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# A Guide to: **Setting up an Archery Range**



# How to set up an archery range

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**Note:** This guidance has been prepared by FITA, the International Federation. In the UK 'Imperial Rounds' are also practiced and for this the measurements are in yards. This is very similar but instead of 90 metres, the longest distance is 100 yards. The side safety distance is 25 yards reducing to the shooting line to 10 yards. Under UK rules, lane markings are not used.

This publication is guidance only and should not be considered as the rules.

## Introduction and summary:

Archery is practiced all over the world. Like in other sports, a special accommodation is needed for practice and competition. Bow and arrows are (part of) the equipment of an archer; an archery range on a flat level field with arrow stop and shooting line is needed for the safe practice of target archery. In field archery the target lanes are mostly far from level, however in this discipline there exist special rules for range layout.

## Rules for designing a safe target archery range:

Safety dictates the range layout. On a target archery range we erect one or more target buttress and determine the place where the archers stand and, from which, launch their arrows. Between the archer and the buttress is the so-called shooting range. It is obvious that during shooting the field of play has to be free of people, pets, and obstacles.

Around the field of play proper use of the terrain can alleviate many safety concerns, particularly in providing natural backstops and buffers.

Safety means a special layout of the field of play and a strict shooting discipline.

In practice we want to shoot safely on a range that allows more than one archer to shoot close to each other and at the same time.

To design an archery range that makes it possible to conduct archery safely, we have to recognize the following prerequisites.

**Rule 1** There is a clearly visible straight line on the ground, called the shooting line and archers only launch their arrows standing astride this line

In target archery there is only one shooting line for all archers, even if they are not shooting the same distances; targets may be placed at different distances for different target lanes.

**Rule 2** There are target lanes, perpendicular to the shooting line and archers shoot only in the target lane corresponding to their place on the shooting line

**Rule 3** If more than one archer is practicing at the same time, shooting takes place in designated time-slots only and the archer may not raise the bow arm until the signal to start shooting is given.

The simplest way to create time-slots for shooting is to use signals, for instance a whistle or an electronic count down timing system. If an audible signal is given (whistle etc.) there should be two blasts on the whistle to go to the shooting line, one blast to start shooting, and three blasts to stop shooting and to collect the arrows.

**Rule 4** Shooting will be in one direction only.

**Rule 5** Archers aim continuously toward their target when drawing their bow. The bow must not be drawn in such a way that if the string was accidentally released the arrow would fly out of the safety zone.

These rules have to be followed at all times, whether practicing or at a tournament. They are the precondition for safely practicing archery.

## Outdoor field orientation:

The field orientation should prevent the archers from shooting with the sun in their eyes. To achieve this, different orientations for archery ranges need to be considered for the northern and southern hemispheres. The orientation of an archery range in the northern hemisphere is “the shooting line is on the south side of the range and the targets are on the north side”, with a tolerance allowance from the magnetic north of +/- 20 degrees. This is to allow the sun to be behind the archers most of the day.

The orientation of an archery range in the southern hemisphere is “the shooting line is on the north side of the range and the targets are on the north side”, with a tolerance allowance from the magnetic north of +/- 20 degrees.

This is to allow the sun to be behind the archers most of the day.

In countries around the equator the time of competition, together with the orientation of the field should prevent the archers from shooting with the sun in their eyes.

Always keep in mind that there are right-handed and left-handed archers, their frontal plane on the shooting line is orientated opposite. So the sun position during early morning or late evening shooting must be considered.

### Outdoor field of play layout, with safety zones:



Picture courtesy of Essex Archery Festival 2010

Figure 1.

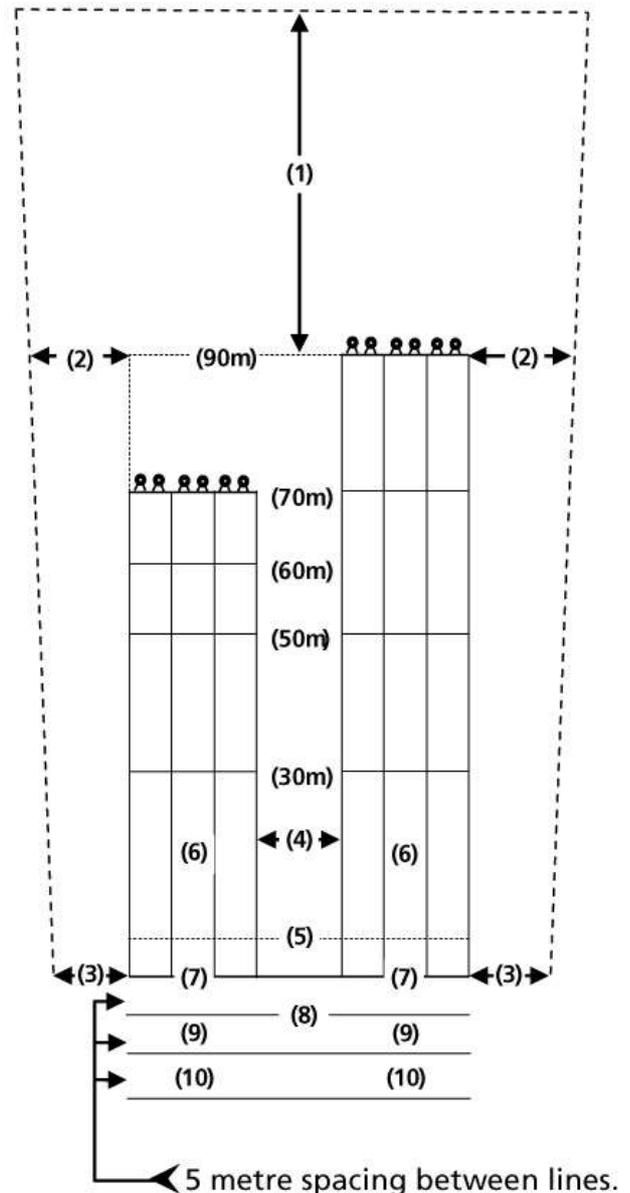


The following drawing (figure 1) shows an archery field layout.

- If archers are shooting different distances the targets must be staggered not the shooting line;
- There must be a minimum of 5 metres between the shooting line and waiting archers;
- The measurements for the safety zones shown on each side of this field are for experienced archers. If novices are shooting consideration must be given to increase this area.

**The legend for figure 1:**

- (1). 50 metres overshoot exclusion area;
- (2). 20 metres exclusion measurement;
- (3). 10 metres exclusion measurement;
- (4). 10 metres space between shooting areas;
- (5). 3 metres line for determining arrows that will be classed as not being shot;
- (6). 5 meter wide lanes;
- (7). Shooting line;
- (8). Waiting line;
- (9). Equipment area;
- (10). Competitors area.



**(1).** There should be no dead ground in the 50 metre overshoot exclusion area, and it should always be clear before and during shooting. Be aware that archers may still be behind the targets looking for arrows that missed the target. Always check this before the signal to start shooting is given

**(2) & (3).** The exclusion areas each side of the range must be kept clear from all obstacles which could obscure any potential danger.

**(4).** The 10 metre measurement between the two different shooting distances is there to identify separate ranges, this does not permit the archers on one range to collect their arrows whilst archers on the other range are still shooting.

**(5).** This line is there mainly for tournament purposes. If an archer has an arrow that falls within this 3 metre area the arrow is deemed as not being shot. Therefore another arrow may be shot – but under the guidance of the officiating judge.

**(6).** The spacing between the targets is set so that each archer has a minimum personal space to shoot of 80 centimetres.

**(7).** Each archer stands with one foot either side of the shooting line to shoot their bow when the signal to start shooting has been given.

**(8).** Whilst archers are waiting to go to the shooting line they must wait behind the waiting line until the signal is given to advance to the shooting line. When the archers have shot their required number of arrows they must return back behind the waiting line. They wait there until the signal is given to advance to the targets to retrieve their arrows. Never run on an archer range always walk to, and from, the targets to avoid any accidents or injuries.

**(9).** Shooting equipment only should be placed in the equipment area, any tackle boxes or similar should be kept in the competitors area. Always leave walk ways through the equipment area to allow easy passage for the archers to get through.

**(10).** The competitors area is for the archers, team managers and coaches. All spectators should be excluded from this area to minimise accidental damaged to equipment or personal injury.

### Outdoor field of play with reduced safe zones:

In a very few cases an archery field with the required measurements for safety is not available. It is possible however to reduce the exclusion zones beside and behind the archery range by introducing security barriers. In some cases we can use the natural features of the field to reduce these areas.

From experience it is found that a barrier behind the target line does not have to be higher than 4 metres. When the distance between shooting line and target line is 90m, the further the barrier is behind the targets, the lower the barrier can be. It is possible sometimes to use a barricade or natural hill behind the target line. A 4 metres high barrier is high enough. BUT it is essential that the arrows cannot pass through this barrier.

### Indoor shooting range:

Depending on the local characteristics such as climate and the availability of an outdoor venue, an indoor venue may be designed for archery practice under all-season weather conditions.

Sometimes an archery club can use a gymnasium or any similar convenient hall for their practice. Sometimes a small surrounded safe outside area is available. A safe surrounded area for archery practice at a distance of at most 25m will be considered from the point of safety as 'indoor facility'.

The usual advantage of an indoor venue is the protection of the archers from cold in countries with real winter weather or from the heat of the sun in tropical countries.

The most common indoor shooting distance is 18m; this is the distance used at FITA indoor championships.

Behind the targets there must be a safe arrow stop device, which can be a "special arrow stop curtain". Never rely on a "special arrow stop curtain" to stop arrows if there is any activity going on behind it. These curtains do deteriorate and with some high powered bows now available arrows have been known to pass through them.

At 5m behind the shooting line there must be a waiting line. This can be reduced to 3m if the space available is restricted, but safety must not be jeopardised. Behind the waiting line we need space for the archers shooting equipment. Behind this area there must be a competitor's area, which will accommodate the archers, when shooting is not taking place, along with the team managers and coaches. A total length of about 30m is required for an indoor accommodation.

The following recommendations for an indoor accommodation should be observed.

- Access to the range must only be possible from behind the shooting line.
- Any other access should be locked during practice.
- There must be access to all emergency exits, but if some are in front of the shooting line entrance into the hall through these must be restricted.
- There should be no windows or glass in the wall behind the target line that can be hit by an arrow that misses the target.
- An appropriate arrow stop can cover these windows.
- If there are side windows less than 2m high, they must be protected with an appropriate cover or with a shield.

In the case of using divisional curtains like in some multi-sport venues, they must be able to stop an arrow. A curtain should be attached at the upper side only, thus having a more arrow stopping ability. **Under no circumstances should there be any human activity taking place behind the target area even if an arrow stop curtain is being used.**

The number of targets in an indoor accommodation is usually dictated by the available width of the activity hall. Each archer will need a minimum of 80 centimetres of space when on the shooting line.

The FITA target face for indoor competition at 18 metres has a diameter of 40 centimetres; the target butt should be bigger than the target face, so that any arrow that misses the face will still land in the target butt and not in the arrow stop curtain.

### Security barriers:

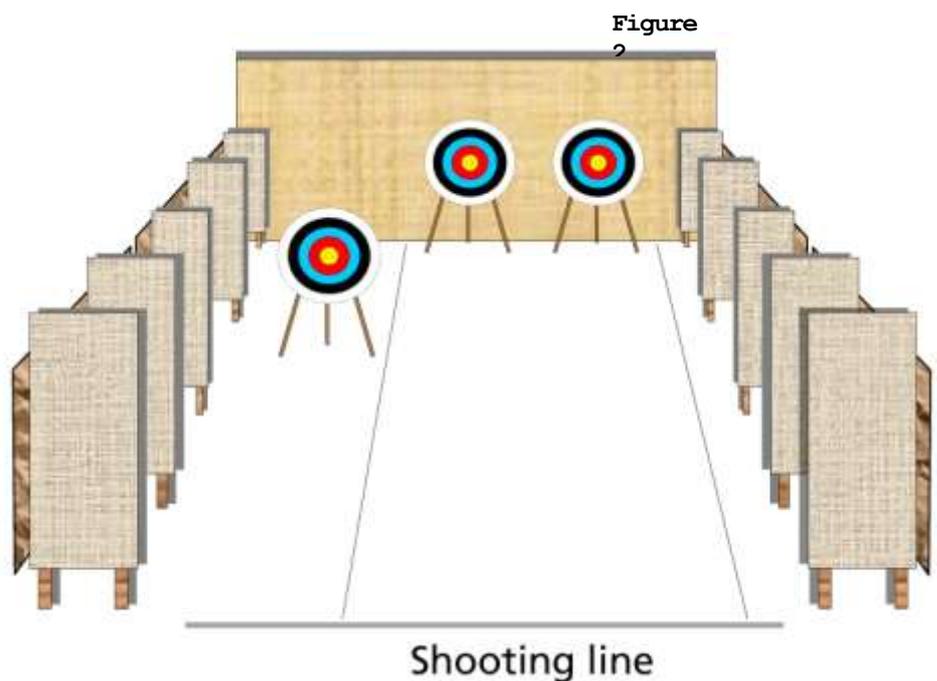
When shooting indoors the safety area beside the shooting range may be reduced by using lateral barriers made from an arrow penetration resistant material.

These vertical barriers are required also in cases where a steel construction could be the cause of arrows being damaged or bouncing back toward the shooting line.

On an outdoor range, when shooting a distance more than 25m, these lateral barriers are less

appropriate. They cover the free sight area but can not prevent unauthorised people from entering the range through the spaces between the barriers. In an indoor facility lateral barriers can be combined with vertical barriers, thus reducing the possibility of people inadvertently walking

between the vertical barriers. See figure 2.



## Accommodating demonstrations or Come-and-try:

For Come-and-Try activities we use slightly different recommendations than for the more professional archery practice. This paradox can be explained by the fact that the distance of shooting in Come-and-Try situations is at most 10 metres and the bows being used should be less than 20lb draw weight; moreover a Come-and-Try activity is supposed to be held with an instructor available for each participant on the shooting line. Nevertheless, these lightweight bows can still project an arrow over a very long distance and the overshoot and exclusion areas must be appropriate to the prevailing conditions and equipment to ensure complete safety.



It is mandatory that a good visible shooting line is used, and 5 metres behind this there must be a waiting line just as on a regular archery range. The people waiting to shoot must stay behind this line until they are called to come forward to the shooting line to perform. There should also be another line/barrier demarcating the “field of play” and the spectator area. For a Come-and-Try accommodation the arrow stop behind the target should be exceptionally high. Novices have the habit to raise their bow arm during release, thus causing the arrow to pass high above the target. An experienced instructor will prepare for this and may even hold the bow slightly lower than the archer’s hand in order to prevent the first shot missing the target.

## Field archery:

The discipline of field archery differs from target archery in the sense that the field of play has many different target lanes spread out over the natural terrain.

- The shooting lanes must be set so that any arrows that miss the target will not travel into areas that could be populated with other archers or spectators.
- Targets should not be placed on top of a rise where an arrow that misses the target can travel to an area that is not readily in view of the archer when they are standing in the shooting location.
- The course must have safe paths to allow the officials and working staff to be able to move around the field of play with safety.
- Only those persons who have been given permission will be allowed on the field of play when shooting is taking place, and they must keep to the safe paths at all times.
- All of the target face must be visible to the archer when standing on the shooting location.

Field archery offers wonderful opportunities for archery, when there is no level terrain available.

To start field archery the archer should have some moderate experience of shooting at a close target set on level ground.

Field archery clubs should have a safe and well defined practice area.



### Some final remarks:

Very few archery clubs have access to an archery field with a capacity that is big enough to host a national or international archery event. In such incidental cases a soccer or rugby field or something similar can be used. In all cases the rules for safety have to be rigidly obeyed.

## Further reading:

We used among others the following literature.

1. FITA rule book
2. Rules of Shooting, Archery GB

## Glossary:

**Buffer lane** Strip of land beside the field of play to keep spectators at a safe distance.

**Frontal plane** Anatomic notion. Vertical plane corresponding with the view of an observer facing the front of a person standing straight (in anatomic stance).

**Shooting plane** Vertical plane through target point and zero point. When shooting simultaneously from a shooting line, each archer has a unique zero point and therefore there is a shooting plane for each of them

**Target lane** Accommodation for at most three archers to shoot simultaneously from one and the same shooting line at one target butt

**Target point** Intended point of hitting the target



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