

## CHARACTERISTICS OF THE TECHNICAL-TACTICAL AND PHYSICAL TRAINING OF ÉPÉE FENCERS AGED 8 TO 10 YEARS

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**Abstract.** *The purpose of this paper is to investigate the level of technical-tactical and physical training of the fencer (épée fencer) aged 8 to 10 years. The study was conducted within the épée training group of « Quarto » Sports Club, in the fencing gym of « Steaua » Club throughout the competitive year 2016-2017, with a group formed of 10 athletes of 8 to 10 years old. The results of the study point out the degree of somatic development, the improvement of the specific physical and technical-tactical indicators and the raising of the performance level. The higher values of the capacity for performance were highlighted by athletes in two national competitions where the number of victories in groups tour increased ( $p < 0.01$ ), the number of made touches increased by 2.5 ( $p < 0.001$ ), the received touches decreased by 5.1 ( $p < 0.001$ ), the direct elimination victories increased by 0.5 ( $p > 0.05$ ) and the obtaining of the direct result during competitions decreased by 2.8 points ( $p > 0.05$ ). The higher value of these indicators proves the tight connection between the physical training and the technical-tactical one during the fencing sessions. This connection is scientifically argued by the correlative analysis of the investigated indicators. In this sense we can state that by ensuring an adequate level of the technical-tactical and physical training with the help of the most important means we contributed to the achievement of better performances in competitions.*

**Keywords:** *fencing, physical training, technical-tactical training, performance.*

### Introduction

For successful fencing, one must be prepared from all points of views: physical, technical, tactical and psychological (Tüdös, 2000). In this respect, coaches also include them in the training sessions, the group exercises, the study and competition assaults teaching us the same thing: fencing (Ionescu, 1979). Obtaining sports results and increasing them in the future depend not only on the level of physical, technical and tactical training, but also on the motivation and will of the fencer.

The motor skills necessary for acquiring the sports mastery in fencing are the speed, dexterity, strength, ability, spring, endurance, sense of distance, simple and complex reaction time (Bompa, 2001). During the preparation of the young fencing practitioner, this training stage (8 to 10 years) is characterized by a large volume mainly dedicated to the primary physical and technical training. A fencing training session generally includes exercises for warming up, mobility and stretching, guided or individual displacements, assaults, one on one lessons and closing. But some sessions can include physical training only and/or specific physical training (Poenaru & Ceortea, 2001; Stoma, 1984).

The results of the athlete and the level he can reach depend on the physical, tactical and technical training and the will of the fencer. The specific technical and tactical training starts with the acquisition of the offensive actions (Zbigniew & Zbigniew, 2008). In order to start learning and improving the offensive actions, the athlete must have well-grounded knowledge and skills. In its essence, the tactic reflects the capacity of the athlete to intelligently use the means provided by the technique and the combat sports rules to win victory (Poenaru, 2002). Both technique and tactics are subject to the same laws of learning and improvement. If the main objective of the technical training is the motor automatism, then the objective of the tactic is to develop the sense of combat and the creative thinking of the athlete (Ionescu, 1998). The theoretical approach to fencing only by explanatory description of the technique, tactics and regulations of the International Federation is a phase already out-dated in the history of the sport with cold weapons (“Istoria Sportului Românesc: Scrimă”, 2017).

*Purpose* of the paper: investigation of the technical-tactical and physical training level specific to the épée fencer of 8 to 10 years old, using the indicators of the fitness tests to which the subjects were submitted.

*Paper hypothesis:* we believe that better performances will be achieved in competitions if a proper level of technical-tactical and physical training is provided by using the most important means.

## Material and methods

### Participants

This study was carried out with a number of 10 male and female (5 male and 5 female) athletes of 8 to 10 years old, belonging to the Fencing Sports Club (Épée department).

### Procedure

The study was conducted within the (épée) training group of « Quarto » Sports Club, in the fencing gym of « Steaua » Club during the competitive year 2016-2017. The subjects consented to collaborate all along the study period, as well as the other subjects of the experimental study who were enrolled in other clubs. The tasks of the study were to monitor both physical and technical-tactical evolution of each subject. We selected the necessary exercises meant to help the development of the athletes and we monitored the evolution of the épée fencers with a view to obtain good results in the near and long term future.

The first testing took place in Bucharest, during the “Stebal Cup” competition on 2 -3 June 2016 and the final testing was in Bucharest too, in the 4<sup>th</sup> edition of “Stebal Cup” on 1-2 June 2017. We mention that the same athletes participated in the competition.

The basic training, the application of the training means and the training sessions content consisted in physical training workouts and exercises, using: a) exercises for the development of speed, strength, endurance, muscular flexibility and joints mobility; b) exercises and workouts for technical-tactical training, using specific variants of displacements, exercises with partner, work in pairs: simple attacks and compound attacks; c) one on one lessons and d) free assaults (of 5 or 8 touches).

Physical fitness tests and technical-tactical tests as well have been used during this study in order to determine the level of complex training of the athletes.

Anthropometric data: Height (H, cm), Weight (W, kg), Length of the upper limbs (LUL, cm), Full arm span (FAS, cm) and Length of lower limbs (LLL, cm).

Physical fitness tests (PFT): standing long jump (SLJ, cm), spring (D, cm), abdominal strength (AS) and length of lunge from squat (LS, cm).

Technical and tactical training (T-TaT): direct attack (DA, reps), attack with disengagement (AwD, reps), parry - riposte (PR, reps), compound attack (CA, reps).

Performance capacity (PC): results obtained in the Competition I (C I) and Competition II (C II).

## Results

Tables 1, 2, 3 and 4 show the results of the tests in the initial and final stage of the research regarding the descriptive statistical and comparative indicators (t, p) of the anthropometric measurements, physical training, technical-tactical training and the performance capacity.

Table 1. Results of the anthropometric measurements

Statist. Indicators	H (cm)		G (kg)		AVG (cm)		LMS (cm)		LMI (cm)	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Mean	133.9	139.0	33.1	35.5	136.0	139.3	55.8	59.0	74.5	79.1
SD	5.91	6.27	3.21	3.75	6.09	6.53	3.52	3.62	4.90	6.19
Cv%	4.42	4.51	9.71	10.56	4.47	4.68	6.31	6.14	6.58	7.83
T	10.58		7.06		7.36		16.00		7.67	
p-values	0.00		0.00		0.00		0.00		0.00	

Note: Mean – arithmetical mean; SD – standard deviation; Cv% – coefficient of variations; t- parametric test Paired Comparison for Means; H – Height, W – Weight, FAS – Full arm span, LUL – Length of upper limbs, LLL – Length of lower limbs

The results of the statistical-mathematical analysis (Table 1) concerning the anthropometric data of the subjects of the research highlight an increase of the values in final testing as follows: height by 5.1 cm; weight by 2.4 kg; full arm span by 3.3 cm; upper limbs length by 2.8 cm and lower limbs length by 4.6 cm; there are significant differences at  $p < 0.001$ .

Table 2. Results of physical training

Statistical Ind.	PF1- SLJ (cm)		PF2- S (cm)		PF3- AS (no. of reps)		PF4 - LS (cm)	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Mean	138.8	145.3	29.2	32.9	41.7	46.2	75.3	77.9
SD	9.18	10.98	2.94	2.73	4.90	6.55	4.88	5.40
Cv%	6.62	7.56	10.06	8.29	11.75	14.17	6.48	6.94
T	7.56		7.47		5.32		8.51	
P value	0.00		0.00		0.00		0.00	

Note: PF1-4 – fitness tests for physical training; SLJ – Standing long jump; S – Spring; AS – Abdominal strength; LS – Lunge from squat

As for the results of the physical training of the épée fencers aged 8 to 10 years (Table 2), these ones reveal, in final testing, the increase of lower limbs strength by 6.5 cm in standing long jump and by 3.7 cm in vertical jump; the increase of the abdominal strength by 4.5 reps and the increase of lower limbs strength in lunge length by 2.6 cm; significant differences were found out between tests at  $p < 0.001$ .

Table 3. Results of technical-tactical training

Statistical Ind.	T-Ta1 - DA (no. of reps)		T-Ta2 - AwD (no. of reps)		T-Ta3 - PR (no. of reps)		T-Ta4 - CA (no. of reps)	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Mean	10.1	17.6	6.0	11.7	8.4	14.4	6.9	12.4
SD	3.45	5.93	4.44	4.24	2.87	3.59	2.37	3.34
Cv%	34.12	33.69	35.13	36.27	34.23	24.97	34.47	26.94
T	8.86		6.28		10.06		5.31	
p-value	0.00		0.00		0.00		0.00	

Note: T-Ta1-4 – fitness tests for technical-tactical training; DA – direct attacks; AwD – attacks with disengagement; PR – parry -- riposte; CA – compound attacks

Regarding the results of the technical-tactical training of the épée fencers aged 8 to 10 years (Table 3), the final testing reveals the following increases: the number of direct attacks increased by 7.5 reps, the attacks with disengagement by 5.7 reps, parry-riposte attacks by 6.0 reps and compound attacks by 5.5 reps; there are significant differences at  $p < 0.001$ .

Table 4. Results of performance capacity

Statist. Indicators	V.T.		T.D.		T.R.		D.E.V.		R.	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final	C1	C2
Mean	3.6	4.3	22.4	24.9	16.8	11.7	2.8	3.3	8.7	5.9
SD	1.26	1.16	26.71	3.93	4.16	4.27	1.55	1.42	7.97	4.04
Cv%	35.14	26.96	23.07	15.78	24.75	36.49	55.33	42.97	91.6	68.5
T	4.58		5.24		7.38		2.24		1.98	
p-value	0.001		0.000		0.000		0.052		0.078	

Note: V.T. - victories in groups tour; TM. - touches made; T.R. - touches received; D.E.V.- direct elimination victories; R. - direct result in competition; C1 - the first competition; C2 - the second competition

In terms of performance capacity level recorded by the athletes who participated in the two national competitions (Table 4), one can notice the increase by 0.7 of the victories in groups tour ( $p < 0.01$ ), the increase by 2.5 of the touches made ( $p < 0.001$ ), the decrease by 5.1 of the touches received ( $p < 0.001$ ); the increase by 0.5 of the direct elimination victories ( $p > 0.05$ ) and the decrease by 2.8 points in the obtaining of the direct result in competitions ( $p > 0.05$ ).

Figure 1 shows the results of the correlation between the indicators of the technical-tactical training and the indicators of the physical training in initial and final testing.

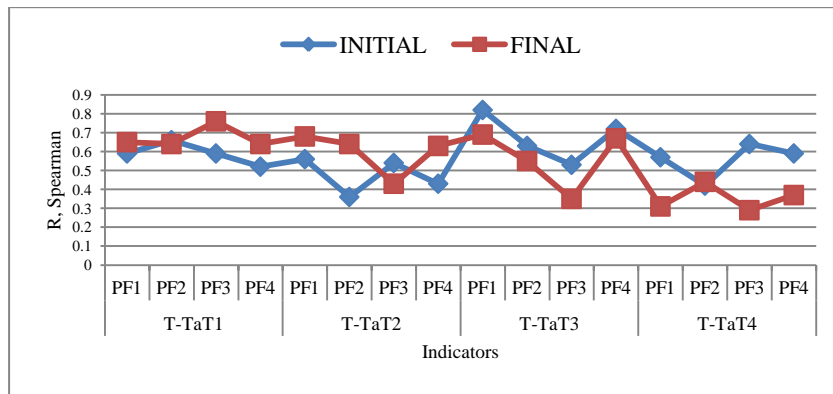


Figure 1. Correlation between the indicators of technical-tactical training and physical training in initial and final testing (PF1-4 – indicators of physical training - Table 2; T-Ta1-4 – indicators of technical-tactical training- Table 3)

The correlation between the indicators shown in Figure 1 highlights 32 correlations (16 in initial testing and 16 in final one), significant correlations at  $p < 0.01$  between T-TaT3 and PF1 in initial testing ( $R = 0.82$ ) and at  $p < 0.05$  in initial testing between T-TaT1 and PF2 ( $R = 0.66$ ), T-TaT3 and PF2 ( $R = 0.63$ ), PF4 ( $R = 0.72$ ); T-TaT4 and PF3 ( $R = 0.64$ ), while in final testing between T-TaT1 and PF1 ( $R = 0.65$ ), PF2 ( $R = 0.64$ ), PF3 ( $R = 0.76$ ) and PF4 ( $R = 0.64$ ); between T-TaT2 and PF1 ( $R = 0.68$ ), PF2 ( $R = 0.64$ ) and PF4 ( $R = 0.63$ ); between T-TaT3 and PF1 ( $R = 0.69$ ) and PF4 ( $R = 0.67$ ).

Figure 2 presents the results of the correlation between the indicators of the performance capacity and the indicators of the technical-tactical and physical training in initial testing and final testing.

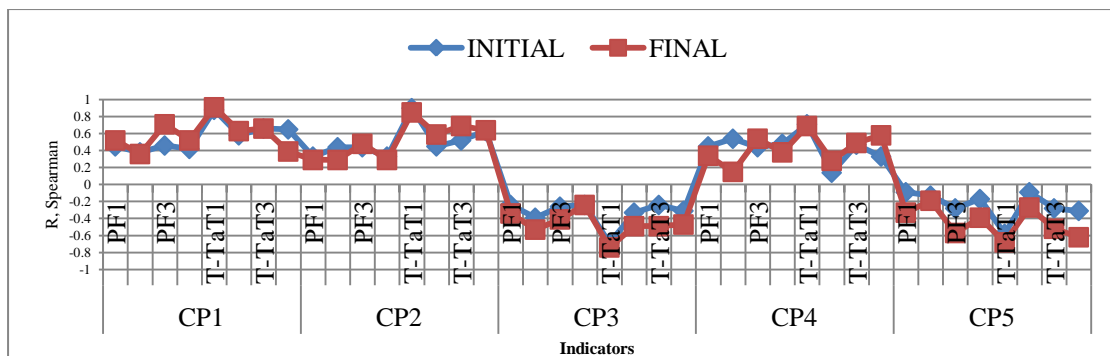


Figure 2. Correlation between the indicators of performance capacity and the indicators of technical-tactical and physical training in initial testing and final testing

The correlation between the indicators presented in Figure 2 reveals 80 correlations (40 in initial testing and 40 in final testing), significant correlations at  $p < 0.001$  between CP1 and T-TaT1 in initial testing ( $R = 0.88$ ) and in final testing ( $R = 0.90$ ) and T-TaT2 in initial testing ( $R = 0.91$ ); at  $p < 0.01$  between CP2 and T-TaT1 in final testing ( $R = 0.85$ ); at  $p < 0.05$  between CP1 and T-TaT3 ( $R = 0.66$ ) and T-TaT4 ( $R = 0.65$ ) in initial testing and between CP1 and PF3 ( $R = 0.71$ ) and T-TaT3 ( $R = 0.66$ ) in final testing; between CP2 and T-TaT3 ( $R = 0.69$ ) and T-TaT4 ( $R = 0.64$ ) in final testing; between CP3 and T-TaT1 ( $R = -0.74$ ) in final testing; between CP4 and T-TaT1 ( $R = 0.69$ ) in final testing; between CP5 and T-TaT1 ( $R = -0.68$ ) in final testing.

## Discussions and conclusions

In the case of the fencers, some specialised perceptions are developed due to long time practicing. The names given in fencing to these specialised perceptions are the “sense of distance”, the “sense of the blade”, the “sense of tempo”, and “the sense of rhythm”. Joined together, all these „senses” form the „tactical sense of fight” which is different in each fencer (Stoma, 1984).

The literature has studies that highlights various aspects related to the following matters: testing of performance fencers (Tsolakis, Kostaki, & Vagenas 2010); physiological and psychological features of the athletes

and prevention of accidents in fencing sport (Roi & Bianchedi, 2008); biomechanical characteristics in fencing (Chen et al., 2017), etc.

The analysis of the individual test sheets pointed out the improvement of the specific physical and technical indicators, as well as a higher performance level reached in competitions. The higher values of these indicators show the close connection that exists between the physical training indicators and the technical-tactical training indicators in the fencing training sessions. The results of the correlation reveal the significant relationship between the indicators of the physical training, technical-tactical training and performance capacity. The workouts for general physical development exert an influence upon the improvement of the technical procedures.

We observed that the values of the technical-tactical tests and the competition results improved differently in each athlete. The reason of this fact is the physical and technical exercising during the training sessions but also the temperament type of each fencer. The exercises used in the training sessions and especially the genetic endowment of the athletes influence the technique, tactics and competition results. Ensuring an adequate level of the physical and technical-tactical training with the help of the major means resulted in better performances in competitions, which validates the hypothesis proposed by this research.

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