



TRACE 10

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TRACE 10

I. FUNCTIONALITY

The TRACE sensor in combination of a computer (see System requirements) and the software as a wired, optical-acoustic shooting training system. The camera captures a round target image in a known size and distance. The built-in sensor detects the sound when the trigger of a weapon is operated. This may possibly be the muzzle blast during a live shot (with ammunition). The sensor is mounted on the weapon (ideally on the barrel or air cylinder). All the movements during the shot are recorded by the camera. These data can be analyzed in various ways during or after the training and played back as often as you like.

II. SYSTEM REQUIREMENTS

- PC or laptop with Windows 7, 8 or 10 operating system
- Usage of tablet is at your own risk, currently no experience with handheld devices
- Interface USB 2.0 or higher to connect the TRACE sensor
- Mouse with scroll wheel (simplifies operability)

III. USAGE OF TRACE SHOOTING TRAINING SYSTEM

It is recommended to use the TRACE sensor on airguns (rifle and pistol) to record training shots in both the live and the dry shot to analyze the targeting process and the time course of a training session. It can be used in open and closed locations, both alone and among other shooters on the shooting range. The measuring distance starts at 3 meters and is infinitely adjustable up to 50 meters. When using the sensor on laser rifle/ pistol suitable for under 12-year-olds.

Note:

The use of firearms with cartridge ammunition (caliber larger than .22) or muzzleloaders is currently only partially recommended. Current sensor mounting is not designed for gun systems with perceptible recoil or high mass moving parts (e.g., pistol slide) during live firing.

Usage on such weapons is at your own risk.



IV. SOFTWARE INSTALLATION AND ACTIVATION

- 1. Download the TRACE application from www.traceshooting.com/get (package volume 40 MB, installed volume 200 MB)*
- 2. Run the installer and select the setup language*
- 3. Once the installation process is complete, start the application*
- 4. On the welcome screen, select 'I have a code!'*
- 5. Copy the "request code" generated by the application and send it by e-mail to the address hello@traceshooting.com.*
- 6. In return you will receive your "activation code" by e-mail to the registered address. Please note that the activation process can take some time, especially during weekends.*
- 7. Copy and paste the 'Activation Code' into the appropriate field in the TRACE software and select 'Activate'.*
- 8. Your TRACE application is now activated and ready to use.*

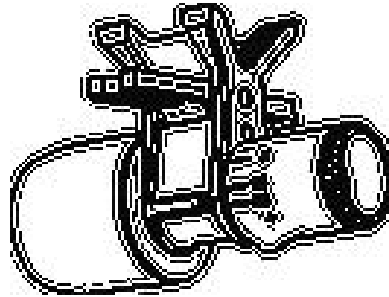
Note:

The TRACE software can also be used in View-only mode, so you can share your training files with other shooters and/or coaches who do not need to operate the system. In this case the application can be used without activating it.

V. MOUNTING, ADJUSTMENT OF CAMERA AND CALIBRATION

1.1. Mount the TRACE sensor on the weapon by using the metal strap. Tighten the knob screw firmly so that the sensor remains fixed in place during use.

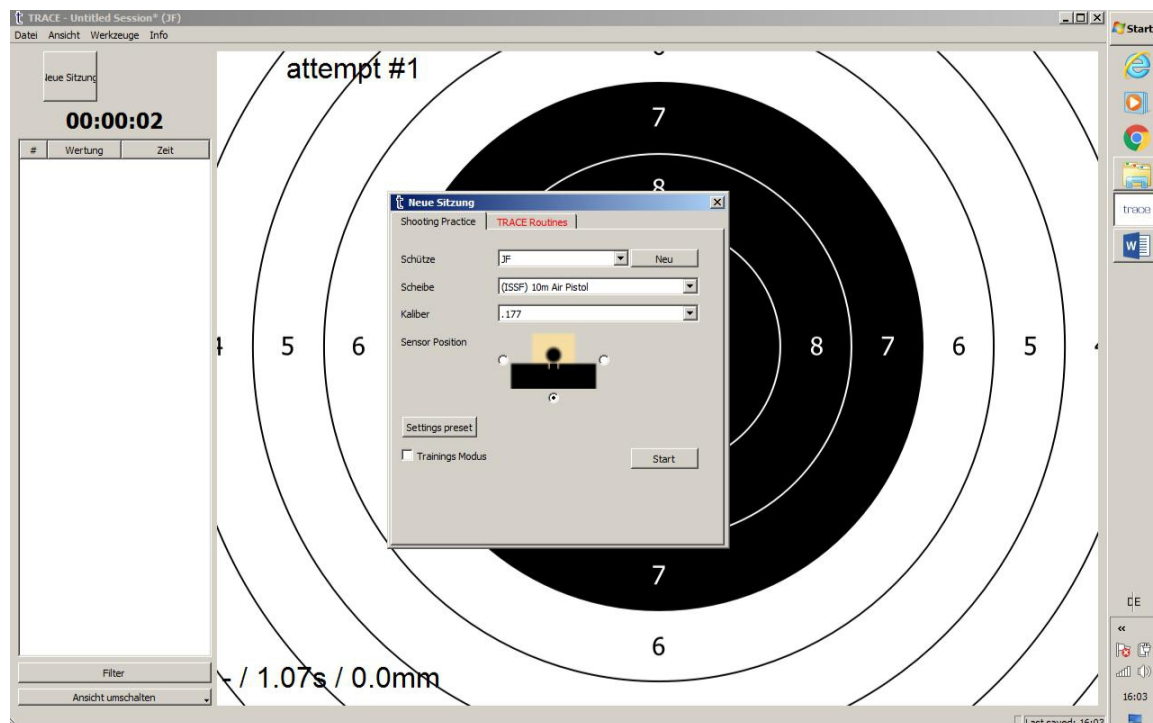
Note: The sensor can be mounted below or on the left or right side of the weapon.



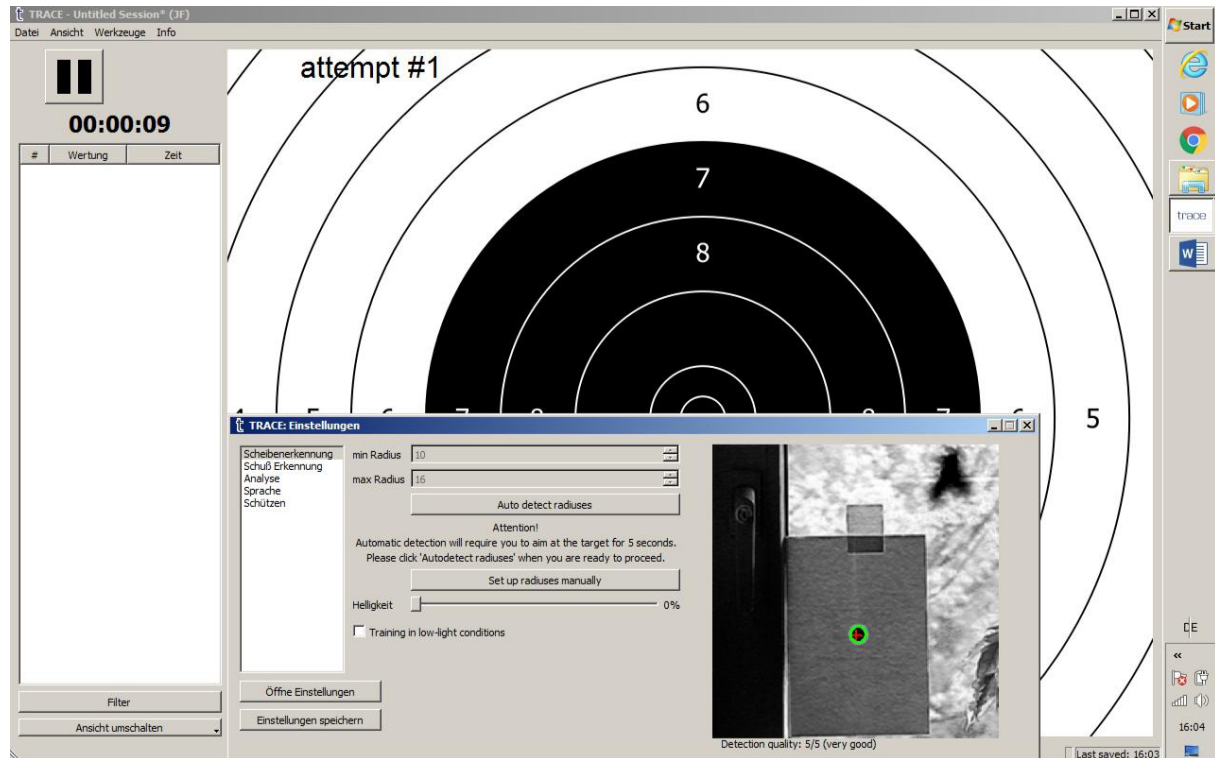
3. Connect the sensor cable to the USB 2.0 port on your computer.

4. Start the licensed TRACE application and select 'New training session'.

5. Specify: 'User', 'Target', 'Caliber', 'Sensor Position' (left, right or under) and select 'Start'.



6. 6. Under the "View" tab, select the 'Settings' to make the target detection and the subsequent shotcalibration. The following menu appears including the live image of the camera:

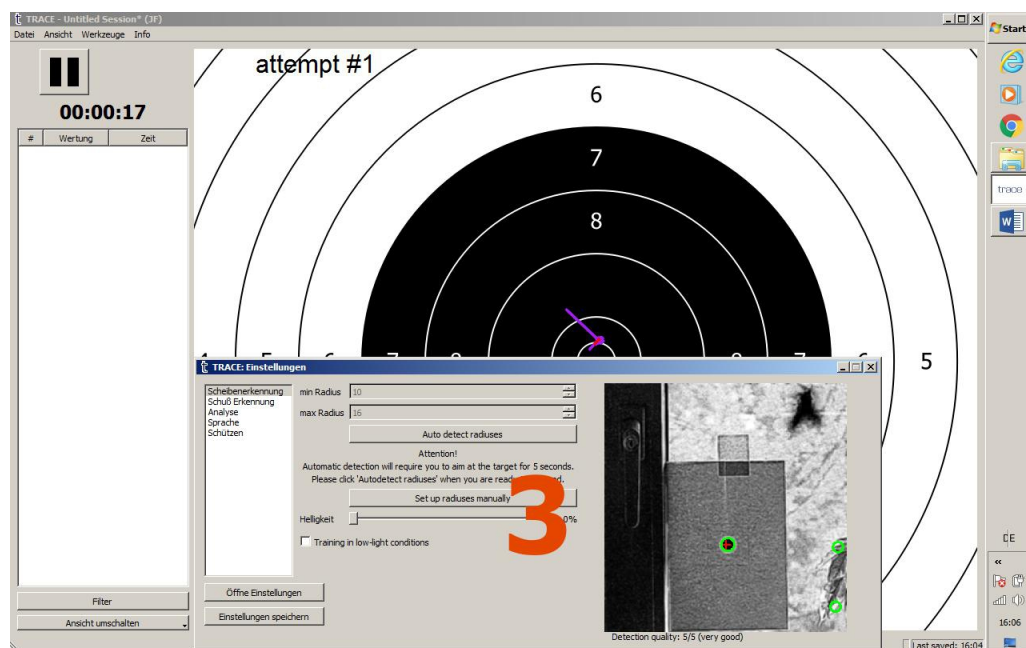


Please check the distance adjustments of the lens as well as the brightness settings, so that the target image is clear and sharp.

7. The following procedure is supported by sound. Make sure that your computer has sound on.

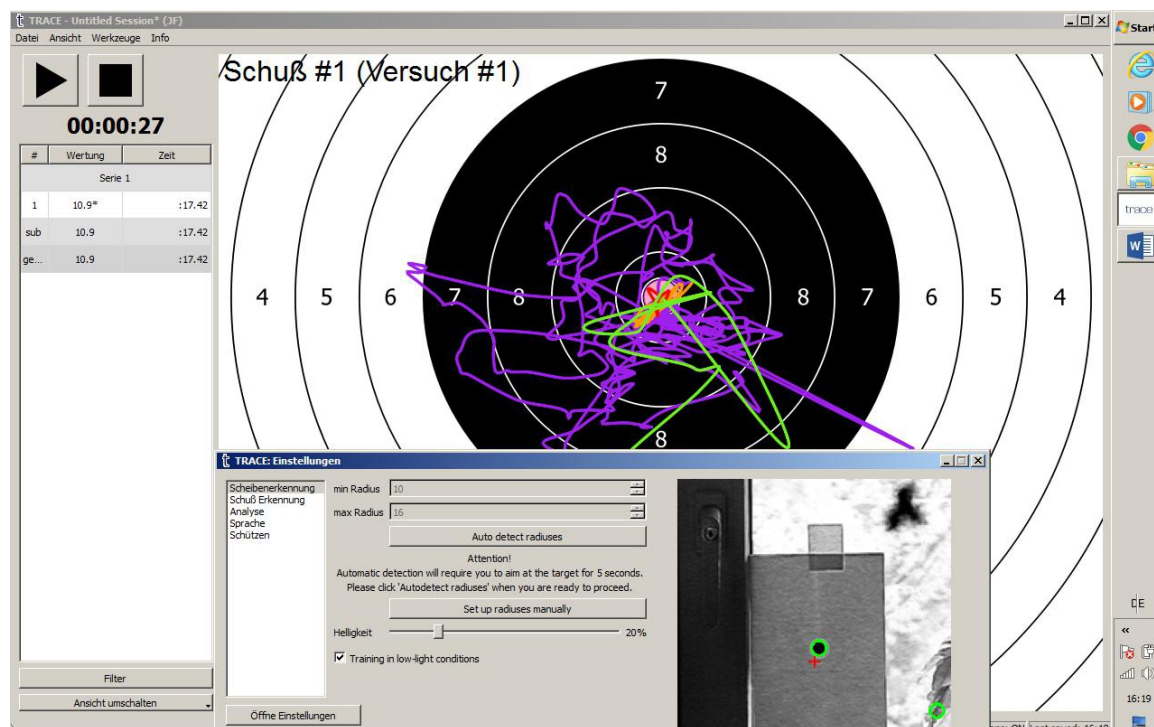
8. Point the sensor to the desired target.

9. Press the "Auto Detect radiuses" button and a five-second count-down starts, during which you are aiming to the desired target.

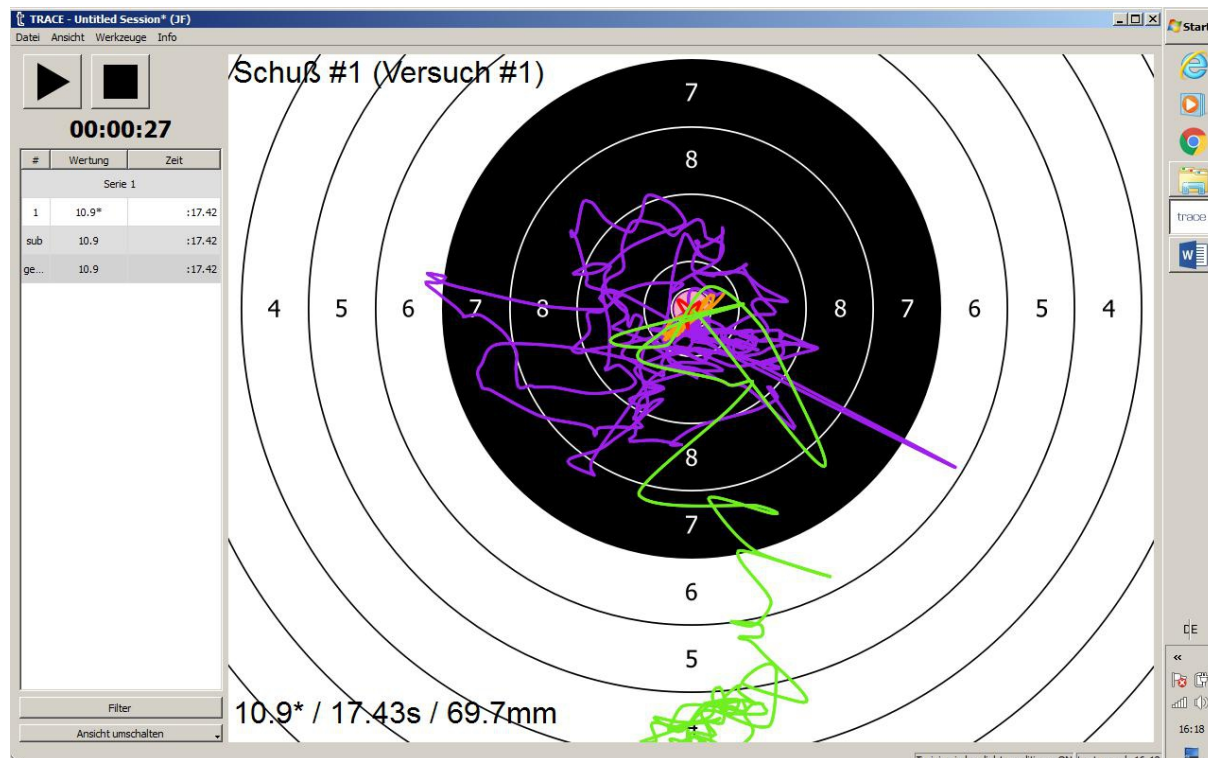


10. Countdown audio signal continues to sound. Data has been collected during which the target process must be maintained. After approx. five seconds, a confirmation tone sounds indicating that automatic target detection has been done. The weapon can be lowered. A shot is not required here.

11. Following the target detection phase next is calibration shot. Load your weapon in Dry Fire or Live Fire mode (without or with ammunition) and make a shot to the target.



12. The system will automatically place the first shot into the center of the target with a score 10.9.



13. You can now adjust this hit (live-fire shot) by holding down the 'Ctrl' and the left mouse button and drag-drop the shot to the desired position.

14. If the calibration shot is not displayed, you can use the mouse wheel or the "View" → "Zoom" button in the main menu to zoom in on the pane view so that the outside areas are also visible. If there is no indication, the automatic target detection has failed and the system must be set manually. Please read the following section.



VI. MANUAL SET-UP

Use "Save Preset" to save all the adjustments, e.g. Target detection, light condition, shot detection, user names.

a. Target detection

1. From the menu bar, select View >> Settings >> Target Detection to access the Target Detection Settings and camera view.

2. Point the TRACE sensor at the target.

3. Adjust the lens focus by rotating the lens body in both directions until the image from the camera is sharp and clear.

Note: Use the distance markings on the right side of the sensors casing. The distance is marked in meters.

4. Adjust the 'Brightness' settings until the black target circle is clearly visible and in good contrast to the white area of the target. In good lighting conditions, the low light check box can be unchecked.

5. While aiming at the target with the sensor, increase the 'max radius' and reduce the "min radius" settings of the relevant target image, until you see a stable green circle, without flickering, around the black target.

Note: If several green circles are visible around other round bodies (e.g. home furnishings, lettering signs or similar), increase the 'min radius' or decrease the 'max radius', until only one green circle around the target is visible.

6. Check the 'Detection Quality' indicator under the camera view. The recognition quality should be 5/5 (very good) and the green circle should always be visible and steady at the edge of the black target circle.

7. Select 'Save Settings' to save the current settings for future sessions at this location.



b. Shot detection

1. Select "View" >> 'Settings' >> 'Shot Detection' in the menu bar to switch to shot detection settings.
2. Load your weapon in dry fire mode and make a shot. At the same time pay attention to the indicator 'Shot detected'.
3. If the indicator shows "yes", it means that the shot was detected.
4. If the indicator says "no", try reducing the threshold until the indicator shows "yes" and the shot is detected. For dry fire training in a quiet environment, a value of about 25 to 30 percent is usually a suitable setting.

Note: The lower the threshold percentage value is selected, the more sensitive the sensor is. The higher the value, the louder the trigger sound or the shot must be.

If the "Register off-target shots" check-box is activated, supposed triggering sounds (possibly charging or handling noises) could be interpreted as shot and thus recorded. If the button is deactivated, the system does not register a shot until the camera has acquired the target image. Please note that there are several potential target images (neighboring stands) in a shooting range. Special attention should be paid to a shooters who are using the system in prone position.

5. Take a few dry shots to make sure all your shots are detected.
6. Select 'Save Settings' to save the current settings for future sessions under these conditions.

Note: The sensor uses a built-in microphone to detect the triggering. For the best performance of the TRACE sensor connected to the computer, select 'Windows Control Panel' >> 'Hardware and Sound' >> 'Sound' >> 'Recording' and locate the 'USB Microphone', open the 'Properties' >> 'Levels' and make sure the microphone input is set to 100%.



c. Dry-fire training set-up

1. Once the system is in operation recording mode, make 3-5 shots at the target.
2. Hold down the 'Ctrl' + left mouse button and drag the group of virtual shots in the middle of the center of the target.

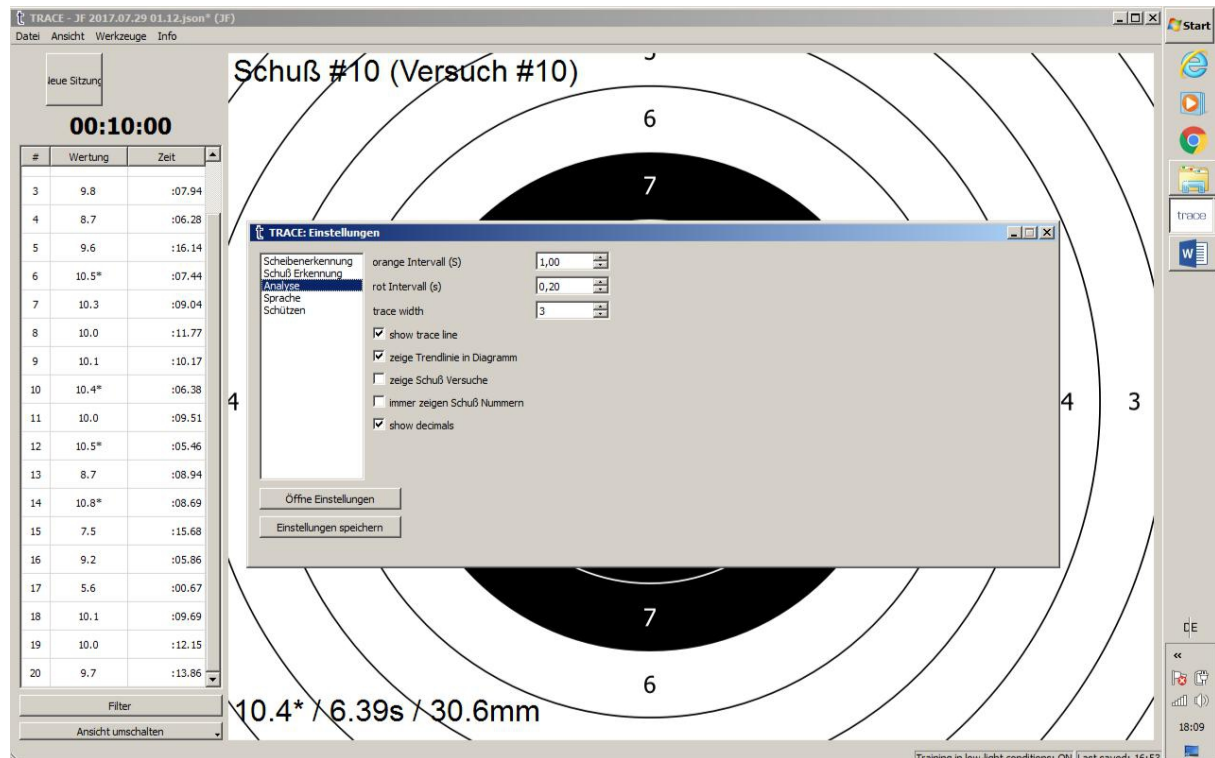
d. Life-fire training set-up

1. Once the system is up and running, make 3-5 shots at the target.
2. In the software menu, select 'View' >> 'Settings' >> 'Shot Detection' and set the parameter 'Time offset (s)'. Slowly increment this parameter until the pattern of virtual shots matches the pattern of real shots on the target. For compressed air weapons, a value between 0.015 to 0.045 is usually ideal. However, this varies depending on the weapon model and also on the computer used.
2. Once the patterns look similar, hold down the Ctrl + Left keys and drag/drop the group of virtual shots in place on the target.

Note: To get the best possible match between real shots and virtual shots, repeat the settings described above. Once you are satisfied with the results, select the "Save Settings" option to save the current settings for future training sessions with the same weapon.

e. Analysis

In the menu "Settings" → "Analysis" various aspects of the shot analysis can be adjusted to personal needs with different parameters.



The screenshot shows the TRACE software interface. On the left, there is a table with columns for shot number, value, and time. The main area displays a target diagram for 'Schuß #10 (Versuch #10)' with a score of 10.4* and a time of 6.39s. A settings dialog box titled 'TRACE: Einstellungen' is open, showing options for 'orange Intervall (s)', 'rot Intervall (s)', 'trace width', and checkboxes for 'show trace line', 'zeige Trendlinie in Diagramm', 'zeige Schuß Versuche', 'immer zeigen Schuß Nummern', and 'show decimals'. The 'orange Intervall (s)' is set to 1.00, 'rot Intervall (s)' is 0.20, and 'trace width' is 3. The 'show trace line' and 'show decimals' checkboxes are checked.

#	Wertung	Zeit
3	9.8	:07.94
4	8.7	:06.28
5	9.6	:16.14
6	10.5*	:07.44
7	10.3	:09.04
8	10.0	:11.77
9	10.1	:10.17
10	10.4*	:06.38
11	10.0	:09.51
12	10.5*	:05.46
13	8.7	:08.94
14	10.8*	:08.69
15	7.5	:15.68
16	9.2	:05.86
17	5.6	:00.67
18	10.1	:09.69
19	10.0	:12.15
20	9.7	:13.86

10.4* / 6.39s / 30.6mm

The time length of the orange and red trace sections can be changed (in seconds).

The thickness of the trace line is changeable according to personal requirements. Depending of discipline, caliber and distance, this can help to provide a better overview.

There are five selection fields:

- Display the trace line ("on" or "off")
- Show trendline on chart ("on" or "off")
- Show shot attempts ("on" or "off")
- Always show shot numbers ("on" or "off") (can also be temporarily displayed by holding the "ALT" key)
- Show decimals ("on" or "off")



f. Languages

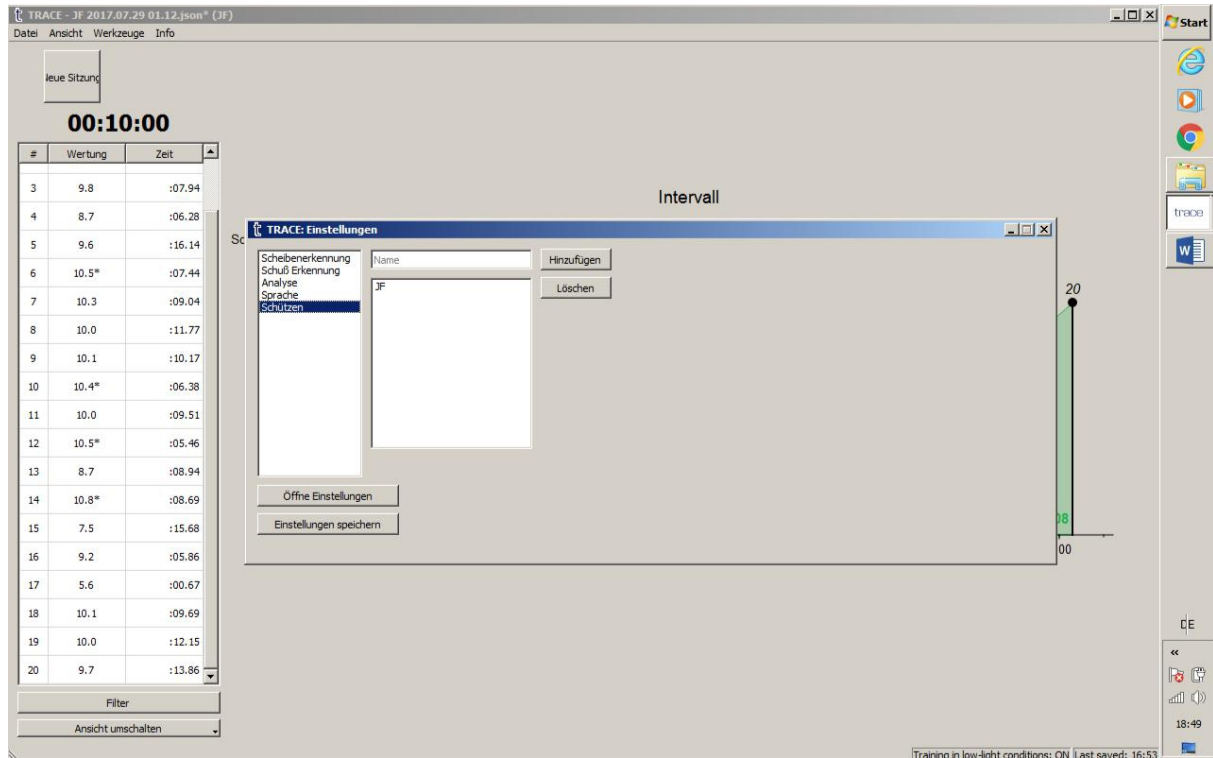
There is an option to change display language. This may be useful if e.g. at the first installation a wrong one was selected.

The screenshot shows the TRACE software interface. On the left, there is a table with columns for '#', 'Wertung', and 'Zeit'. The table contains 20 rows of data. Below the table are buttons for 'Filter' and 'Ansicht umschalten'. In the center, a dialog box titled 'TRACE: Einstellungen' is open, showing a list of languages: English, Danish, German, and Russian. The 'Sprache' option is selected. Below the list are buttons for 'Öffne Einstellungen' and 'Einstellungen speichern'. On the right, there is a vertical scale with a marker at 20 and a value of 08. The bottom status bar indicates 'Training in low-light conditions: ON' and 'Last saved: 16:53'.

#	Wertung	Zeit
3	9.8	:07.94
4	8.7	:06.28
5	9.6	:16.14
6	10.5*	:07.44
7	10.3	:09.04
8	10.0	:11.77
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12	10.5*	:05.46
13	8.7	:08.94
14	10.8*	:08.69
15	7.5	:15.68
16	9.2	:05.86
17	5.6	:00.67
18	10.1	:09.69
19	10.0	:12.15
20	9.7	:13.86

g. User profiles

By activating the area "Add" new users can be added. This could be for coaches when several shooters are using the system, to analyse their performance in long-term.



The screenshot shows the TRACE software interface. On the left, there is a table with columns for '#', 'Wertung', and 'Zeit'. The table contains 20 rows of data. In the center, there is a dialog box titled 'TRACE: Einstellungen' with a list of settings: 'Scheibenerkennung', 'Schuß-Erkennung', 'Analyse', 'Sprache', and 'Schützen'. The 'Schützen' field is currently empty. There are buttons for 'Hinzufügen', 'Löschen', 'Öffne Einstellungen', and 'Einstellungen speichern'. On the right, there is a vertical scale with a green bar and a black dot at the top, labeled '20' and '00'. The bottom right corner of the window shows the status bar with the text 'Training in low-light conditions: ON' and 'Last saved: 16:53'.

#	Wertung	Zeit
3	9.8	:07.94
4	8.7	:06.28
5	9.6	:16.14
6	10.5*	:07.44
7	10.3	:09.04
8	10.0	:11.77
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16	9.2	:05.86
17	5.6	:00.67
18	10.1	:09.69
19	10.0	:12.15
20	9.7	:13.86

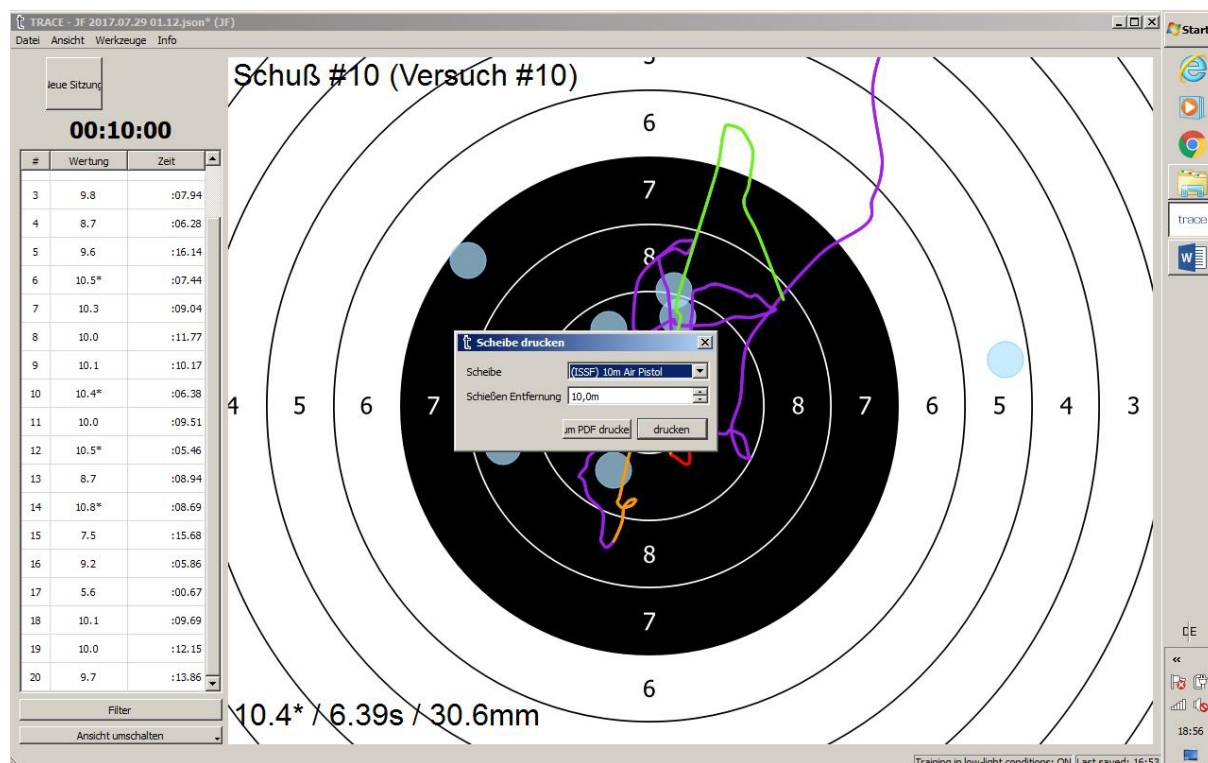
VII. TOOLS

a. Switch user

Switching to other user can be done via menu "Tools" ----> "Switch user". Select the new shooter here and confirm.

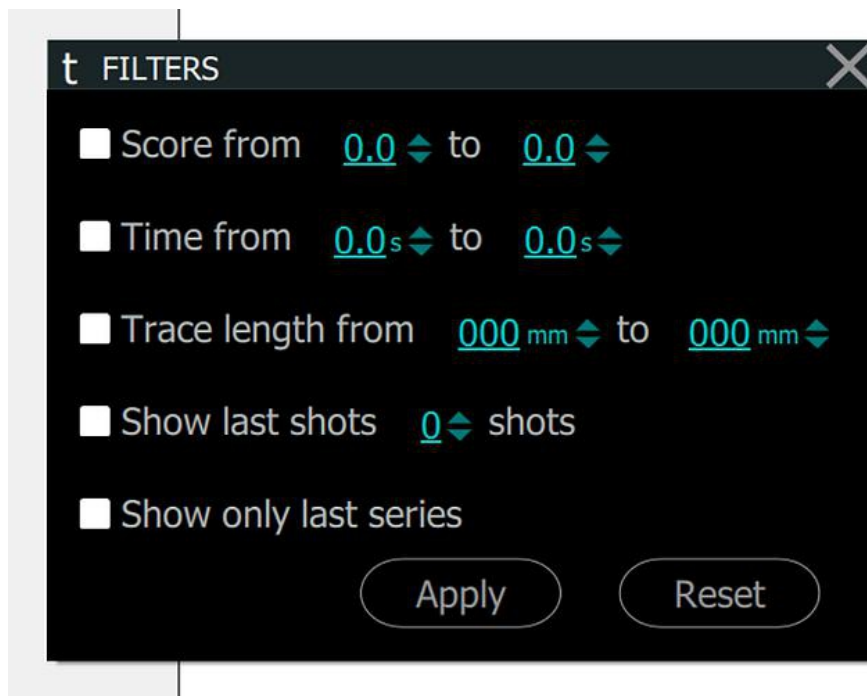
b. Print target

It opens a window with the possibility to select targets for various disciplines. In addition, desired distance can be entered and printout will be re-scaled according to selected distance. The printout can be made in a PDF file or printed out directly via a printer set up and connected as a Windows printer.



c. Filters

This function can be activated directly via the menu item "Tools" or also in the main screen on the left below the shot score display.



The following filters can be set:

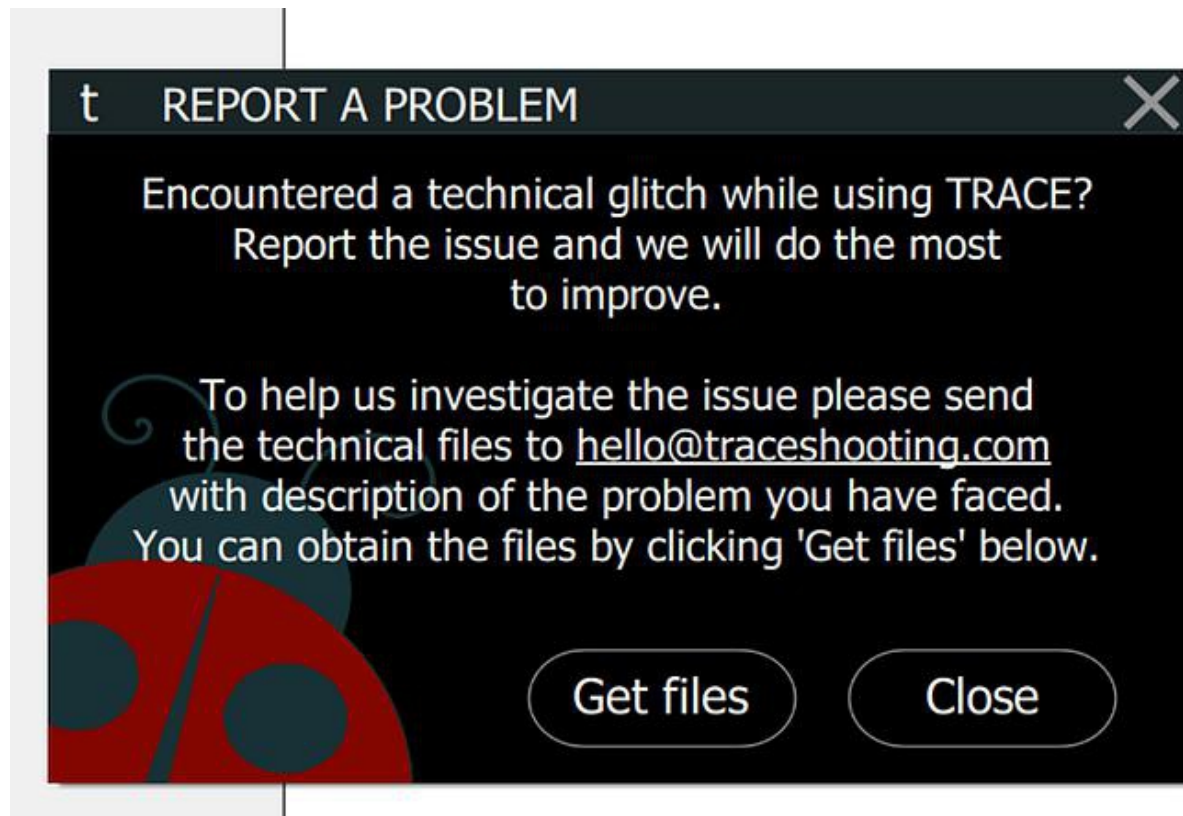
- Shot score results in decimals
- Time required to make a shot
- Trace length from/to
- Show last (selected number) of shots
- Show only last series

To select, activate the desired filter by clicking on the selection field, enter the range or value (separate decimal places with dots) and finally confirm with "Apply". Only the shots that are defined according to the filter will be displayed.

The removal of set filters can be done by pressing the "Reset" button and then "Apply".

VIII. INFO

a. Report a problem



This part of the program is for better analysis of occurring errors when using the TRACE software. It is possible to create a record of the current configuration exclusively from the TRACE software by pressing the "Get files" on the control panel. By doing this the file will be saved. When sending a message to hello@traceshooting.com attach the file and describe the problem briefly but clearly in the e-mail.

TRACE Team will solve the problem from this information and develop a solution for next software update.

IX. TRACE analysis

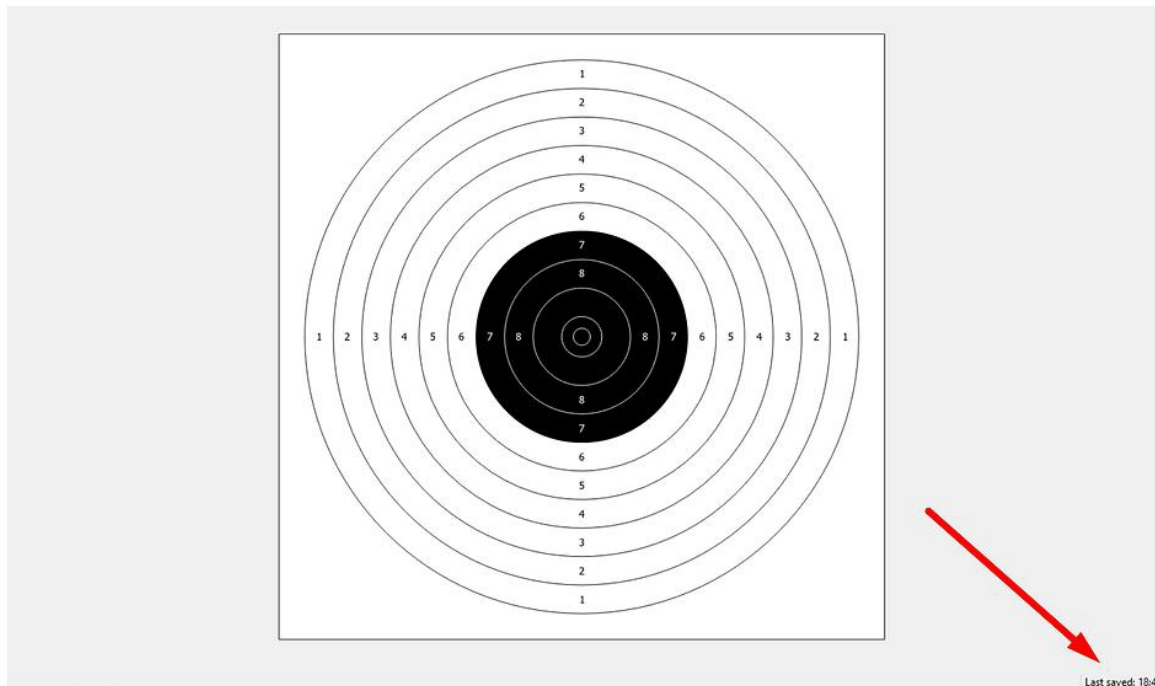
a. Saving the session data

The TRACE software offers you the most important tools to analyze your shooting performance. For this purpose, into software version v.1.2. (0823) every shot fired is automatically saved.

This is done in the directory:

Local Disk (C :) → User → "User Name" → My Documents → TrainingFiles

The time of the last automatic saving process is displayed on the main screen in the lower right corner. See the following illustration:



When the program is started, the "Load saved session" button can be used to load the automatically or manually stored training sessions for analysis.

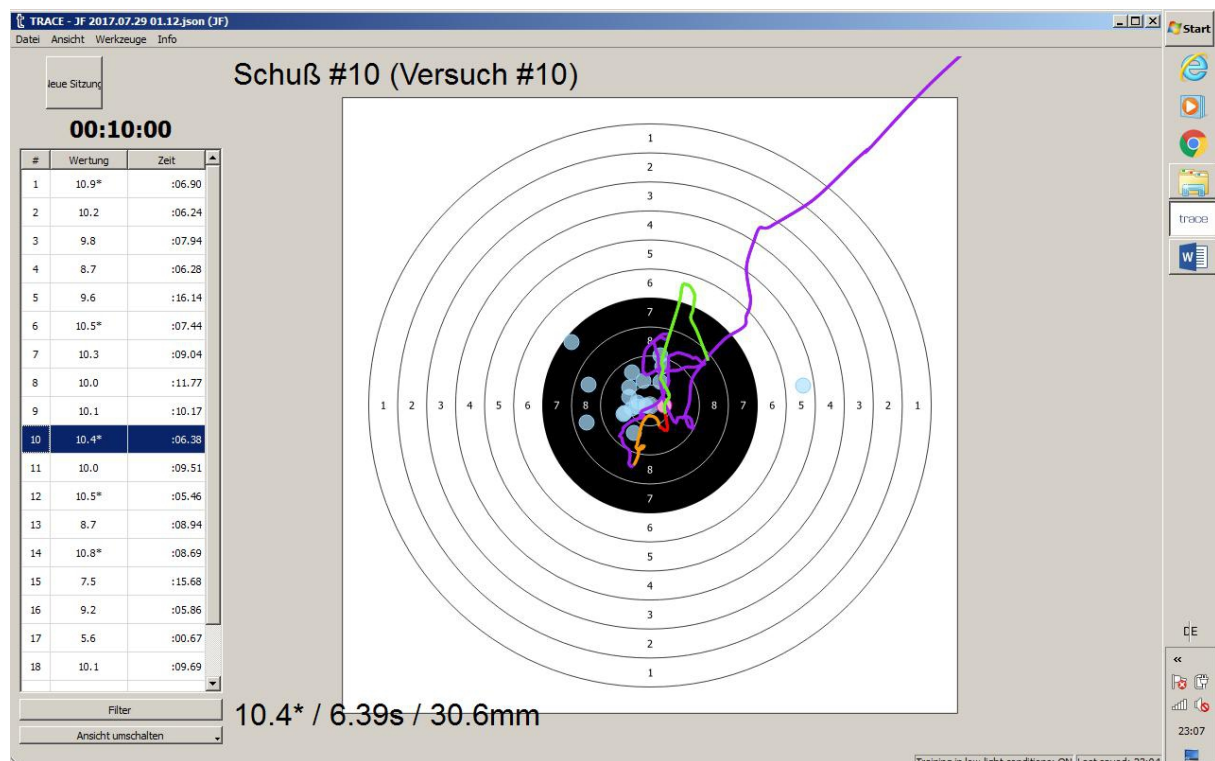
b. Shot phase analysis

With the TRACE software, you can use the adjustable time intervals to analyze specific phases of the target path of your shot.

1) From the menu bar, choose "View" >> "Settings" >> "Analysis" to find the settings for the "orange time interval" and the "red time interval".

Note: Intervals are shown as parts of trace line in different colors (see picture below).

2) You can adjust the length of each individual interval by changing the time values accordingly.



Note: Default values 1.00 for Orange is the target phase before the triggering. 0.2 for Red is the triggering phase of the shot.

In addition to the shot result and the time required to make a shot, the trace length is displayed in the lower left corner of the target image, starting from the change to orange till the firing point (Red end phase).

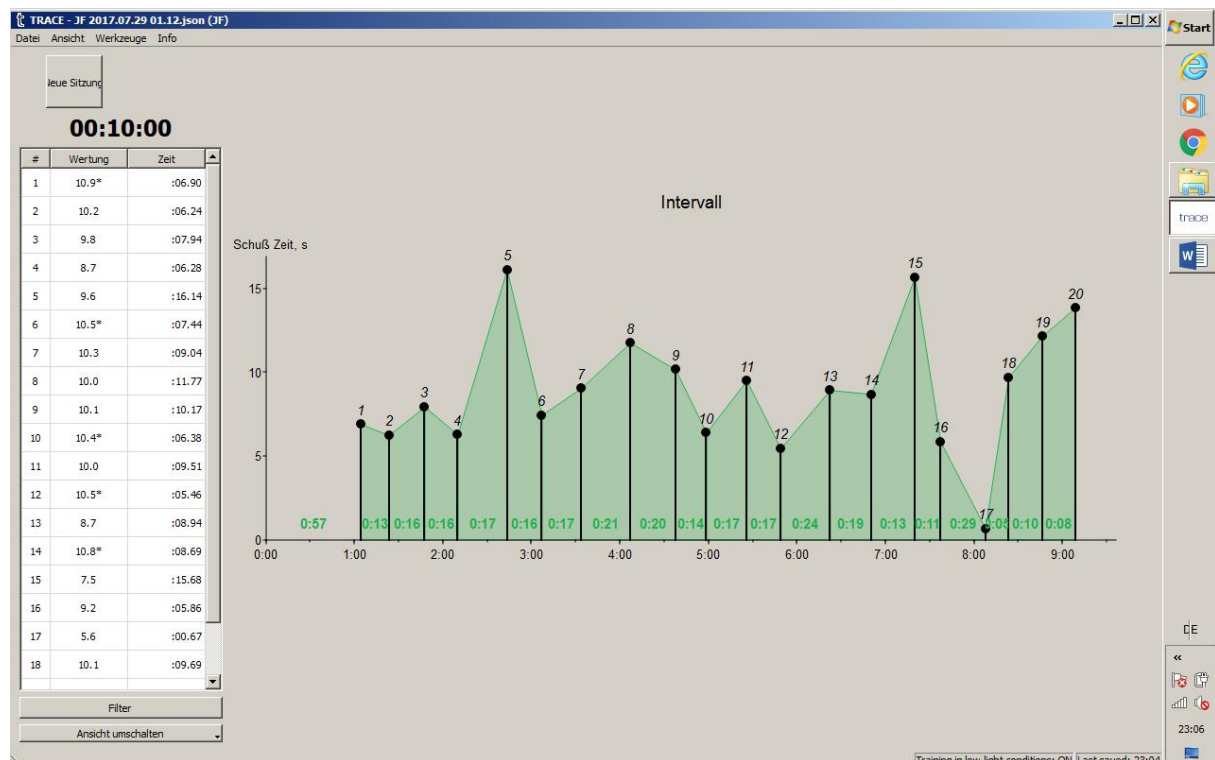
c. Time interval chart

Shows the aiming time and rest periods between shots and helps to evaluate shooting speed and firing rhythm.

To open the time interval chart:

1) 1) In the main TRACE window at the bottom left, select "Switch View" >> "Time / Interval Chart".

2) You can select "Disable diagram trend line" under "Settings" → "Analysis"





d. Coordination chart

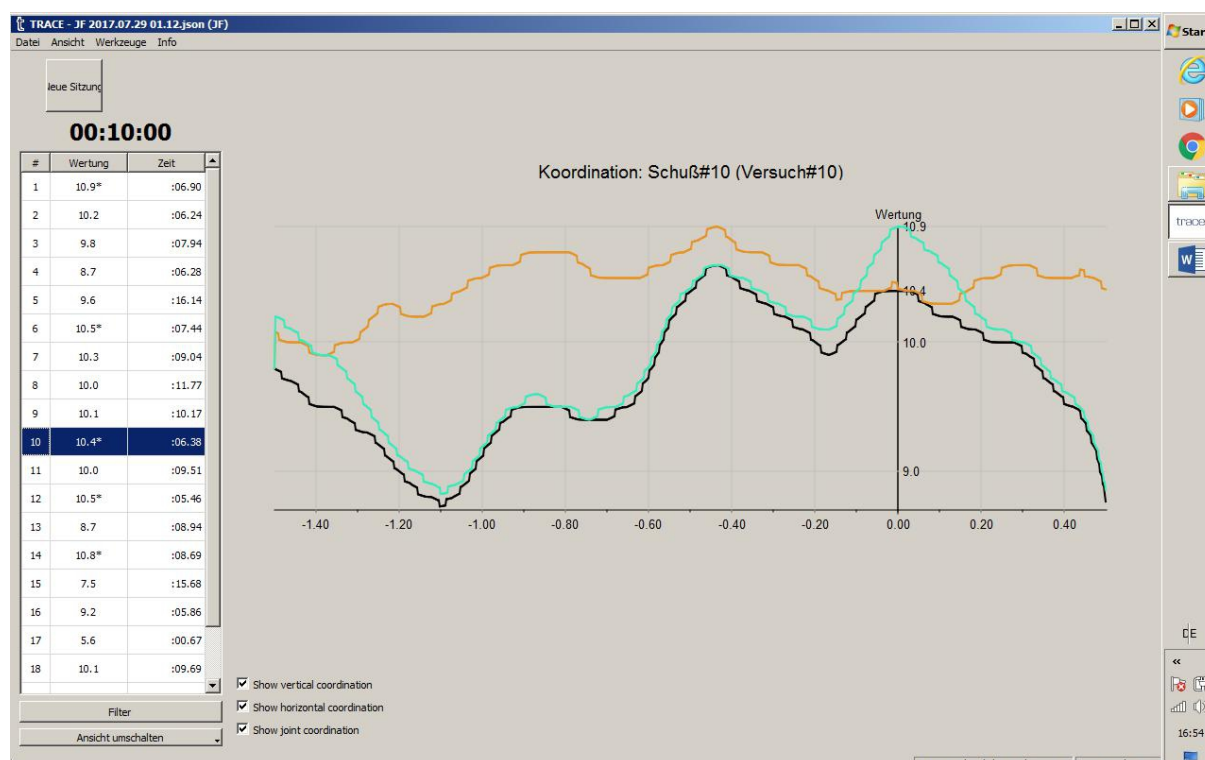
The Coordination Chart provides insight into the final phase of the shot and shows the level of concentration.

To open the coordination chart, from the main TRACE window, select on the bottom left: "Switch view" >> "Coordinates chart".

Note: The coordinate diagram shows the deviation of your weapon in relation to the center of the target. From this chart you can see the stability of the shooter during the aiming, the firing and the follow-up process.

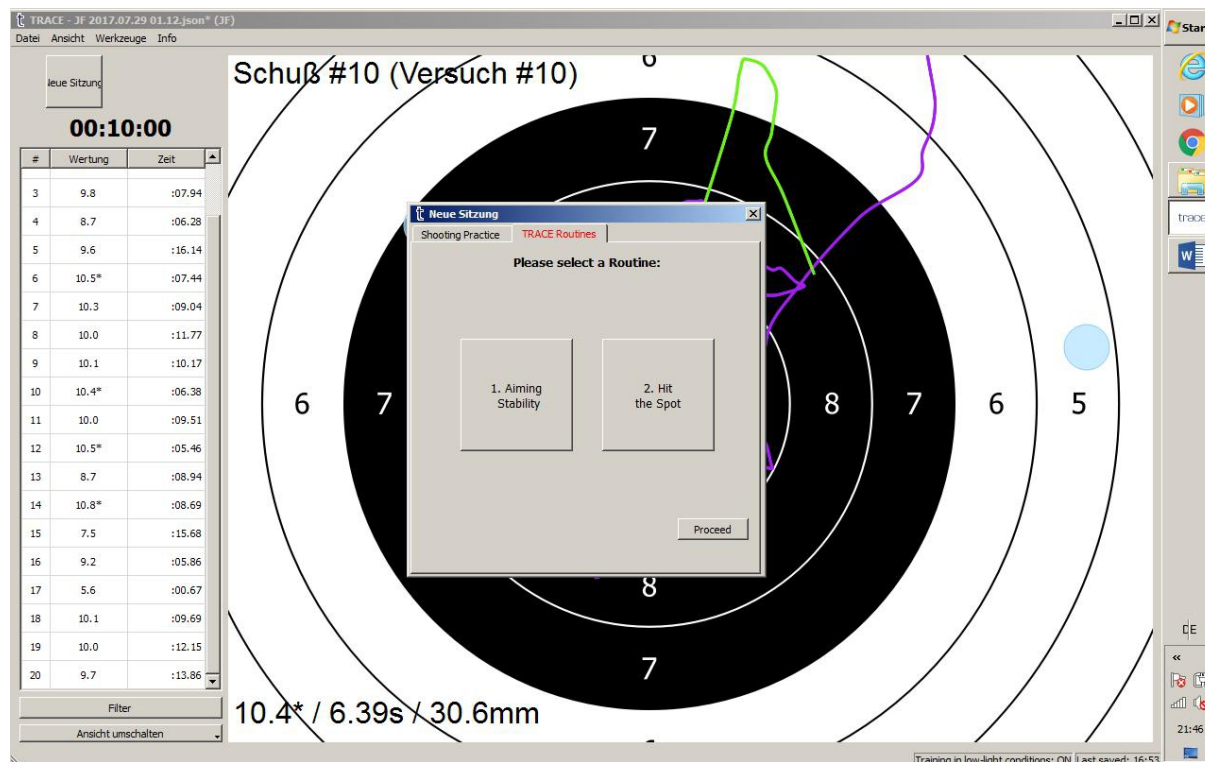
If the chart line is horizontal and/or rises at the moment of the triggering, this indicates a good level of preparation of the shooter. Sudden drop of the chart line just before the shot indicates a lack of concentration and may indicate possible mistakes in the shooting technique.

The deviations in x-direction, in y-direction and total value can be displayed. Each of the three chart lines can be switched on or off by checking in/out the check boxes in the lower left area of the diagram.

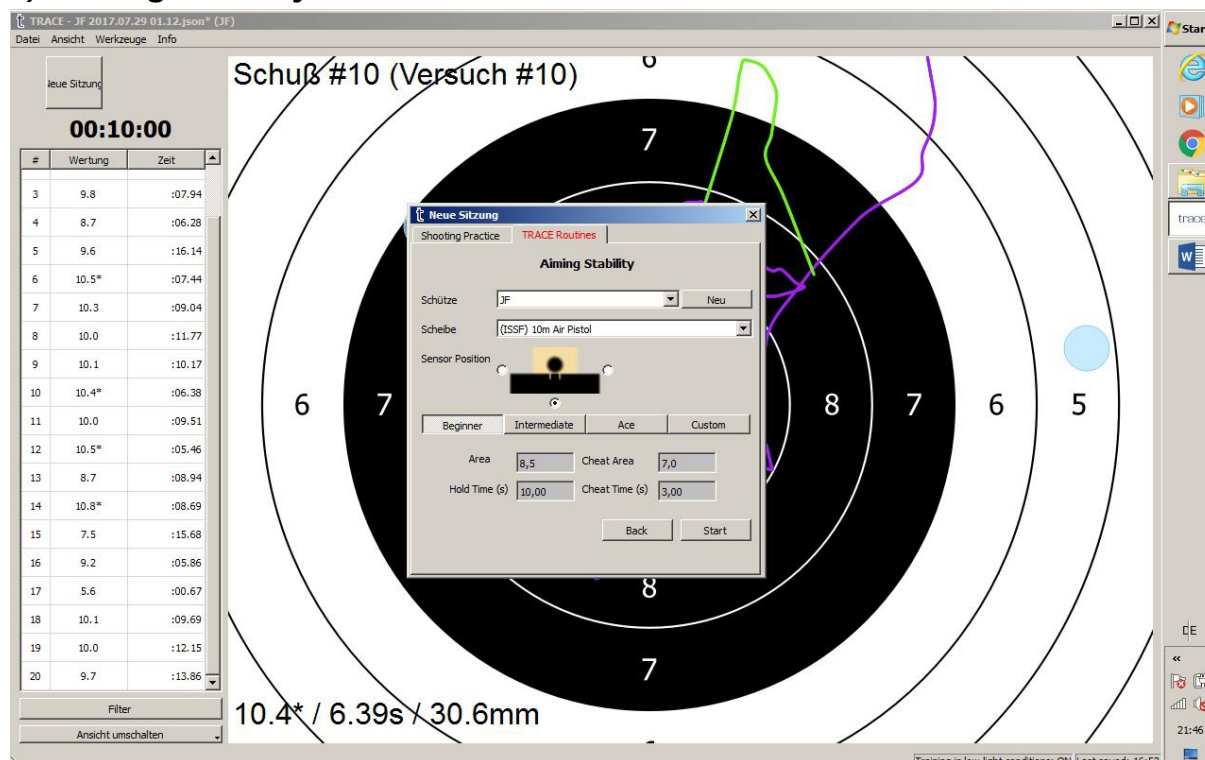


X. TRACE – ROUTINES

These are two built-in exercises to improve shooters holding stability and aiming.

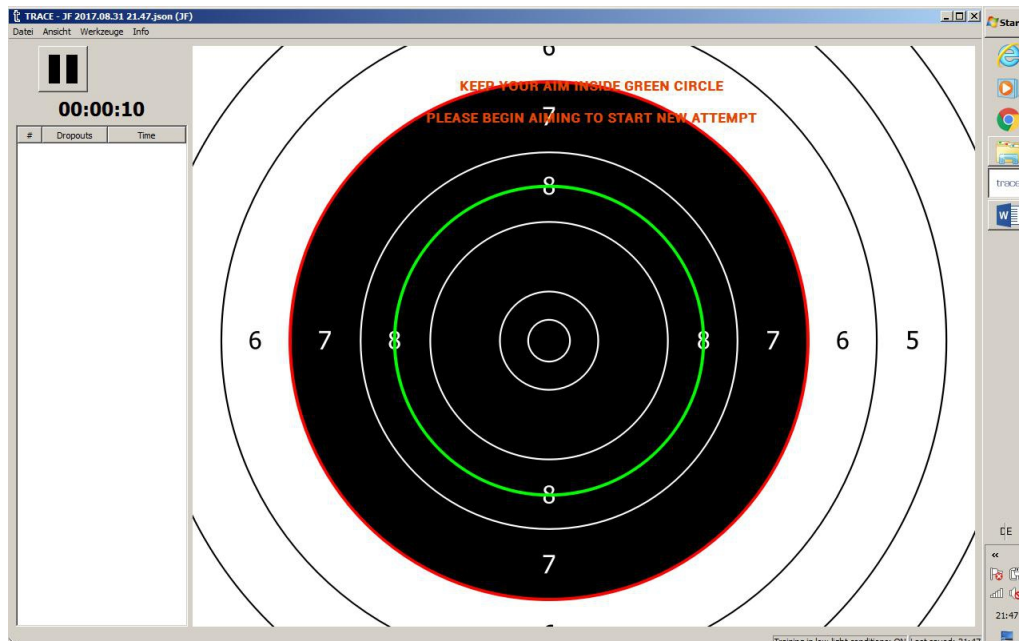


a) Aiming Stability

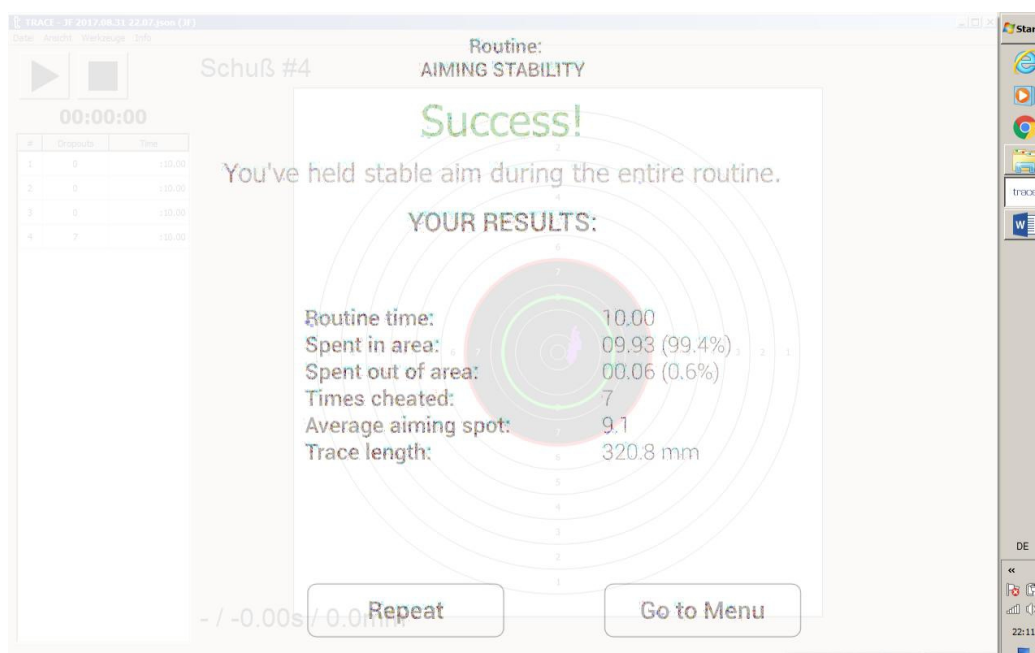




In this exercise, the shooter should hold his/her aim in a holding area for a predetermined period of time. This exercise is supported with audio sound. After each successful holding phase, the exercise starts again. This can be practiced any number of times. In addition to three pre-arranged skill levels, called "Beginner", "Intermediate" and "Ace", there is also the "Custom" version. Here all parameters can be freely adjusted according to your own wishes and skills.

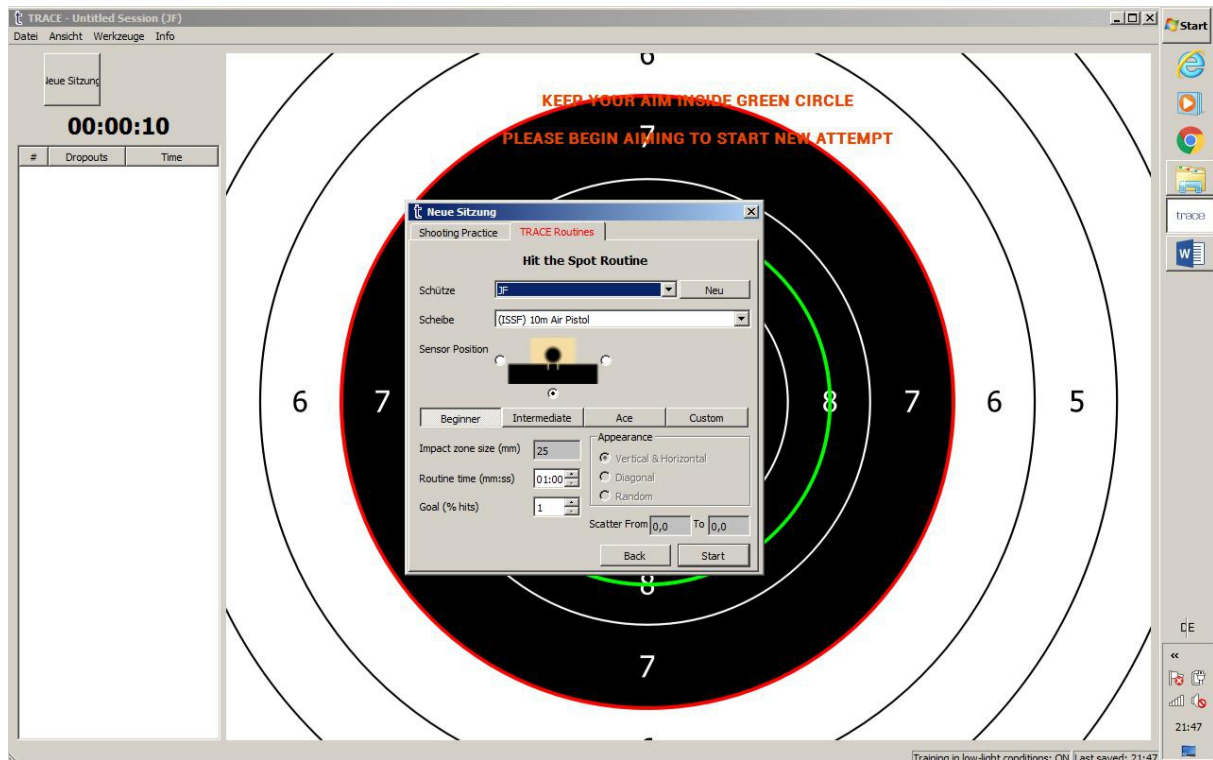


The green circle is the desired holding space. The space between the green and red circles specifies a so called cheat zone for permissible "slip-ups". Hold time and cheat time can be applied before each try. After each attempt an analysis is shown.



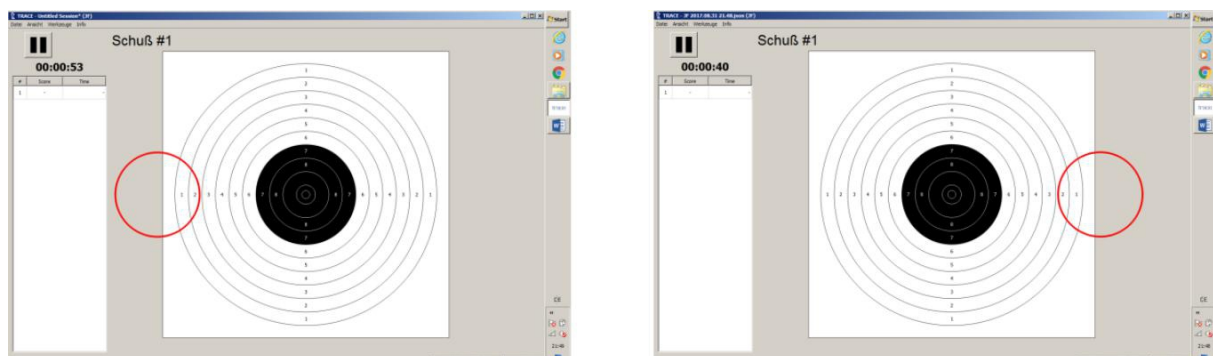
Next attempt can be started via the "Repeat" button. All attempts will be recorded, saved and then played back as in the practice session.

b) Hit the Spot



In this exercise, the shooter should hit the red circle displayed on the screen. The position of the circle varies with each attempt.

In addition to three pre-arranged skill levels "Beginner", "Intermediate" and "Ace", there is also the "Custom" version. Here all parameters can be freely adjusted according to your own wishes and skills.



Thus, the size of the hit zone (red circle) can be freely determined, as well as the duration of the exercise.



After each attempt an analysis is shown.

The screenshot shows the TRACE software interface. At the top, it says 'Routine: HIT THE SPOT' and 'Schuß #5'. A large green 'Success!' message is displayed in the center, along with 'You have achieved the goal!'. Below this, 'YOUR RESULTS:' are listed:

- Goal: 1% landed shots
- Shots (total/landed/missed): 4 / 1 / 3
- Total time: 01:00
- Average trace length: 81,9
- Total trace length: 327,5 mm

A target graphic is visible in the background. At the bottom, there are two buttons: 'Repeat' and 'Go to Menu'. A red circle highlights the 'Repeat' button. On the left side, there is a table with columns for '#', 'Score', and 'Time':

#	Score	Time
1	miss	-06.00
2	miss	-16.25
3	hit	-15.00
4	miss	-09.99

At the bottom left, there is a status bar showing '10.2 / 4.22s / 41.0mm'. The Windows taskbar is visible on the right side.

Next attempt can be started via the "Repeat" button. All attempts will be recorded, saved and then played back as in the practice session.



XI. TIPS & TRICKS

- 1) Press and hold 'Alt' key on main TRACE window to show shot numbers.*
- 2) To move the group of shots hold 'Ctrl+mouse 1' and drag the group to desired location on virtual target.*
- 3) You can delete "unwanted" shots by highlightning them in data table or clicking on virtual shot hole from main TRACE window and pressing 'Delete' button.*
- 4) Highlight a particular shot to see replay of the shot and associated analysis.*
- 5) System allows to record 'shot attempts' (aborted shots). To enable this feature from menu bar select 'View'>>'Settings'>>'Analysis' abd check 'show shot attempts' checkbox.*
- 6) You can zoom in/zoom out from main TRACE window or any chart by using mouse scroll wheel or keyboard shortcuts 'Ctrl+=' and 'Ctrl+-'.*

Happy Shooting!



Manufacturer:

SIA Focusd
Reg. # 40103926082
33-38 Kr. Valdemara street
LV-1010, Riga
Latvia

Contacts:

hello@traceshooting.com

www.traceshooting.com