

CONDUCTING THE TRAINING OF INDIVIDUAL SHOOTING SKILLS IN A LECTURE ROOM

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Summary:

The article presents the possibilities of conducting the training of individual shooting skills in a lecture room. The elements of developing the practical qualifications of settings determination and conducting fire tasks are of significant importance as far as the education of the future artillery cadre is concerned.

Keywords:

artillery training, training of individual shooting skills, setting determination procedure

INTRODUCTION

The works on the new shooting program for the Missile and Artillery Forces commenced on the initiative of the Inspectorate of the Missile and Artillery Forces in 2015. The forms and the types of exercises conducted in units and sub-units of the Missile and Artillery Forces (including the commands and staffs) are specified differently in the new program in comparison to those incorporated in the still valid shooting program of the Missile and Artillery Forces¹.

The new shooting program constitutes the supplementation and particularization of the provisions included in "The instruction on preparation and conducting the exercises with commands, staffs and forces in the Polish Armed Forces within the Missile and Artillery Forces". It thoroughly specifies the manner of preparing and conducting the

¹ See: Program strzelań wojsk rakietowych i artylerii wojsk lądowych, DW Łąd Wewn. 87/2006.

special-tactical classes (Polish - ZT-S), special-tactical exercises (Polish - ĆT-S) and shooting trainings in units and sub-units of the Missile and Artillery Forces.

Preparation of gunners – in terms of knowledge, skills and practice to fulfil tasks individually or collectively on a battlefield within a unit and a sub-unit is mainly achieved by the tactical training. Exercises and trainings are its most effective forms. The execution of the trainings on the high substantive and methodological level determines adequate level of specialized capacities (individual and collective) of artillery units

The below-mentioned activities are conducted in artillery sub-units within the scope of the trainings:

- fire control training (*Polish - TKO*) - with artillery units and sub-units;
- training of individual shooting skills (*Polish – TiUS*) – conducted with individual specialists of an artillery unit (a sub-unit).

Depending on the teaching contents, the training level (synchronization) of units and capacities of trainees, the artillery exercises can be conducted in the field, at reduced artillery shooting ranges, on training devices and simulators. Moreover, the program envisages that some subjects can be conducted in lecture rooms and with the use of artillery trainers. The author of the present paper would like to underline a wide range of existing possibilities for a sub-unit commander in terms of conducting the training of individual shooting skills in a lecture room and indicate ready-to-use solutions, which can facilitate preparation and execution of such the training.

1. TRAINING OF INDIVIDUAL SHOOTING SKILLS DURING EDUCATION OF ARTILLERY CADETS

Trainings of individual shooting skills constitute the essential element of artillery cadets' education during undergraduate and graduate studies at the General Tadeusz Kościuszko Military Academy of Land Forces in Wrocław. Table 1 presents the number of didactic hours dedicated to the trainings of individual shooting skills at particular years of study, taking into account the place of their realization.

Table 1. Trainings of individual shooting skills in the education of cadets at the General Tadeusz Kościuszko Military Academy of Land Forces

No.	Edition	Year of study	Place of realization	Number of hours
1.	2014 graduate study year II	IV and V	Military Academy of Land Forces in a lecture room	30
			Artillery and Armaments Training Center in Toruń	56
2.	2015 graduate study year I	IV and V	Military Academy of Land Forces In a lecture room	30
			Artillery and Armaments Training Center in Toruń	56
3.	2012	II, III and IV	Military Academy of Land Forces	32

No.	Edition	Year of study	Place of realization	Number of hours
	undergraduate study year III		In a lecture room	
			Artillery and Armaments Training Center in Toruń	64
4.	2013 undergraduate study year II	II and III	Artillery and Armaments Training Center in Toruń	60
5.	2014 undergraduate study year I	Artillery and missile specialization		37 each

Source: own elaboration based on educational programs of the General Tadeusz Kościuszko Military Academy of Land Forces

Conducting TiUS in a lecture room commences from the third year of the studies. During these lectures students improve their skills of fulfilling fire tasks with each type of artillery assets. The above-mentioned element of training comprises the form of students' preparation for fulfilling fire tasks at exercise field areas with the usage of live ammunition.

2. CHARACTERISTICS OF INDIVIDUAL SHOOTING SKILLS TRAININGS

During the trainings of individual shooting skills the competencies and practices, which assure fulfillment of a fire task by a trainee and prepare him/her to participate in fire control of a unit (a sub-unit), are perfected. TiUS is a subject, which primarily allows mastering individual and practical skills of preparation and fulfilling fire tasks by artillery specialists. Any training aims at improving knowledge of the shooting and fire control instructional provisions and as a consequence increasing the specialist knowledge and capacities of sub-unit personnel in fulfilling fire tasks in various conditions and tactical situations. Mastering settings determination as provided for in the shooting and fire control manual of field artillery constitutes one of the training's objectives. Trainees subjected to such the training perfect also the skills related to issuing commands.

Within the scope of the training the a gunner carries out fire tasks that include:

- striking a target without registration fire (fire task No 4);
- striking a target with registration fire (fire task No 3);
- determination of obtained corrections in range and azimuth to an auxiliary target through shooting (fire task No 5).

Depending on the location, TiUS can be conducted with the usage of live ammunition, simulators or without the possibility of practical shooting. Reduced artillery ranges where during fire tasks execution small arms or laser devices can be used perfectly suit for these kinds of trainings. An example can be the reduced artillery range, depicted in Fig. 1, located in Artillery and Armaments Training Center in Toruń.



Fig. 1 Reduced Artillery Range – (Polish ZSA)

Source: <http://www.csaiu.torun.pl/Albumy/bazaCSO/index.html> (accessed on 11.2016)

Due to the fact that the fire task No 3 is the most frequently carried out, in the further part of the article the author presents the possibilities of conducting this task in a lecture room.

A gunner performs a number of activities during execution of a task of this type, which ultimately lead to achieving the objective pursued, thereby fulfilling the fire task. The activities depend on the method of conducting the training adopted by a training supervisor. The variant of the activities carried out by a training supervisor and the gunner during execution of the fire task No 3, including the place, are depicted in Table. 2.

Table 2. The activities carried out by training supervisor and the gunner during execution of the fire task No 3

No.	Activities performed during execution of the fire task No 3	Location of TIUS		
		Training area with the usage of live ammunition	Reduced Artillery Range with the usage of simulators	Lecture Room
1.	Preparation of the gunner for fulfillment of the fire task.			
2.	Issuing the fire task by the training supervisor.			
3.	Making a decision to conduct the fire task.			
4.	Determining initial settings for registration fire.			
5.	Providing the command for fire.			
6.	Conducting observation during registration fire. Determining the bursts deviations from the target.			

No.	Activities performed during execution of the fire task No 3	Location of TiUS		
		Training area with the usage of live ammunition	Reduced Artillery Range with the usage of simulators	Lecture Room
7.	Calculation of corrections in range and azimuth during registration fire.			
8.	Conducting observation during effective fire.			
9.	Calculation of corrections in range and azimuth during controlling of effective fire.			
10.	Assessment of fire precision through settings comparison.			
11.	Assessment of fire precision through determination of mid-salvo deviation from the center of target.			
12.	Assessment of the task fulfillment by the training supervisor.			

Source: own elaboration

The analysis of the activities depicted in Table 2 allows the conclusion that conducting a fire task in a lecture room is approximated to TiUS carried out with live ammunition (simulators). While executing a fire task in a lecture room there is no possibility to realize:

- conducting observation during registration fire and controlling of effective fire;
- assessment of fire precision through determination of mid-salvo deviation from the center of target.

The shooting program does not unambiguously determine the place of a trainee during TiUS. Pending the training with live ammunition (simulators), the trainee can either occupy the observation point or the command post of battery commander in the fire position area. Conducting the training in the fire position area disables the trainee mastering the skills in observation during registration fire and effective fire control. It can be therefore concluded that conducting the training from the fire position area and in a lecture room forces the trainee who is fulfilling the fire task performing similar activities. According to the author carrying out TiUS with live ammunition from the fire position area is not entirely legitimate.

The author's observations of the trainings executed in the exercise areas point to the need for running, if only possible, classes on observation during conducting the fire task with live ammunition. Observation during registration fire, assessment of fire effects and controlling the effective fire constitute the most difficult elements for the personnel fulfilling the task. The above-mentioned activities cannot be perfected in a lecture room. Therefore, it is to be underlined that artillery trainings in a lecture room are to be regarded as the merely preliminary form of preparation of artillerymen for conducting fire tasks at reduced artillery ranges following shootings at exercise areas with live ammunition.

Nevertheless, in the further part of the article the author seeks to indicate the advantages and the broad possibilities opening for a training supervisor while conducting this kind of training in a lecture room.

3. METHODS OF CONDUCTING THE TRAINING OF INDIVIDUAL SHOOTING SKILLS IN A LECTURE ROOM

According to the author conducting TiUS in a lecture room can be realized in three variants: full, limited and reduced.

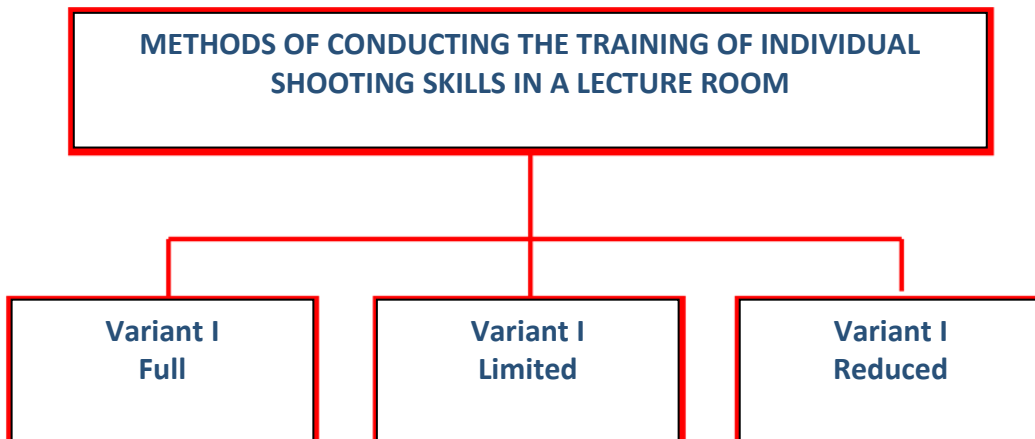


Fig. 3. Methods of conducting TiUS in a lecture room

Source: own elaboration

The methods of conducting TiUS in the proposed variants are represented in the subsequent part of the article. Each of the variants is supported with the data provided by a training supervisor and activities performed by trainees (gunners) both prior the training and during its execution. The data provided by a training supervisor and activities performed by trainees prior the training of the individual shooting skills and activities of a training supervisor and trainees during fulfilling fire tasks in Variant I – Full are presented in Tables 3 and 4, in Variant II – Limited in Tables 5 and 6, in Variant III – Reduced in Tables 7 and 8.

Table 3. Data provided by a training supervisor and activities performed by trainees prior the training of individual shooting skills – Full Variant

Data provided by a training supervisor prior the training of individual shooting skills	Activities performed by trainees prior the training
<ol style="list-style-type: none"> 1. Rectangular coordinates of the order of battle elements. 2. Shooting meteorological conditions (surface data or average meteo message), ballistic data. 3. Types of the ammunition used for fulfilling fire tasks, explosives predicted for conducting the tasks. 4. Safety lines. 5. Methods of topographical data 	<ol style="list-style-type: none"> 1. Preparation of devices and apparatuses for determination of topographical data. 2. Preparation of aggregated correction charts for determination of corrections in range and azimuth during arrangement of initial data for registration fire. 3. Preparation of abstracts of firing tables (tables of sights and others). 4. Preparation of tables for registration fire. 5. Preparation of devices and apparatuses

Data provided by a training supervisor prior the training of individual shooting skills	Activities performed by trainees prior the training
determination (PKO, SKART, other methods). 6. Methods of correction calculations during registration fire and effective fire control. 7. Logistic support of the training. 8. Methods for preparation for the training. 9. Organization of the training execution.	for calculation of corrections during registration fire and effective fire control.

Source: own elaboration

Table 4. Activities performed by a training supervisor and trainees during conducting a fire task – Full Variant

Activities performed by a training supervisor during conducting a fire task	Activities performed by a trainee fulfilling a fire task
1. Issuing the task a) Fire command b) Indication of the target from the base point. Providing polar data to the target (in the role of a section leader of forward observers). 2. Reporting the observations (in the role of a section leader of forward observers). 3. Monitoring of the fire task realization: a) Determination of the sight and direction in which a trainee fulfilling the task switches into effective fire. b) Determination of the instructional errors while conducting the fire task. c) Determination of time required for fulfilling the fire task. 4. The assessment and discussion of the fire task fulfillment.	1. Determination of the topographical data to the target. 2. Determination (calculation of the corrections in range and azimuth) of the initial data for registration fire. Issuing the fire command for the target destruction. 3. Calculating corrections during registration fire and effective fire control. 4. Reporting the accomplishment of the fire task.

Source: own elaboration

Table 5. Data provided by a training supervisor and activities performed by trainees prior the training of individual shooting skills – Limited Variant

Data provided by a training supervisor prior the training of individual shooting skills	Activities performed by trainees prior the training
1. Types of the ammunition used for fulfilling fire tasks, explosives for conducting the tasks. 2. Safety lines 3. Methods of correction calculations during registration fire and effective fire control. 4. Logistic support of the training. 5. Methods for preparation for the training. 6. Organization of the training execution.	1. Preparation of abstracts of firing tables (tables of sights and others). 2. Preparation of tables for registration fire. 3. Preparation of devices and apparatuses for calculation of corrections during registration fire and effective fire control.

Source: own elaboration

Table 6.Activities performed by a training supervisor and trainees during conducting a fire task – Limited Variant

Activities performed by a training supervisor during conducting a fire task	Activities performed by trainee fulfilling a fire task
<ol style="list-style-type: none"> 1. Issuing the task: <ol style="list-style-type: none"> a) Providing trainees with the topographical data and calculated corrections in range and azimuth to the target. b) Fire command. 2. Reporting the observations (in the role of a section leader of forward observers). 3. Monitoring of the fire task execution: <ol style="list-style-type: none"> a) Determination of the sight and direction in which a trainee fulfilling the task switches into effective fire. b) Determination of the instructional errors while conducting the fire task. c) Determination of time required for fulfilling the fire task. 4. The assessment and discussion of the fire task fulfillment. 	<ol style="list-style-type: none"> 1. Determination of the initial data for registration fire. Issuing the fire command for the target destruction. 2. Calculating corrections during registration fire and effective fire control 3. Conducting the fire task. 4. Reporting the accomplishment of the fire task.

Source: own elaboration

Table 7.Data provided by a training supervisor and activities performed by trainees prior the training of individual shooting skills – Reduced Variant

Data provided by a training supervisor prior the training of individual shooting skills	Activities performed by trainees prior the training
<ol style="list-style-type: none"> 1. Methods of correction calculations during registration fire and effective fire control. 2. Logistic support of the training. 3. Methods for preparation for the training. 4. Organization of the training execution. 	<ol style="list-style-type: none"> 1. Preparation of devices and apparatuses for calculation of corrections during registration fire and effective fire control.

Source: own elaboration

Table 8.Activities performed by the training supervisor and the trainees during conducting the fire task – Reduced Variant

Activities performed by a training supervisor during conducting a fire task	Activities performed by a trainee fulfilling a fire task
<ol style="list-style-type: none"> 1. Providing a trainee with the essential data required for calculation of corrections in range and azimuth during registration fire. 2. Reporting the observations (in the role of a section leader of forward observers). 3. Assessment of the calculated corrections. 	<ol style="list-style-type: none"> 1. Calculating corrections during registration fire and fire effective fire control 2. Reporting the calculated corrections.

Source: own elaboration

The presented variants of TiUS are not to be treated as the ultimate ones. They constitute one of numerous possibilities of preparation and execution of this type of the training. The reduced variant presents the option of perfecting one element of the fire task No 3 by a trainee, i.e. calculating corrections during registration fire. However, the method used by trainees to calculate corrections during such the training was not specified. They can be calculated:

- a) at the observation angle lower than 5-00, with the calculative method using reduced formulas or a registration fire plotting board;
- b) at the observation angle larger than 5-00, using:
 - a device for registration fire;
 - a registration fire plotting board;
 - a fire control device;
 - the artillery calculator SKART;
 - a computer².

TiUS in the reduced variant can also concern perfecting other elements related to setting the determination procedure, which includes such skills as

- calculating topographical data to a target;
- calculating corrections in range and azimuth directly to a target - determining initial settings for registration fire;
- calculating registered corrections in range and azimuth after completion of the fire task;
- creating an auxiliary target and calculating registered corrections in range and azimuth to the auxiliary target (during preparation for conducting the fire task No 5);
- calculating ammunition consumption standards for particular conditions of conducting the fire task (during preparation for conducting the fire task No 4).

The presented proposals demonstrate significant potential of a training supervisor as for the selection of the elements that will be perfected during TiUS in a lecture room.

CONCLUSIONS

In the author's opinion conducting the trainings of individual shooting skills in lecture rooms is frequently underestimated and conducted to a lesser extent. This is mainly due to the lack of existing solutions, which might assist with both organization and conducting the training. According to the author, fulfilling the fire task during the training of individual shooting skills in full version can be difficult to accomplish for a trainee. The fire task can be complicated with total flexibility by a training supervisor

² See; Instrukcja strzelania i kierowania ogniem pododdziałów artylerii naziemnej, part I: Dywizjon, bateria, pluton, działo; Sztab Generalny, Szefostwo Wojsk Rakietowych i Artylerii, Warsaw 1993, Z. Marciniak, Rażenie celów obserwowanych, WSO-JB, Toruń 2001.

by implementing extra unconventional situations. Such a unique situation can, for example, include:

- adopting the coordinates of the fire position, the observation point and the target in a different UTM 100 km square;
- providing the burst coordinates during registration fire using rectangular coordinates;
- the stricken target became the not-observed target during the execution of the fire task.

The proposed solutions are likely to contribute to the thorough analysis of the applied methods of the execution of this type of the training and induce commanders for their more regular application when teaching. For all of those reasons the presented solutions raised in the article are to be regarded as the prelude for the discussion in this respect.

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BIOGRAPHICAL NOTE

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