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## THE EVALUATION PARAMETERS TRAINING SPECIFIC TO PRACTICE OF PERFORMANCE HANDBALL BY OF THE "SCALA" IT APPLICATION

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### Abstract\*

*Aim.* Develop an evaluation parameter applications for specific physical preparation and establishment of normative requirement progressive scales at a formative stage to another.

*Methods:* the bibliographic study; the direct and indirect observation; tests method; the experimental and graphical method.

*Results.* By using the equivalence of the results we calculated the minimum threshold of points achieved in each formative stage.

*Conclusions.* Each formative stage has established a normative scale. Promoting a formative stage to another is accomplished by performing scoring scale determined by adding the results (converted into points) received for the four tests on specific physical preparation.

*Key words:* evaluation parameters, specific physical training, formative stages, IT application.

### Introduction

Once the female players are involved in the organized practice of the game of handball, we may consider that their formative stages, as well as performance teams, begin taking shape. (Mihăilă, 2006). The selection and evaluation of the training level is done on the basis of the „formative models” which presuppose that each training stage (juniors I, II, III, seniors) be accompanied by normative exigencies ensuring the progress and reaching maximum performance. (Colibaba-Evuleț, Dună, 2007).

Testing and monitoring the performance handball inclinations of the female players is a constant activity and concern. In this regard, the evaluation of these inclinations or of the associated potential is strictly necessary to scientifically leading the training process. (Negulescu, 1997).

The purpose of research is the development of applications for the evaluation of parameters specific physical preparation and establishment of normative requirement progressive scales at a formative stage to another, leading to continuous improvement "human material" (Bota, 1984) promoted women's handball performance.

Research hypotheses:

1. If we identify handball high performance model sizes on specific physical preparation then they may become targets instructional purpose or likely to be completed during the four phases of the high performance handball: seniors, juniors I, II and III.

2. The software application developed by dots facilitates comparability of the results of tests

in the formative stage and for each part can be established scales criteria - increased regulatory stringency. (Dună, 1999).

Research objectives and tasks:

1. Handball model building high performance in terms of specific physical preparation to serve as the final target oriented activities, selection and training on formative stages;

2. Choice tests (control samples) to evaluate parameters specific physical preparation;

3. Equating the points parameters specific physical preparation and the level of training acquired in different phases of education, using the computer program "SCALA"

4. The initial and final level of specific physical training and the establishment of requirements for each step scales formative part.

Research methods: bibliographical study, direct and indirect observation, statistical and math tests, experimental and graphics.

Content operational approach:

The sample included 84 investigations sports formative classified into four stages: Stage I - III junior (22 sports); Stage II - II junior (18 sports); Stage III - junior I (23 sports) and stage IV - seniors (21 sports).

Operations and types of investigation carried out:

- Four measurements were performed initial and final specific physical preparation: dribbling through seven benchmarks 30m, movement in triangle, handball throwing away and pentasalt;

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- assessing the value of the players on the points formative stages through IT application developed for this purpose;
- developing training programs modeled on the phases of the circuit praxiological objectives-content-strategy-evaluation;
- attending a training course for 6 months that were applied training programs developed;
- final measurements - with comparability of results by points according to the mathematical model developed.

Presentation software application scaling results:

The computer program "SCALA" includes the following functions:

- a) database, which in turn has functions: 1. Tests control - the purpose of this function is to define and introduce the database control samples to be measured; 2. Name the teams - with this feature is inserted into the database name teams subject to the evaluation process; 3. Composition of the teams - the purpose being defined

allocation of athletes to teams in previous function; 4. The introduction of results - the aim being to introduce the sports results from control samples.

- b) Score calculation - the purpose of this function is to assign points to each result obtained by a sport within a sample.
- c) Results scoring - the purpose of this function is that of scaling presenting the results in various ways.

The results obtained and their interpretation

They were taken into account when scaling the results obtained by players in all teams of each core and each job in the team, in the two tests (initial and final).

The following tables present the results and corresponding points obtained by each team the players at the final testing of the control samples and statistical indicators calculated (Popescu, 2009):

Table 1. Calculation parameters specific physical preparation - Final Testing - Senior

No.	CODE NAME	Dribbling through seven benchmarks 30m		Movement in triangle		Handball throwing away		Pentasalt	
		Results	Points	Results	Points	Results	Points	Results	Points
1	DL-P	7.3	94.52	19.2	97.92	47	97.92	11.2	89.60
2	PT-P	7.0	98.57	18.8	100.00	48	100.00	12.5	100.00
3	TT-P	6.9	100.00	19.0	98.95	45	93.75	12.0	96.00
4	SM-P	7.0	98.57	19.0	98.95	42	87.50	11.5	92.00
5	EAV-E	6.5	96.92	18.8	98.94	39	95.12	11.8	96.72
6	MR-E	6.3	100.00	18.6	100.00	41	100.00	12.2	100.00
7	PI-E	6.8	92.65	19.3	96.37	37	90.24	12.0	98.36
8	NOA-E	6.8	92.65	19.2	96.88	35	85.37	11.5	94.26
9	LJ-E	7.0	90.00	19.3	96.37	39	95.12	11.0	90.16
10	BV-I	7.1	94.37	21.9	90.41	44	95.65	12.4	96.88
11	LN-I	7.0	95.71	21.5	92.09	41	89.13	12.0	93.75
12	LS-I	7.0	95.71	21.4	92.52	46	100.00	12.4	96.88
13	SG-I	6.8	98.53	21.4	92.52	42	91.30	11.5	89.84
14	VC-I	6.7	100.00	21.2	93.40	43	93.48	11.0	85.94
15	TA-I	6.8	98.53	19.9	99.50	44	95.65	12.8	100.00
16	MA-I	6.9	97.10	19.8	100.00	40	86.96	12.5	97.66
17	HR-C	6.8	100.00	21.0	100.00	39	95.12	11.1	85.38
18	CR-C	6.8	100.00	21.0	100.00	41	100.00	13.0	100.00
19	BR-PI	6.7	98.51	20.0	99.00	39	100.00	11.1	44.40
20	MO-PI	6.8	97.06	20.3	97.54	38	97.44	11.5	46.00
21	IR-PI	6.6	100.00	19.8	100.00	36	92.31	11.8	47.20
<b>TOTAL POINTS</b>			2039.40		2041.36		1982.06		1841.03
<b>Mean</b>		6.84	97.10	20.02	97.19	41.24	94.38	11.85	87.67
<b>Standard error</b>		0.05	0.63	0.23	0.69	0.77	1.01	0.13	3.94
<b>Median</b>		6.80	100.00	19.80	100.00	41.00	89.13	11.80	47.20
<b>Module</b>		6.80	97.06	21.40	92.52	39.00	100.00	11.50	46.00
<b>Standard deviation</b>		0.22	2.91	1.06	3.14	3.55	4.63	0.61	18.04
<b>Dispersion</b>		0.05	8.44	1.12	9.86	12.59	21.40	0.37	325.58
<b>Maximum value</b>		7.30	100.00	21.90	100.00	48.00	100.00	13.00	100.00
<b>Minimum value</b>		6.30	90.00	18.60	90.41	35.00	85.37	11.00	44.40
<b>Amplitude</b>		1.00	10.00	3.30	9.59	13.00	14.53	2.00	55.60
<b>Coefficient of variation (%)</b>		3.15	2.99	5.30	3.23	8.60	4.90	5.12	20.58

Table 2. Calculation parameters specific physical preparation - Final Testing - Junior I

No.	CODE NAME	Dribbling through seven benchmarks 30m		Movement in triangle		Handball throwing away		Pentasalt	
		Results	Points	Results	Points	Results	Points	Results	Points
1	VE - P	7.0	98.57	19.90	94.47	41.00	85.42	10.70	85.60
2	NMM-P	7.3	94.52	20.30	92.61	39.00	81.25	10.50	84.00
3	PA- P	7.1	97.18	20.00	94.00	38.00	79.17	10.70	85.60
4	SI - E	6.7	94.03	20.20	92.08	36.00	87.80	10.25	84.02
5	DAŞ- E	6.9	91.30	19.70	94.42	34.00	82.93	10.70	87.70
6	LAM- E	6.8	92.65	19.90	93.47	37.00	90.24	10.40	85.25
7	LR- E	6.7	94.03	19.80	93.94	35.00	85.37	10.75	88.11
8	NMA-E	6.9	91.30	20.40	91.18	32.00	78.05	10.55	86.48
9	BR- E	6.9	91.30	20.10	92.54	31.00	75.61	10.65	87.30
10	AMA-I	6.7	100.00	21.80	90.83	42.00	91.30	11.80	92.19
11	BFA-I	6.9	97.10	21.90	90.41	38.00	82.61	11.20	87.50
12	GOA-I	6.8	98.53	22.00	90.00	37.00	80.43	11.15	87.11
13	II-I	6.9	97.10	22.20	89.19	39.00	84.78	11.30	88.28
14	IK-I	7.0	95.71	22.40	88.39	41.00	89.13	10.90	85.16
15	IR-I	6.9	97.10	21.40	92.52	33.00	71.74	10.85	84.77
16	MA-I	7.2	93.06	22.80	86.84	36.00	78.26	11.15	87.11
17	MD-I	7.1	94.37	22.10	89.59	35.00	76.09	11.40	89.06
18	CBF-C	6.9	98.55	21.80	96.33	36.00	87.80	10.95	84.23
19	GA-C	7.1	95.77	22.20	94.59	37.00	90.24	11.15	85.77
20	MM-C	6.9	98.55	22.00	95.45	34.00	82.93	11.00	84.62
21	ACE-PI	6.6	100.00	21.20	93.40	33.00	84.62	10.25	41.00
22	AR-PI	6.9	95.65	20.60	96.12	31.00	79.49	10.15	40.60
23	PCM-PI	6.9	95.65	21.30	92.96	35.00	89.74	10.30	41.20
<b>TOTAL POINTS</b>			2202.02		2125.33		1915.00		1852.66
<b>Mean</b>		6.92	95.74	21.13	92.39	36.09	83.26	10.82	80.57
<b>Standard error</b>		0.03	0.56	0.21	0.52	0.64	1.12	0.09	3.29
<b>Median</b>		6.90	97.10	21.30	92.96	36.00	78.26	10.75	88.11
<b>Module</b>		6.90	95.65	22.20	94.59	37.00	90.24	11.15	85.77
<b>Standard deviation</b>		0.17	2.70	1.01	2.51	3.09	5.36	0.42	15.80
<b>Dispersia</b>		0.03	7.30	1.01	6.28	9.54	28.70	0.18	249.69
<b>Maximum value</b>		7.30	10.00	22.80	96.33	42.00	91.30	11.80	92.19
<b>Minimum value</b>		6.60	91.30	19.70	86.84	31.00	71.74	10.15	40.60
<b>Amplitude</b>		0.70	8.70	3.10	9.49	11.00	19.56	1.65	51.59
<b>Coefficient of variation (%)</b>		2.41	2.82	4.76	2.71	8.56	6.43	3.87	19.62

Table 3. Calculation parameters specific physical preparation - Final Testing - Junior II

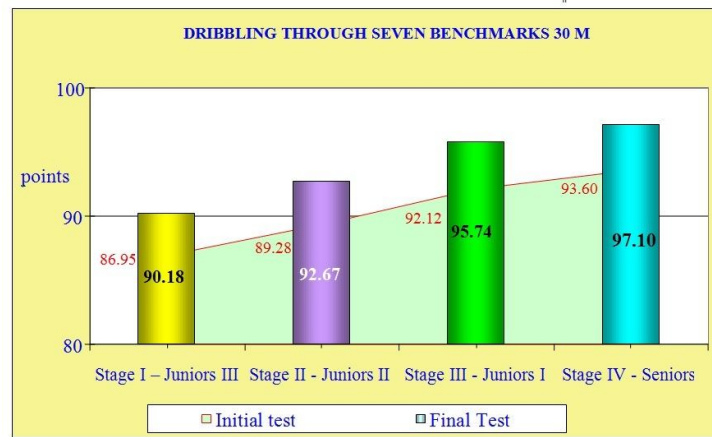
No.	CODE NAME	Dribbling through seven benchmarks 30m		Movement in triangle		Handball throwing away		Pentasalt	
		Results	Points	Results	Points	Results	Points	Results	Points
1	CR - P	7.1	97.18	21.0	89.52	34	70.83	9.45	75.60
2	MAM-P	7.3	94.52	21.0	89.52	31	64.58	9.50	76.00
3	ML- P	7.5	92.00	21.2	88.68	32	66.67	9.35	74.80
4	APD-E	6.9	91.30	20.9	89.00	32	78.05	9.30	76.23
5	FCE-E	7.2	87.50	20.8	89.42	26	63.41	9.20	75.41
6	RM-E	7.1	88.73	21.0	88.57	28	68.29	9.15	75.00
7	SR-E	6.9	91.30	21.0	88.57	24	58.54	9.15	75.00
8	CF-E	7.1	88.73	21.2	87.74	23	56.10	9.25	75.82
9	RI-E	7.0	90.00	21.2	87.74	25	60.98	9.20	75.41
10	SB-I	7.3	91.78	22.8	86.84	34	73.91	10.65	83.20
11	II-I	7.0	95.71	23.2	85.34	30	65.22	10.45	81.64
12	VM-I	7.1	94.37	22.9	86.46	31	67.39	10.40	81.25
13	CA-I	7.2	93.06	23.2	85.34	26	56.52	10.65	83.20
14	CA-C	7.1	95.77	23.1	90.91	28	68.29	10.20	78.46
15	AA-C	7.1	95.77	23.0	91.30	28	68.29	10.20	78.46
16	PA-PI	6.9	95.65	22.1	89.59	28	71.79	9.20	36.80
17	MT-PI	7.3	90.41	22.0	90.00	23	58.97	9.05	36.20
18	SA-PI	7.0	94.29	22.3	88.79	26	66.67	9.15	36.60
<b>TOTAL POINTS</b>			1668.07		1593.33		1184.50		1275.08
<b>Mean</b>		7.12	92.67	21.88	88.50	28.28	65.83	9.64	70.83
<b>Standard error</b>		0.04	0.68	0.22	0.40	0.83	1.41	0.14	3.78
<b>Median</b>		7.10	91.55	21.60	88.87	28.00	68.29	9.33	75.52
<b>Module</b>		7.10	95.77	21.00	88.57	28.00	71.79	9.20	36.80

No.	CODE NAME	Dribbling through seven benchmarks 30m		Movement in triangle		Handball throwing away		Pentasalt	
		Results	Points	Results	Points	Results	Points	Results	Points
	Standard deviation	0.16	2.89	0.94	1.69	3.53	5.99	0.59	16.04
	Dispersia	0.03	8.34	0.88	2.85	12.45	35.88	0.35	257.23
	Maximum value	7.50	97.18	23.20	91.30	34.00	78.05	10.65	83.20
	Minimum value	6.90	87.50	20.80	85.34	23.00	56.10	9.05	36.20
	Amplitude	0.60	9.68	2.40	5.96	11.00	21.95	1.60	47.00
	Coefficient of variation (%)	2.27	3.12	4.29	1.91	12.48	9.10	6.14	22.64

Table 4. Calculation parameters specific physical preparation - Final Testing - Junior III

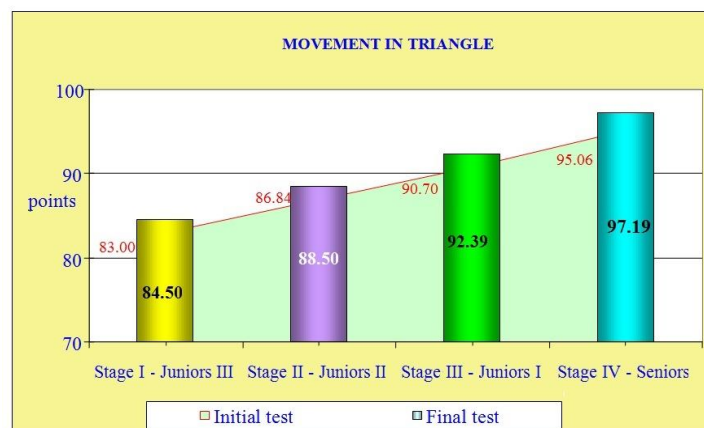
No.	CODE NAME	Dribbling through seven benchmarks 30m		Movement in triangle		Handball throwing away		Pentasalt	
		Results	Points	Results	Points	Results	Points	Results	Points
1	PAM-P	7.5	92.00	22.0	85.45	30	62.50	8.25	66.00
2	CE-P	7.7	89.61	22.0	85.45	27	56.25	8.15	65.20
3	GA-P	7.4	93.24	22.2	84.68	28	58.33	8.20	65.60
4	SS-E	7.2	87.50	22.0	84.55	27	65.85	8.30	68.03
5	IC-E	7.3	86.30	22.0	84.55	24	58.54	8.25	67.62
6	MA-E	7.3	86.30	22.2	83.78	22	53.66	8.05	65.98
7	DC-E	7.1	88.73	22.4	83.04	23	56.10	8.15	66.80
8	TMA-E	7.5	84.00	21.8	85.32	24	58.54	7.95	65.16
9	RR-E	7.2	87.50	21.9	84.93	25	60.98	8.25	67.62
10	AE-I	7.2	93.06	23.8	83.19	27	58.70	9.80	76.56
11	RL-I	7.3	91.78	23.9	82.85	28	60.87	9.55	74.61
12	LA-I	7.3	91.78	24.2	81.82	25	54.35	10.1	78.91
13	MM-I	7.4	90.54	24.0	82.50	26	56.52	9.85	76.95
14	ID-I	7.5	89.33	24.5	80.82	24	52.17	9.80	76.56
15	SA-I	7.5	89.33	23.9	82.85	30	65.22	9.55	74.61
16	IAM-I	7.4	90.54	24.1	82.16	24	52.17	9.60	75.00
17	VA-C	7.4	91.89	24.2	86.78	25	60.98	8.95	68.85
18	AA-C	7.4	91.89	24.1	87.14	28	68.29	9.10	70.00
19	PM-C	7.1	95.77	23.8	88.24	23	56.10	9.00	69.23
20	AA-PI	7.4	89.19	23.1	85.71	22	56.41	8.05	32.20
21	LA-PI	7.2	91.67	23.0	86.09	22	56.41	8.10	32.40
22	CF-PI	7.2	91.67	22.8	86.84	25	59.10	8.10	32.40
	<b>TOTAL POINTS</b>		1983.62		1858.74		1228.94		1536.29
	Mean	7.34	90.18	23.09	84.50	25.43	58.86	9.48	69.82
	Standard error	0.03	0.58	0.21	0.41	0.55	0.95	0.72	3.24
	Median	7.35	92.51	23.05	85.90	25.00	54.35	8.30	68.03
	Module	7.40	89.19	22.00	84.55	24.00	52.17	8.25	67.62
	Standard deviation	0.15	2.72	0.97	1.93	2.50	4.35	3.46	15.56
	Dispersia	0.02	7.40	0.93	3.73	6.26	18.95	11.98	242.12
	Maximum value	7.70	95.77	24.50	88.24	30.00	68.29	10.10	78.91
	Minimum value	7.10	84.00	21.80	80.82	22.00	52.17	7.95	32.20
	Amplitude	0.60	11.77	2.70	7.42	8.00	16.12	17.05	67.80
	Coefficient of variation (%)	0.04	3.02	4.19	2.29	9.84	7.44	36.51	23.30

**DRIBBLING THROUGH SEVEN BENCHMARKS 30M  
 AVERAGE SCORE INITIAL – FINAL TESTING**



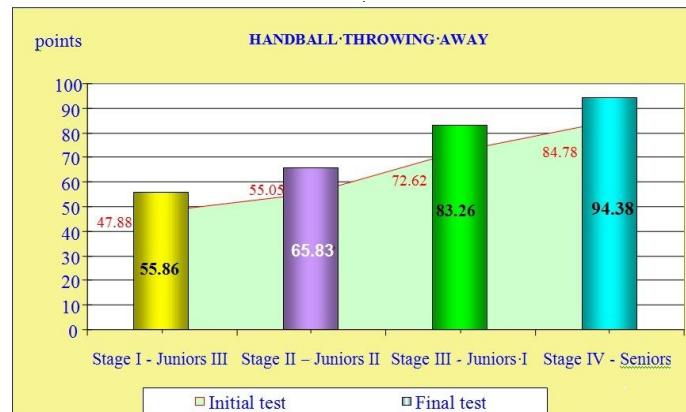
Graph 1. Dribbling through seven benchmarks 30 m – The average score – IFT

**MOVEMENT IN TRIANGLE  
 AVERAGE SCORE INITIAL - FINAL TESTING**

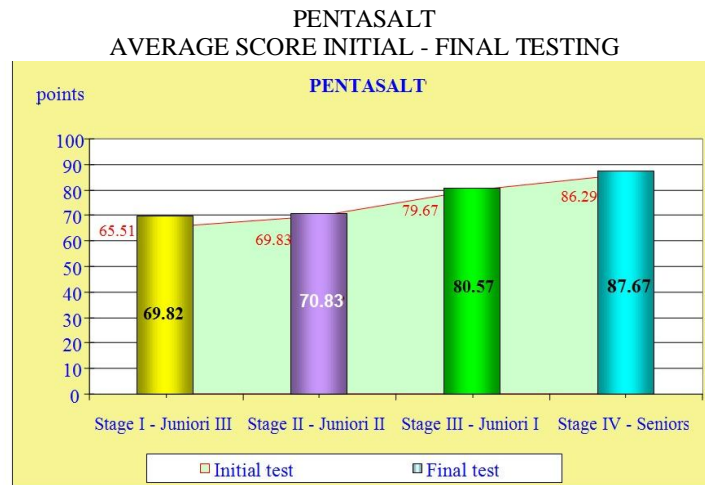


Graph 2. Movement in triangle – The average score – IFT

**HANDBALL THROWING AWAY  
 AVERAGE SCORE INITIAL - FINAL TESTING**



Graph 3. Handball throwing away – The average score – IFT



Graph 4. Pentasalt – The average score – IFT

### Results

1. It confirms first case of research that claims that handball player model based on high performance requirements can determine deductively decreasing standard requirement for subordinate models of selection and training. At the same time each formative stage the teaching-

learning-training evaluation and subordinated chain are monitored praxiological: objectives - content - strategy - evaluation.

The software application developed under the name "SCALA" enables us to convert the results of the tests in points. This operation can be easily traced in Table 5:

Table 5. Average score the formative stages

TEST	STAGE I	STAGE II	STAGE III	STAGE IV
	Juniors III	Juniors II	Juniors I	Seniors
<b>Average score on stage</b>				
<b>Dribbling through seven benchmarks 30m</b>	<b>90.18</b>	<b>92.67</b>	<b>95.74</b>	<b>97.10</b>
<b>Movement in triangle</b>	<b>84.50</b>	<b>88.50</b>	<b>92.39</b>	<b>97.19</b>
<b>Handball throwing away</b>	<b>58.86</b>	<b>65.83</b>	<b>83.26</b>	<b>94.38</b>
<b>Pentasalt</b>	<b>69.82</b>	<b>70.83</b>	<b>80.57</b>	<b>87.67</b>

2. In the four phases of education can use a system of point scoring parameters specific physical preparation to ensure speed of exigency increasing from stage to another.

3. Expected minimum normative scales were established with the help of computer application SCALA. These scales can be traced in Table 6:

Table 6. Results - Expected minimum score

AVERAGE SCORE	STAGE I JUNIOR III	STAGE II JUNIOR II	STAGE III JUNIOR I	STAGE IV SENIOR
<b>Average Amount</b>	<b>303.36</b>	<b>317.83</b>	<b>351.96</b>	<b>376.34</b>
<b>Standard deviation</b>	19.63	12.23	8.51	6.94
<b>Minimum score</b>	<b>283.34</b>	<b>301.00</b>	<b>335.11</b>	<b>359.73</b>

### Conclusions

1. Using "computer application SCALA" results by measuring parameters specific physical

preparation are converted into points, which facilitates obtaining timely information about the value of the players, teams progress to a stage



formative States and especially the establishment of scales normative requirement increased from a stage formative States.

2. The software application proposed equivalence point-value teams (the players) the phases of ensuring "quality of human material" alleged demands ever increasing demands of the international competitions of large-scale (J.O, CM., C.E. and other).

3. Each scale has a formative stage Criteria - normative. Promoting a formative stage to another is accomplished by performing a scoring scale determined by adding the results (converted into points) received for the four tests. These "scales" act as filters that passes only remarkable willingness for handball athletes with performance. (Șiclovan, Dună, 1980).

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