index fletch. Sometimes called the hen fletchings.

Shaft size: An identification code given to a particular arrow size and properties to allow ease of selection.

Shaft The main body of the arrow; un-fletched arrow.

Shake: A crack running with the grain in a bow stave.

Shooting glove: A partial glove with three fingers to protect the drawing hand fingers and to ensure a smooth release of the bow string.

Shooting line: A line marked parallel to the targets from which the archers shoot.

Sight bar: The part of the bow sight to which the aperture assembly is attached.

Sight block: The moveable portion of the bow sight which holds the sight pin.

Sight extension: A bar that allows the bow sight to be extended away from the bow toward the target.

Sight pin: The part of the bow sight that is superimposed on the centre of the target during the act of aiming.

Sight window: The recessed area on the riser just above the grip.

Sight: Any device mounted on the bow that allows the archer to aim directly at the target or mark.

Sighters: Practice arrows prior to a tournament commencing.

Sipur: An extension which is fitted to a bow to enable a short arrow to be used (usually used in flight shooting).

Six gold end: A perfect end of six arrows (all in the gold/bull's eye).

Skirt: An outer cloth on some target faces where the target pins are placed to hold the face on the target mat. Also known as the "Petticoat".

Sling: A strap attached to the bow through which the archer slips the bow hand, thereby preventing the bow from being dropped upon release.

Snap shooting: Shooting without pausing to aim carefully.

Spectator line: A line clearly marked over which any spectators must not pass.

Spine: The measured deflection of an arrow shaft established by hanging a specified weight from its centre whilst being supported at both ends.

Springy rest: A small spring with an arrow rest extension and substitutes for a Pressure button.

Stabiliser: A rod and weight assembly mounted on either the face or back of the riser to help eliminate torque of the bow around it's axis upon release.

Stacking: A rapid disproportionate increase in draw weight in the last few inches when drawing some (usually older) recurve bows.

Stance: The physical alignment of the body in relation to the target in preparation for shooting.

Stave: A wood blank that a bow is fashion from.

Stock: The main part of a crossbow which houses the trigger mechanism and to which the bow is fixed.

String alignment: The relationship between the bowstring and the sight aperture.

String fingers: The fingers that hold the bowstring when shooting a bow.

String hand: The hand that pulls the string.

String height: The distance between the string and pressure point (or the place indicated by the manufacturer) when the bow is strung.

String jig: A mechanical device on which bow strings are made.

String loop: The part of the string that fits over the nocks at the end of the bow limbs.

String walking: A style of shooting where the archer moves the position of the string fingers on the string to adjust the vertical displacement of the arrow. No bow sight is permitted when this method of shooting is being used.

String: The string of a bow usually made of synthetic material.

Tab: A piece of leather worn on the drawing hand to protect the fingers and give a smoother release to the

string.

Tackle: Archer's equipment.

Take down bow: A bow that is assembled out of a riser and separate limbs to make a complete bow.

Target archery: A competitive round shot at fixed distances in an open field.

Target Captain: The person at each target during a tournament designated to call the scoring value/or recording all arrows on that target.

Target face: The cloth or paper or cardboard scoring area mounted on the target butt.

Target panic: The inability to execute a shot properly-due to a loss of control of the psycological process of shooting, usually caused by over aiming.

Target Stand: A prefabricated structure which holds the target butt in the designated correct position.

TFC: Torque Flight Compensator; an adjustable flexible coupling fitted between stabiliser rods and the riser to damp down vibrations.

Thumb ring: A ring that fits onto the thumb with a small raised section that holds the string during the draw. Mainly used in the eastern and Asian countries in their traditional archery.

Tiller: a) The Bowyer's manufacturing process used to balance the forces which are applied by the limbs of the bow when strung or being drawn.

b) A comparison of the measurement taken, when the bow is strung, from the string to the fade-out at each end of the riser. It is normal for the bottom measurement to be slightly smaller to that of the top measurement.

Timber hitch: Traditionally the knot which is used to form the second loop on a string which has been manufactured with one loop. Such as a longbow string.

Tip: The extreme end of the narrow part of the limbs.

Torque: A rotation of the bow about it's axis upon release of the bow string.

Toxophilite: One who takes part in the sport of archery.

Toxophilus: The title of the first book to teach the art of archery, written in 1544 by Roger Ascham who was the archery coach to Queen Elizabeth 1st of England.

Toxophily: The sport of archery

Trajectory: The curved path an arrow follows during its flight to the target.

Tuning: An adjustment made to any area of the bow or arrow to achieve the truest arrow flight possible.

U

Under-bowed: An archer shooting a bow that is too weak for them, or the task being undertaken.

Under-draw: An archer who does not draw the bow to their full potential.

Under-strung: A bow with a string too long resulting in a low bracing height and reduced efficiency.

Unit aiming: Maintaining the relationship of the body's shooting line while adjusting the elevation needed from the waist or hips.

Upshot: The final shot in an archery tournament.

V

Valley: The point of the lowest holding weight reached near full draw on a compound bow.

Vane: A feather or plastic fletching fitted to the arrow.

W

Waiting line: A line parallel to the shooting line which the archers, about to go to the shooting line, must not cross until given the signal to do so.

Wand: Apiece of wood, 6 feet long and 2 inches wide, that is driven vertically into the ground serving as a shooting mark. Traditional ancient shooting of "splitting the wand".

Wax: Bee's wax is traditionally used to seal the bowstring preventing excessive moisture being absorbed. It also binds the string fibres together.

Weight: The force required to draw the bow, measured in pounds.

Whip-ended: A description of a bow where the limbs are too weak in the tip area.

White: The fifth scoring colour on the target face.

Windage: Horizontal correction of the bow-sight adjustment to compensate for drift due to the wind.

Wobble: An erratic motion of a flying arrow.

Wrist sling: A strap that wraps around the archer's wrist and the bow, thereby preventing the bow falling to the ground during release.

Y

Yaw: An arrow's erratic motion during flight.

Z

Zen: Japanese religious or mystical approach expressed through traditional crafts or martial arts.

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FITA was able to make this valuable manual available to the archery coaches with the tremendous collaboration of the following World Class Archery Coaches.

THANK you SO MUCH !

(Named by alphabetic order)

FITA also acknowledge that the illustrations were made by Yesdayesdesign, under the leadership of Thomas RANDALL.

Names of the “extras” who generously gave their time - Geraldine AURAIX, Thomas COLMAIRE, Richard CORDEAU, Gwenael HANNEMA, Ludovic PEYRAUD and Olivier PEYRAUD.

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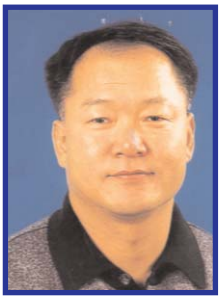

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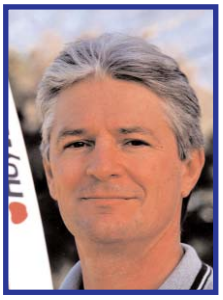

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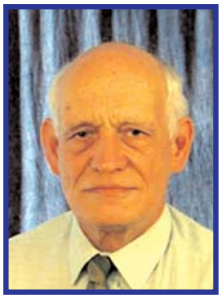

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