

VIDEO ANALYSIS

OF SHOTGUN TECHNIQUE IN SKEET, TRAP AND DOUBLETAP
RECORDING DIGITAL VIDEO AND STORAGE IN THE COMPUTER

The development of powerful and inexpensive computers, with connection to digital video camcorders, is offering new analysis tools to Shotgun specialists worldwide.

RECOMMENDED STEPS FOR THE EFFECTIVE USE OF THIS TECHNOLOGY:

- > Video-recording from different angles during training and competitions.
- > Organized storage of all footage on disks in a library.
- > Analyzing and taking advantage of all information contained in this video library.
- > Extracting gun recoil still-shots, to trace gun movement during the d/trap shot and during the different stages of shot production.
- > Diagram 1 (Time and movement analysis)
- > Diagram 2 (Video equipment for Shot Gun)

SOME METHODS FOR THE ANALYSIS OF VIDEO SHOTGUN RECORDINGS.

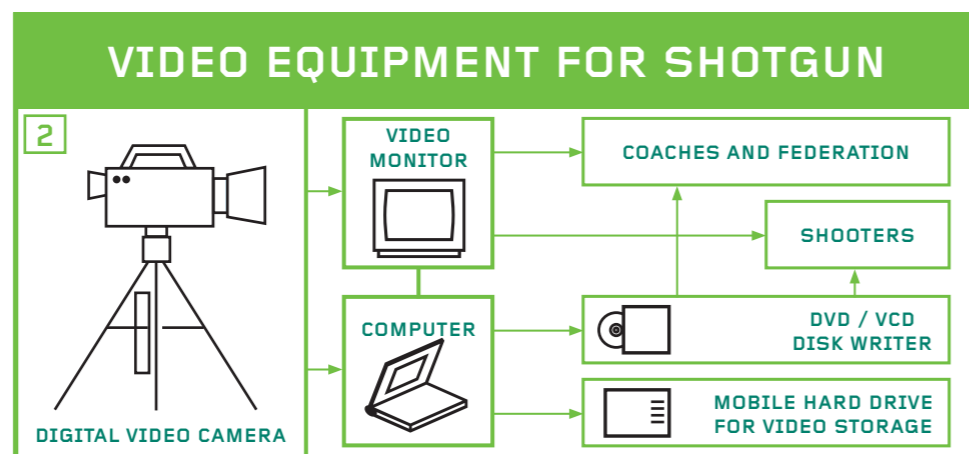
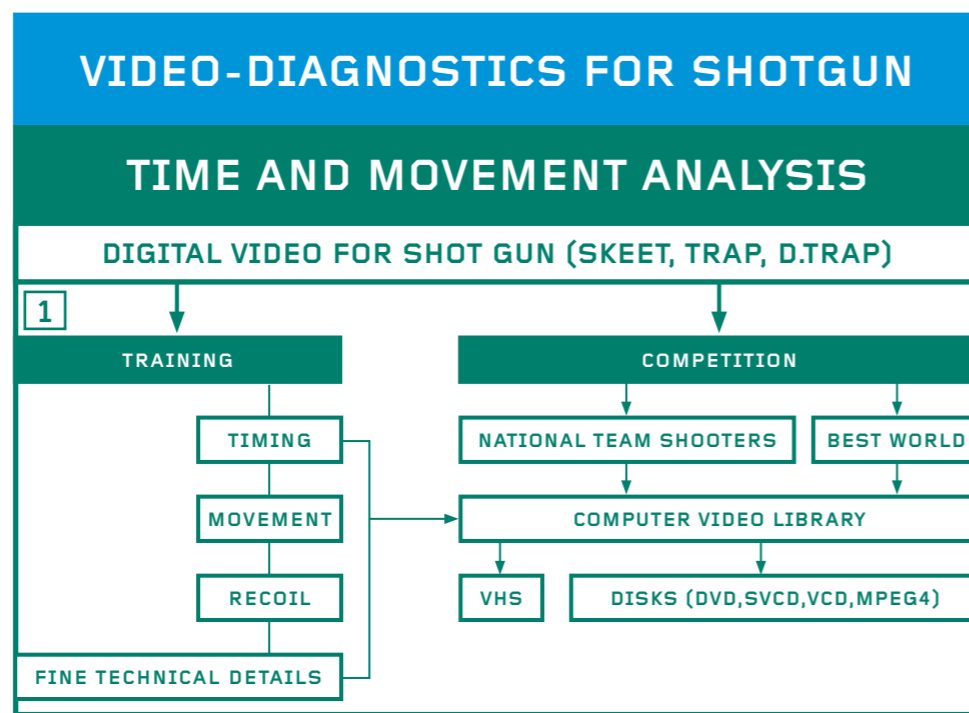
GUN RECOIL

The gun recoil can be analyzed by comparing the differences between two neighboring video frames, one just before and one immediately after the shot.



DETAILED PROCEDURE:

- > Place the camera on a tripod next to the shooter, pointing at the gun
- > Record the shot
- > Connect camera to computer and download all footage
- > Use video editing software to find and extract the two frames
- > Save them on hard drive as images
- > Use image editing software to overlay the two images in a single picture
- > Select blending mode: "Differences"
- > Inverse colors
- > Notice small black spots on white background indicating the gun recoil
- > The more spots, the more recoil



GUN MOVEMENT

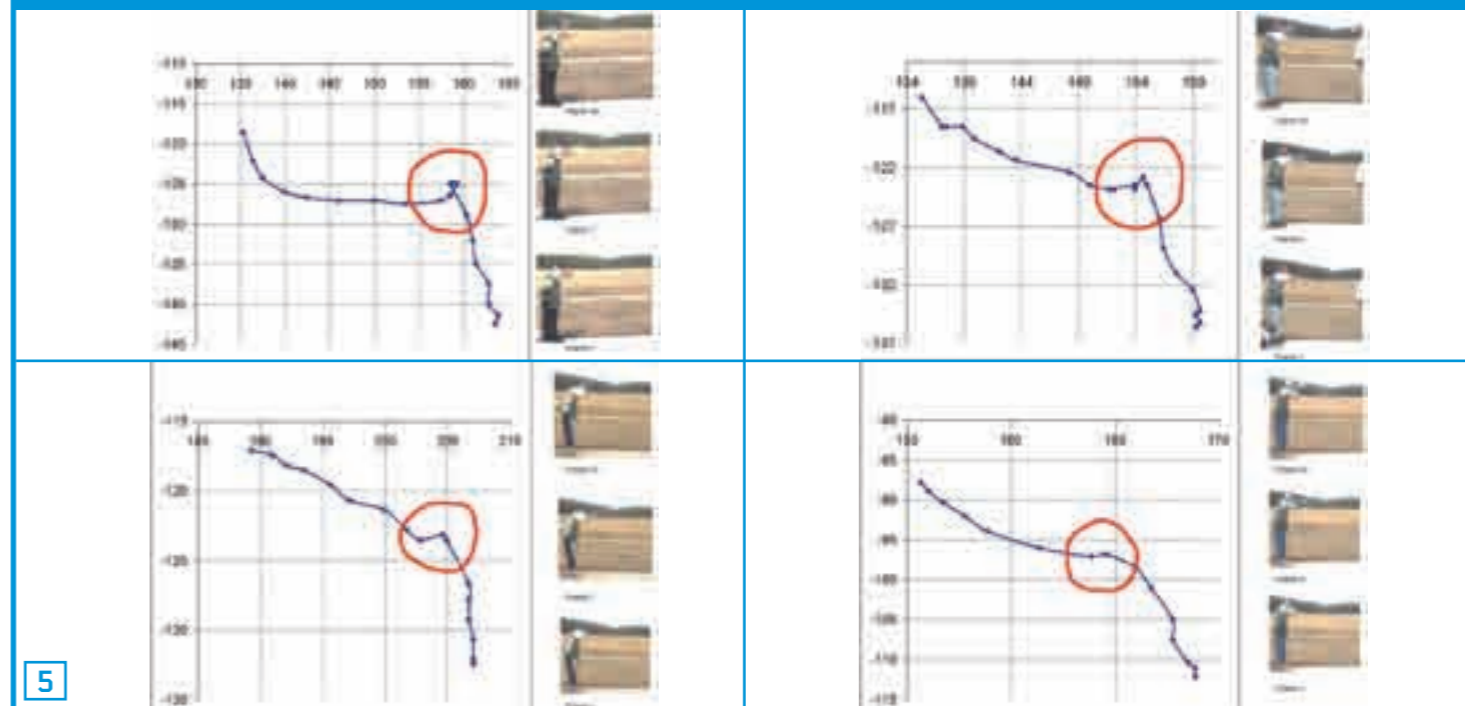
One can obtain gun movement information that is very helpful for coaches and shooters, especially in Double Trap shooting.

The video recording produces a line of 25 separate frames per second. Use standard image editing software to place the cursor on the barrel muzzle in each frame. Determine the cursor's X and Y coordinates in each frame. Create a table of these coordinates from the moment when the target appears,



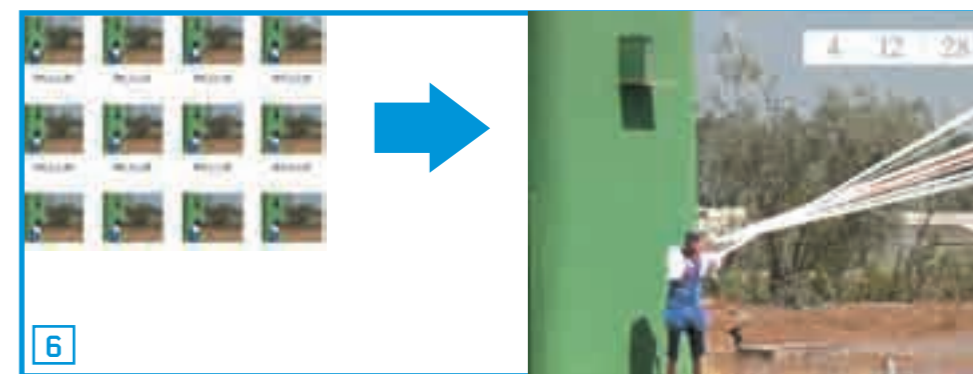
Photos: Anatoli Aktov

COMPARING GRAPHS FROM DIFFERENT SHOOTERS



to the moment of the second shot. Building a graph from the barrel coordinates will show the exact gun movement. Picture 4 shows extracted video frames with the resulting graph.

Comparing graphs from different shooters in D/Trap shows a smoother first-shot movement by the best shooter (number 4) in Picture 5 (different shooters' gun traces). Low shoulder position will compensate muzzle jump after the smoother first shot. Picture 6 (shooter with gun)



SHOTGUN TRACE PICTURES

In all shotgun events, splitting the video recording into separate frames and drawing the lines will provide an image of the technique. Compilation of all frames with lines will create movies with clear movement of gun. Picture 7 (show two examples for skeet and double trap shooting)



TIME ANALYSIS

Counting the number of frames between the first and the last image, from the shooter in ready position with visible clay to the first shot and the second shot, makes it possible to create a time table. This statistical analysis shows the stability of timing for all 50 shots, as a graphic.

Pictures 8 (timetable and graph).

The above-mentioned methods and techniques offer shooting sport specialists powerful tools for analyzing video footage. Inexpensive Digital Video equipment plus the efforts of coaches will help develop modern Olympic shotgun techniques and monitor the training process and progress.

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