COACHING PISTOL
MOST COMMON CHANGES IN POSTURE DEPENDING TRAINING WEIGHTS

PART VI

PREVIOUSLY we have offered our readers a series of articles related with shooting postures. These articles were accompanied by descriptions of physical exercises aimed at improving fitness and building muscle and, ultimately, at enabling the shooter to maintain the required static and dynamic physical weights.

IN FUTURE ARTICLES, I would like to direct the attention of all coaches to the main coaching skills, such as 1) observation skills, 2) goal setting in training and competition, and 3) decision-making during training, program development, and competition. These skills are interrelated and cannot be detached from one another.

IN THIS ARTICLE, I would like to answer the following question:

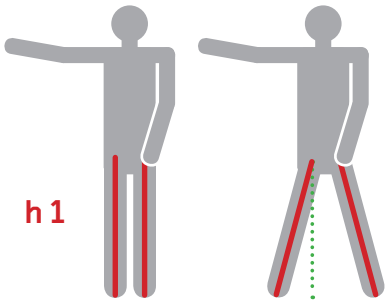
WHAT DOES THE COACH NEED TO OBSERVE WHEN APPLYING PARTICULAR WEIGHTS DURING TRAINING?

I will discuss the impact on posture and consequently on shooting caused by:

- change in the distance between the shooter's feet, and of
- the swaying back of the shooter's body
- the twisting of the body

While there is a variety of shooting postures, the shooter's primary concern should be the maintenance (the consistent performance) of his/her chosen posture.

Lets assume this basic posture and consider what will happen if the shooter alters the distance between his feet while shooting.



Length of the shooter's leg

A change in the shooting stance during a training session or a match causes changes in body height. A change in body height, in turn, brings about change in the arm's position in the shoulder joint, and in the angle of declination of the pistol in the wrist joint, thus causing change in muscle tension in the shooting posture.

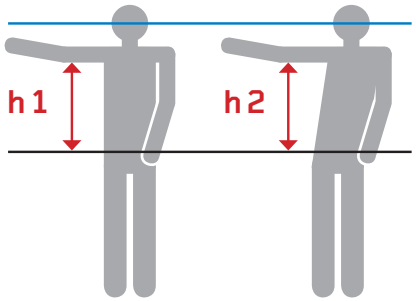
Let's assume that the length of the shooter's leg (h1) is equal to 1metre and that the shooter remains reasonably upright. He has moved his legs out from the original position by 15cm. We will now calculate the resulting change in his shooting posture height (by using the Pythagoras' Theorem that you know from school math lessons).

$$h1 = \sqrt{h1^2 - L^2}$$

Changing legs' position

We find that h2 = 98.87cm. The shooter's height has therefore changed by 1.13cm. Consequently, the shooter needs to drop or raise the shooting arm slightly in order to (re)align it with the aiming area, where this creates the abovementioned problems.

Let's consider another situation. The shooter's body is leaning back when she/he is shooting, while the position of her/his hips does not change.



Leaning back position

Suppose that the shooter's right shoulder has moved 5cm to the right with relation to its initial position. Provided that the hips remain fixed in their position, and that the spine does not change in shape, the given change in position must be the result of the rotation in a point situated very close to the hip.

Picture 2a shows that, in order to retain alignment with the aiming area, the shooter needs to alter the position of her/his neck (in order to retain the same head position),

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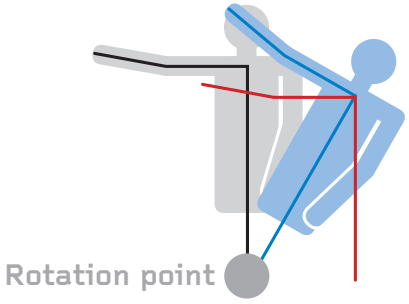
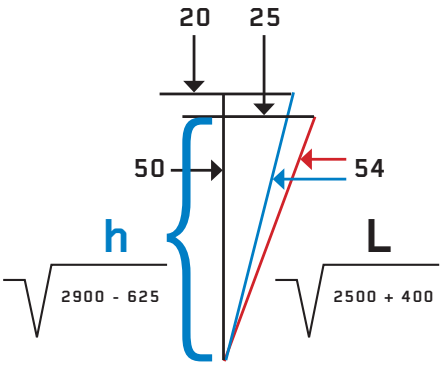


2a

of her/his shoulder (to move the arm down) and, furthermore, in reality, there is movement in almost every joint throughout the shooter's spine.

Picture 2b shows the calculation of the resulting change in the shooter's height. The length of the spinal column (the distance between the hips and the shoulders) is, on average, 50-60cm; let's assume that it is 50cm. The horizontal distance between the neck and the shoulder joints is, on average, 20-25cm; let's assume that it is 20cm. The distance between the rotation point and the shoulder joint (L) will therefore equal 54cm (L = the square root of (502 + 202)).

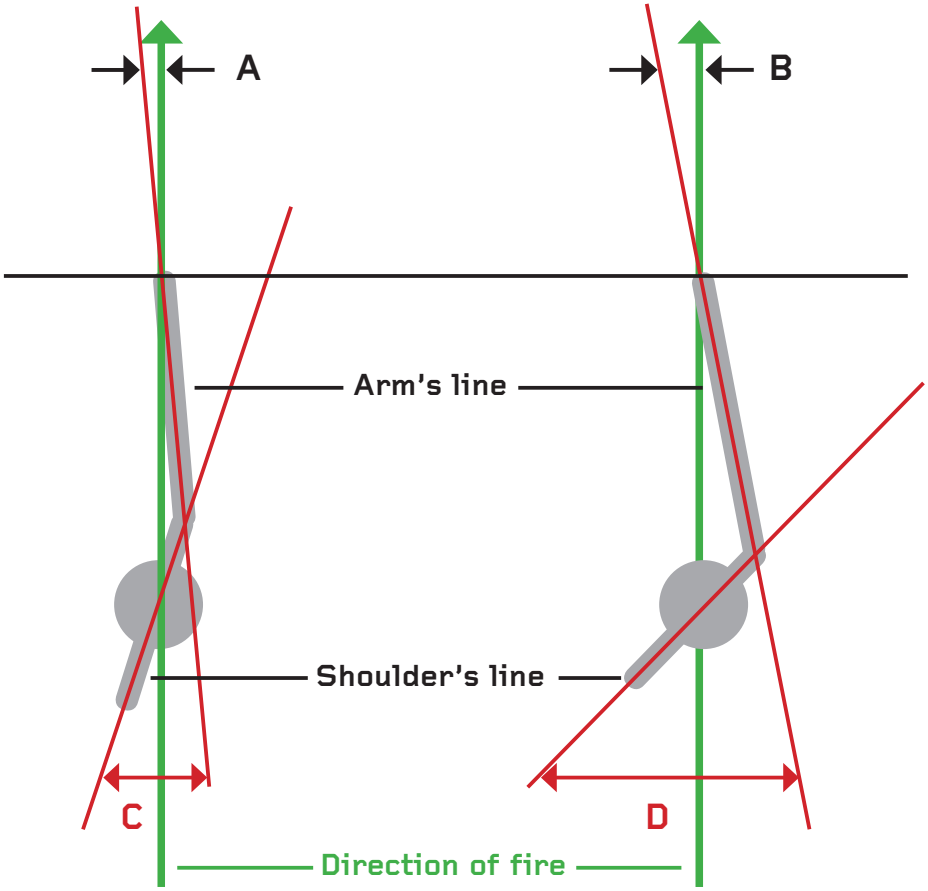
We will now determine where the shoulder level occurs when, as a result of the body swaying back, the shoulder moves 5cm to the right. h = the square root of (542-252) H= 47.85.



2b

The changes in posture resulting from leaning back require the shooter to adjust the position of the arm/wrist in order to (re)align the sight with the aiming area.

When this adjustment takes place during the final phase of the shot, the upward/downward movement of the arm/wrist causes the gun barrel to move at a higher than average speed, which tends to cause a lot of errors, and to result in wild shots.



Similar cases will occur when shooter will twist his/her body

These pictures represent how the angles between the shooting arm's line and the shoulder's line will be changed, if the shooter twists his/her body during the course of shooting. There are obvious changes in angles (A and B, C and D) between the direction of fire and the arm's line, between the arm's line and the shoulder's line. These changes will cause a different tension in the wrist and shoulder areas, and there is also a change in the distance between the sights and shooter's eye – all this will cause a change in the shot group placement on the target.

Given the aforementioned problems associated with changes in posture while shooting, it is very important for coaches to determine the reasons behind any changes observed in order to be able to rectify the situation. In most cases, the condition of the shooter's muscles does not allow her/him to maintain the same posture while shooting. Leaning back may be a product of the weakness of the abdominal muscles or of the shooting shoulder muscles.

CONCLUSION

Mainly when training beginners, the most notorious change is the distance between the shooter's feet. The swaying back of the shooter's body and the twisting of the body are, however, very common in all shooters. It is important for the coach to be a good observer and to understand the reasons behind a particular body movement. If consistent changes are noticed, the coach needs to decide both whether and how to communicate this information to the shooter.

Furthermore, in order to lay the foundations for the best possible individual posture, the coach must focus not only on controlling posture and movement during shot activity, but also on developing the shooter's physical abilities and identifying the role played by specific muscle groups in maintaining the desired posture. Thus, it is clear that observation is a vitally important skill that is indispensable to every coach.

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