

# Ladder Rules

18th Board



E.S.H. Da Vinci  
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## Introduction

The **Ladder** Competition (**Ladder**) for which this document presents the rules is a long standing tradition at E.S.H. Da Vinci. Often **Scores** are shot in small groups, offering opportunities for socializing and for new members to get to know people who have been shooting for a long time. The intent of the **Ladder** is to provide a competition element to normal trainings. Everyone can compete with other archers at their own level, within their rung, as well as reference their own level by the level of the best archers in the association. The **Ladder** is cross-discipline and cross-generational way for archers to compete with one another.

The rules of the **Ladder** are designed to accomodate this. The rules as presented in this document were first implemented by the 16th board of E.S.H. Da Vinci. Many implementation details were worked out by Jan Ebberts, Chairman of the 15th Board, and Jesse Pasterkamp, Secretary of the 18th Board and member of the CommunicaCie. These details were worked out so the rules could be implemented in the **Ladder App**, an application intended to make it easier to maintain the Ladder. The source code of this **Ladder App**, which is implemented in Python and Flask for the tech-savvy readers, is available upon request from the CommunicaCie.

For anyone who just wants to see the results of the Ladder, just go to the appropriate page on the association's website to see an up-to-date standing. Results are processed as quickly as possible to encourage competition even within rounds.

The most important goal of the **Ladder** is to provide a fun way to get into competition shooting, so don't forget to enjoy the shooting!

- The 18th Board

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## Contents

	<b>1 Practical Regulations</b>	<b>4</b>
	1.1 Participation . . . . .	4
30	1.2 Competition . . . . .	4
	1.3 Scores . . . . .	5
	1.4 External Competition Scores . . . . .	6
	1.5 General . . . . .	7
	<b>2 Rulesets 16th Board</b>	<b>7</b>
35	2.1 Normal Round . . . . .	7
	2.1.1 Score Requirements . . . . .	7
	2.1.2 Ladder Calculation Steps . . . . .	8
	2.2 Setsystem Round . . . . .	8
	2.3 Score Corrections . . . . .	9
40	<b>3 Scorers</b>	<b>9</b>
	3.1 Default Scorer . . . . .	9
	3.2 Corrected Barebow & Traditional Scorers . . . . .	9
	3.2.1 Traditional Discipline . . . . .	10
	3.2.2 Barebow Discipline . . . . .	10
45	3.3 Corrected Compound Scorer . . . . .	10
	<b>4 Definitions</b>	<b>10</b>



## 1 Practical Regulations

This section explains practical regulations for participation in the **Ladder**, such as what **Scores** are accepted for entry. These are important for everyone who wishes to participate.

### 50 1.1 Participation

1. Participation to the **Ladder** is open for every Member and Recreant at E.S.H. Da Vinci who has been either 1) determined to be qualified to shoot by the Board or 2) has finished the Beginners' Course.
2. The following disciplines are recognized in the **Ladder**: Recurve, Barebow, Traditional and Compound. Any archer shooting outside of the usual qualifiers for such disciplines should ask the **Competition Manager** on how to submit entries.
3. **Scores** of all disciplines are entered for the same **Ladder**. Participants are allowed to shoot different **Scores** with different disciplines.
4. Participation is automatic at the hand-in of an accepted **Score** to **Competition Manager**.

### 60 1.2 Competition

1. The **Ladder** consists of multiple rounds. Each **Round** is governed by a **Ruleset**, which are described in detail Section 2.
2. Each **Round** spans at least two calendar weeks or at least 16 hours of **Shooting Time**, whichever results in a shorter **Round**.
3. Every **Round** is announced by the **Competition Manager** at least one week in advance of the start of the **Round**, unless special permission is given by a Board member to make an exception to this rule.
4. For each **Round** every participating archer must hand in a score. Not handing in a **Score** for a **Round** has consequences described by the **Round's Ruleset**.
5. Only a single **Score** can be entered for the **Ladder** per continuous **Shooting Time** period, except when the **Ruleset** specifies otherwise. In the case a **Score** is declared invalid, entering a second **Score** is not allowed for that period. In the case a **Score** is declared void, the **Score** is retroactively considered to never have been recorded.
6. A **Score** may only be recorded for the **Ladder** in the presence of a **Verifier**, who themselves are allowed to participate in the **Ladder** and are neither the archer nor the opponent.





7. The **Verifier** checks the **Score** shot by the archer according to the rules applicable at archery competitions.
8. The intent of the archer, and optionally their opponent, to shoot a **Score** to be entered into the **Ladder** must be announced to the **Verifier** before they shoot any arrows recorded in that **Score**. After the declaration of intent all subsequently shot arrows up until the number set forth in the **Ruleset** of the **Round** during which the **Score** is shot must be recorded in the **Score**.
9. If any participating party takes a **Break** during the shooting of the **Score**, the score is declared invalid. In the case of a **Score** with an opponent, the **Ruleset** defines the consequences.
10. If any participating party is forced to stop shooting a **Score** due to material failure or a different factor outside of their control, the **Competition Manager** decides whether the **Score** is declared or invalid or whether it is declared void.
11. **Rulesets** may define special consequences for invalid **Scores**.

## 1.3 Scores

**Scores** are accepted for entry in the **Ladder** if and only if they comply with the following regulations.

1. **Scores** must be written on a special scoring card, which are made available by the Board. The original scoring card must be handed in to the **Competition Manager** or, if they are not available during **Shooting Time**, to a Board Member.
2. The format in which a **Score** must be recorded is set forth in the **Ruleset** of the **Round**.
3. Unless special permission for the whole duration of a **Round** is given by the **Competition Manager**, **Scores** may only be entered if they are shot in an indoor setting, at a shooting distance of 18m and on a target face with a size of 40cm. With permission, **Scores** may also be entered if they are shot in an outdoor setting.
  - (a) **Scores** shot within the Compound discipline must be shot on a so-called Dutch Target Face in cases for which a 40cm Target Face is required.
4. For **Scores** shot in an outdoor setting, the following target face sizes are acceptable:

Distance [m]	Target Face Size [cm]
18	40
30	80
50	80
70	122
90	122

5. All **Scores** entered must at least list the following information:



(a) **Identifiable name**

(b) Depending on the **Ruleset**: **Identifiable Name** of the opponent

(c) Date

(d) Discipline (One of: Recurve, Barebow, Traditional, Compound)

(e) Signature of the archer

(f) Signature of a **Verifier**

(g) A value indicating the impact of each shot arrow on the result of the **Score**

6. If a **Score** is shot in an outdoor setting, the following additional information must be listed on the **Score** paper:

(a) Distance to the target

(b) Target face size

7. Additional rules apply to the acceptance of **Scores** shot for an **External Competition** into the **Ladder** as described in Section 1.4.

8. Additional rules for the scores may be specified by the **Ruleset**.

9. In the case of incomplete or incorrect information on an entered score, the information may only be added to the **Score** in the presence of the **Competition Manager** or a Board Member, if they deem it acceptable to do so.

10. The **Competition Manager** is allowed to reject scores, even when previously accepted by Board Members, if they do not comply with the Regulations set forth in this Section.

11. **Scores** must be handed in before the end of the **Round** during which they are shot. In case **Scores** are handed in to a Board Member and they cannot deliver the **Scores** to the **Competition Manager** before the end of the **Round**, the **Competition Manager** must accept these **Scores** up until the end of the succeeding **Round**.

## 1.4 External Competition Scores

Scores shot and accepted for entry in an **External Competition** are accepted for the **Ladder** subject to the following regulations:

1. The setting of the **External Competition** must comply with the regulations set out in 1.3.

2. **Scores** shot at **External Competitions** are exempt from the requirement stated in 1.2.8.

3. **Rulesets** may add additional requirements for **Scores** shot at **External Competitions** or exclude them entirely.



- 135 4. In such a case that for an **External Competition** a **Score** consists of a number of arrows larger than the number of arrows specified by the **Ruleset**, the highest scoring contiguous selection of arrows from the **Score** will be accepted, subject to number of arrows required being a divisor of the starting index of the contiguous selection. In practical terms, this means that for a 60-arrow score of an external competition, the highest scoring of either the first or the last 30 arrows are transferred to a score for the Ladder.

## 1.5 General

- 140 1. The Regulations in this document may be amended by the **Competition Manager** after discussion with the Board and public announcement in the **Info App** and to go into effect at the start of the next **Round**.
2. Upon request from any participant, the **Competition Manager** will supply the participant with all data required to verify whether the **Ladder** results have been determined correctly.
- 145 3. In such an event that **Competition Manager** is no longer able to carry out the tasks set forth in these regulations, a new **Competition Manager** is to be appointed by the Board before the start of the next **Round** or two weeks after the Board is given notice, whichever is a longer period of time.

## 2 Rulesets 16th Board

### 2.1 Normal Round

#### 2.1.1 Score Requirements

- 150 1. **Scores** must be shot by individual archers in the format of 10 sets of 3 arrows each, for a total of 30 arrows.
2. Each arrow has points assigned on a 0-10 scale, with a miss being marked as 'M' and an X being marked as 'X'.
- 155 (a) **Scores** shot within the Compound discipline must be denoted differently. Whereas both the 'X' and 10-rings count as a 10 for other disciplines, for the Compound discipline only the 'X'-ring counts as a 10. Therefore on **Scores** shot within the Compound discipline should denote arrows within the 'X'-ring as 10 and arrows shot within the 10-ring as 9'.
- 160 (b) The **Competition Manager** may exempt a **Score** from these rules if the notation of the **Score** is wrong in a consistent manner and a replacement **Score** can be formulated while in the presence of the **Competition Manager**, such that the replacement **Score** accurately reflects the **Score** shot by the archer.



## 2.1.2 Ladder Calculation Steps

1. Find the highest **Score** for each participant entered within the time frame of the round and discard all others.
2. If this is the first round:
  - (a) Place all participants in the Ladder, from the highest-scoring first to the lowest-scoring last.
  - (b) Apply tie breaks by considering shoot-off scores.
3. If this is not the first round:
  - (a) Each participant in the **Ladder** for which no **Score** has been entered for this round is moved to the bottom of their rung.
  - (b) Insert participants for which there is no entry in the **Ladder** yet at the bottom of the Ladder, the highest-scoring first and the lowest-scoring last.
  - (c) Sort each rung by the **Scores** of the respective participants within the rungs. The highest-scoring participant comes in at the first place in the rung, the second-highest second and so on.
  - (d) Apply tie breaks by considering shoot-off scores.
  - (e) Promote, starting from the bottom of the Ladder, participants that are in the first place of their respective rung for the second round in a row *and* that have a higher **Score** than the lowest-scoring participant in the rung above them:
    - i. The promotion is done by swapping the promoting participant with the participant in the last place of the rung above.
    - ii. If the participant that was demoted did not enter a **Score** for the round, the demoted participant is placed at the bottom of their new rung.
  - (f) Apply demotion rules. For each participant, starting from the bottom of the Ladder, that did not enter a valid **Score** for this round:
    - i. If this is the first consecutive round for which they did not enter a valid score, drop the participant to the bottom of the rung below the one they are currently in *except* if they have already dropped a rung due to another participant being promoted.
    - ii. If this is the second consecutive round for which they did not enter a valid score, drop the participant to the bottom of the Ladder.
    - iii. If this is the third consecutive round for which they did not enter a valid score, remove the participant from the Ladder.

## 2.2 Setsystem Round

**TODO:** Describe the ruleset in more detail.





The Setsystem Round is intended to add a direct competitive element by allowing Archers to shoot direct setsystem matches against one another. For the first one-third of the timespan of the round, only matches between participants within the same rung are considered. For the second part, any match is considered, as long as the difference between the two participants is no more than three spaces. If the lower-placed participant wins the match, the two participants swap positions. At the end of the round, all archers who have not shot a **Score** are demoted following the same procedure as for the 16th Board Normal Round **Ruleset**, as described in ??3f.

## 2.3 Score Corrections

The total number of points accumulated by a **Score** is corrected based upon the discipline within which the **Score** was shot. Details of how the scores are corrected are given in Section 3. For this **Ruleset**, the following Discipline-Scorer map applies:

Discipline	Scorer
Recurve	Default
Barebow	Corrected Barebow Scorer
Traditional	Corrected Barebow Scorer
Compound	Corrected Compound Scorer

## 3 Scorers

### 3.1 Default Scorer

The default scorer performs normal accumulation of the points scored by each arrow. X's and misses are recorded separately.

### 3.2 Corrected Barebow & Traditional Scorers

Barebow and Traditional discipline archers tend to score lower than their Recurve-shooting counterparts. Hence the **Scores** shot within these two disciplines are boosted by this scorer. This is done according to the formula:

$$P_{\text{assigned}} = \max \left[ \min \left[ (1 + F) - \left( P_{\text{accumulated}} - \frac{2}{3} \cdot P_{\text{achievable}} \right) \cdot \frac{F}{\frac{1}{3} P_{\text{achievable}}}, 1 + F \right], 1 \right] \cdot P_{\text{accumulated}},$$

where  $P_{\text{assigned}}$  is the number of points assigned for the **Score**,  $P_{\text{accumulated}}$  is the number of points calculated by the Default Scorer,  $P_{\text{achievable}}$  is the maximum number of points that can be obtained with the number of arrows shot ( $10 \cdot N_{\text{arrows}}$ ) and  $F$  is the correction factor. Non-integer results are rounded to the nearest integer.

# Ladder Rules

18th Board



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## 3.2.1 Traditional Discipline

For the Traditional discipline, the correction factor  $F$  is selected to be 0.2. For a normal score consisting of 30 arrows this yields the effective formula

$$P_{\text{assigned}} = \max [\min [1.2 - (P_{\text{accumulated}} - 100) \cdot 0.002, 1.2] 1] \cdot P_{\text{accumulated}}.$$

## 3.2.2 Barebow Discipline

For the Barebow discipline, the correction factor  $F$  is selected to be 0.15. This number was selected to be slightly lower than the correction factor for the Traditional discipline to reflect the differences between the two disciplines while at the same time maintaining a fair level of competitiveness between Recurve, Barebow and Traditional discipline archers.

## 3.3 Corrected Compound Scorer

Applies only to scores shot within the Compound discipline on Dutch targets. The following point map applies: This inherently means that the number of X's shot by a Compound archer is always zero. Any

Ring on Target	Notation	Points Scored
X	10	10
10	9'	9
9	9	8
8	8	8
7	7	7
6	6	6

number of points below 6 is a miss, as Dutch targets do not have rings for 5 or below.

## 4 Definitions

### Competition Manager

The person assigned by the Board to execute the **Ladder** and maintain the documentation.

### Identifiable Name

A name with which an archer can be uniquely identified within the E.S.H. Da Vinci association by the **Competition Manager**. Specifically, at least the first name is recorded, as well as the initials of the last name in case multiple members within the association carry the same first name as the archer in question.

### Info App

The WhatsApp group created by the Board for announcements.

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## Ladder

Ladder is short-hand for Ladder Competition, the name for the internal competition for which the rules are described in this document.

## Ladder App

The application developed by the CommunicaCie to make the administration of the **Ladder** easier.

## Round

A Round is a period in the execution of the **Ladder** for which **Scores** can be entered and a single **Ruleset** is applied.

## Ruleset

Rulesets govern how archers are moved up and down within the ranking of the **Ladder** based on their submitted scores.

## Score

Either a physical or a digital representation of the number of points accumulated by a set number of arrows.

## Shooting Time

Time during which archers are allowed to shoot at the E.S.H. Da Vinci accomodation. This includes Free Training and Training with Trainer.