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ASSESMENT OF SHOOTING REPEATABILITY WHEN SHOOTING WITH SHORT AND LONG FIREARMS USING MATLAB ENVIRONMENT

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In previous years, shooting was not a popular sport, but due to the current political situation, more and more people are becoming interested in it. Its popularity increase is a result of people's more willing participation in training in both defensive and dynamic shooting. Regardless of what kind of shooting we are talking about, regularity in shooting is a key parameter when determining shooting effectiveness. Despite the increasing popularity of shooting, research on it is considered niche and there is little of it. Popularizing the topic of shooting among researchers will improve the quality of shooting training and as well as allow them to determine the relationship between the kinematics of the human body and the repeatability of fired shots. This study assesses shooting repeatability when shooting with short and long firearms using the Matlab environment.

The study was carried out on a group of 20 people (2 women and 18 men). They were divided into two subgroups - professionals (people who have undergone shooting training and shoot regularly) and amateurs (people who have contact with weapons recreationally). All shooters were healthy, although five of them had eyesight defects, which could have influenced the test results. Each subject fired 12 shots - 2 test ones, not included during the analysis, and a series of 10 actual ones, taken into account. After each series, the shooting target was replaced. Then, the paper sheets were scanned and analyzed using the Matlab environment. The analysis involved determining the radius of the smallest circle that covered all fired shots. That allows for assessing shoot repeatability. The smaller the circle radius is, the greater the repeatability is. Finally, a statistical analysis of the obtained results was performed for both subgroups.

As a result, it was proven that the repeatability of shots fired in a series depends on the shooter's experience in the case of long firearms and the lack of the above relationship in the case of short ones. Considerations were made to determine the reasons for the obtained result. Visible features characterizing both groups of shooters (amateurs and professionals) were also found, considering the tests using handguns and long firearms separately.