COMPARATIVE STUDY ON THE SPECIFIC AND TECHNICAL INITIAL TRAINING OF WEIGHTLIFTERS

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Abstract: The content of the practical activities of sports training, as well as the series of operations with an experimental character cannot be performed without the afferent appreciations on the different directions, types of training, levels of training, etc., on certain states, functions, levels of development and growth of the analyzed weightlifters' body which, in fact, would represent the technical training, an element persistently anticipated by our research as well as by others.Among the multitude of particularities required for a proper and accurate training, we took into account the weightlifters' somatic aspect, considering this aspect highly important as the weights planned during the training sessions can be selected and are conditioned by other measurements also. Among somatic tests (several states were appreciated through different tests), we find appreciations on certain indicators of the subjects from the experimental and control groups, the results being illustrated in the tables and figures below.

Current issue:

The comparative study of the weightlifters' somatic indicators in the pedagogic experiment reveals insignificant differences from a mathematical-statistical point of view.

Purpose:

The appreciation of the level of specific and technical training of weightlifters in the initial stage, beginners 10-12 years old, and of the different statistics in various research stages.

For a proper assimilation of the techniques afferent to these tests, for benefitting from a positive transfer of the practical skills and abilities, many specific experiences were planned, organised and performed, according to the elaborated order and method, as well as an established amount of exercises of the respective intensity. These exercises were the basis of the weight lifting technical exercises, both on fragments – algorithmisation and on the whole.

We mention that the subjects of the control group performed the training process according to the traditional (classical) working methodology. In keeping with the requirements of the elaborated experimental syllabus, the subjects of the experimental group approached the algorithmic systemic methodology.

Methodology of the research
1. Elaboration of the experimental programme on the subjects' specific and technical training
2. Organisation and development of the pedagogic experiment
3. Theoretical-experimental argumentation of the obtained results in view of the specific and technical training of the analysed weightlifters and the comparative study of the results. [6]

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We will describe below only some of the performed exercises.

Analysing the data presented in (Table 1. and Fig. 1), we find that in the initial testing stage both groups have the same level of the specific training, where t is comprised between 0.08 and 0.17, value of P>0.05. The lowest results are recorded in the pull without thrust test: 28.88±2.42 kg for the control group and 28.60±2.40 kg for the experimental group. These figures are satisfactory for beginners because this is one of the difficult tests, especially in the beginning stage. Intermediate values for this age group are recorded in the barbell upright row (without thrust) and toss without thrust. The indicators reveal an average of the lifted weight of 33.33±3.04 kg for the control group and 33.97±3.00 kg for the experimental group in the barbell upright row and 34.33±3.18 kg and 34.71±3.20 kg in the toss without thrust exercise, where we also find a uniformity of the training level.

For the other analysed parameters, the averages are significant, the weightlifters performing exercises with heavier weights, but which are easier to do given their structure and content due to the intervention of the large groups of muscles and of the comfortable lifting position. For instance, making genuflections holding the barbell on the back and on the chest, where the weight of the barbell represents 60% of the sportsman's possibilities at that time. The weightlifters also stood out in the other testing categories, revealing results which require a thorough, special and efficient selection [2, 3].

Table 1. Values of the indicators of the beginner weightlifters' specific initial training

Pos.	Tests	Statistical characteristics			
		Control group	**Experimental group**	**t**	**P**
1	Pull without thrust (kg)	28.88±2.42	28.60±2.40	0.08	> 0.05
2	Upright row without kg)	33.33±3.04	33.97±3.00	0.15	> 0.05
3	Toss without thrust (kg)	34.33±3.18	34.71±3.20	0.08	> 0.05
4	Back genuflections (kg)	61.07±5.61	62.00±5.64	0.12	> 0.05
5	Chest genuflections (kg)	57.67±5.18	58.12±5.11	0.06	> 0.05
6	Straightening (kg)	50.00±4.55	51.11±4.50	0.17	> 0.05
7	Pull tractions (kg)	37.53±3.53	38.40±3.51	0.17	> 0.05
8	Toss tractions (kg)	48.39±5.33	49.63±5.38	0.16	> 0.05

Note: P - 0.05; 0.01; 0.001. n = 12 f = 22 t = 2.074; 2.819; 3.792
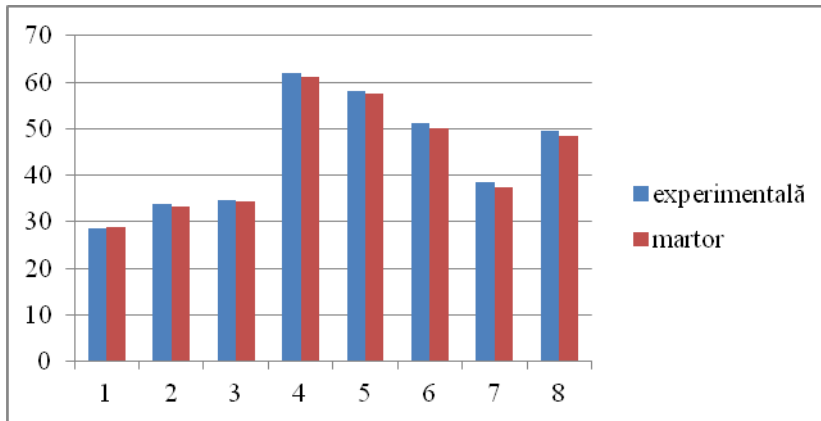
Note: 1, 2, 3, 4, 5, 6, 7, 8 – categories of tests
Fig. 1 Graphic illustration of the indicators of the initial specific training of the control and experimental groups (expressed in kg)

However, in the experimental group (as per Table 2, Fig. 2.) the situation of the results, illustrated in the table below, outlines the following: during the tests, the weightlifters of the experimental group obtained significant results in all the tests subject to the experiment. The algorithmisation method was applied at the basis of the training, the accuracy of barbell lifting representing a qualitative leap, technically speaking.

In the *pull without thrust* exercise the young weightlifters had remarkable results: in the initial stage: 28.60±2.40 kg, and in the final stage 37.64±2.35 kg where indicator t = 4.43 and value of P (significantly) < 0.01. In the *upright row without thrust*, good results are again obtained: in the initial stage: 33.97±3.00 kg, and in the final stage 44.41±2.92 kg where t = 4.11, and P < 0.01.

In the *toss without thrust* exercise, 34.71±3.20 kg in the initial stage and 46.44±3.16 kg, in the final stage, therefore t = 4.30, and P < 0.01. Significant results were also obtained in the *genuflections with the barbell on the chest* (t = 4.42; P < 0.01), *pull tractions* (t = 4.36; P < 0.01), *toss tractions* (t = 4.26; P < 0.01). But, the most important results were obtained in two of the testing categories, namely, *genuflections with the barbell on the back* where t = 4.83 and P < 0.01 and *straightening exercises* where t = 4.45 and P < 0.01. All these data are also important from a statistical point of view, reflecting that the subjects of this group (experimental group) were given a superior training throughout the entire duration of the pedagogic experiment due to the experimental structure and algorithmisation method applied in the training process.

Table 2. Values of the indicators of the specific training of the experimental group subjects in different research stages

Pos	Tests	Statistical characteristics			
		Initial data	Final data	t	P
1	Pull without thrust (kg)	28.60±2.40	37.64±2.35	4.43	< 0.01
2	Upright row without kg)	33.97±3.00	44.41±2.92	4.11	< 0.01
3	Toss without thrust (kg)	34.71±3.20	46.44±3.16	4.30	< 0.01
4	Back genuflections (kg)	62.00±5.64	83.25±5.58	4.83	< 0.001
5	Chest genuflections (kg)	58.12±5.11	77.40±5.05	4.42	< 0.01
6	Straightening (kg)	51.11±4.50	68.22±4.46	4.45	< 0.001
7	Pull tractions (kg)	38.40±3.51	51.43±3.47	4.36	< 0.01
8	Toss tractions (kg)	49.63±5.38	69.16±5.30	4.26	< 0.01

Note: P - 0.05;   0.01;   0.001. n = 12 f = 11   t = 2.101; 2.878; 3.922.
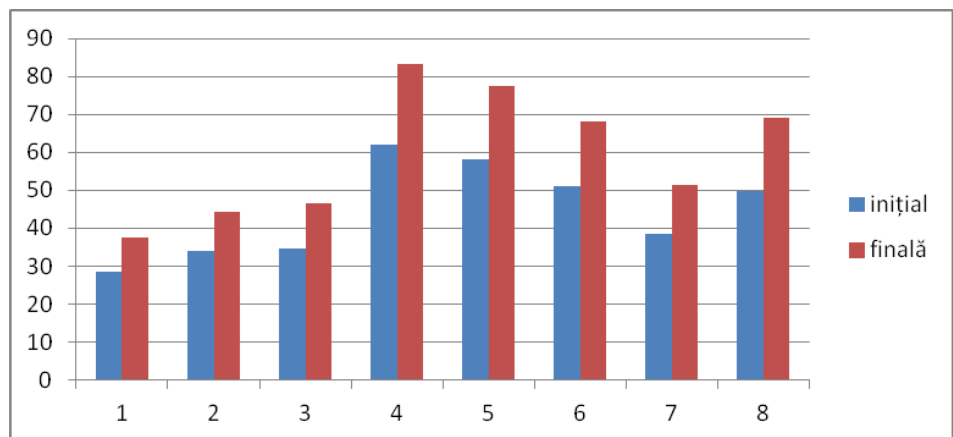
Note: 1, 2, 3, 4, 5, 6, 7, 8 – categories of tests
Fig. 2 Graphic illustration of the specific training of the experimental group weightlifters in the initial and final stage of the pedagogic experiment (expressed in kg)

For a clear image on the results of the differences between the averages of the control group and of the experimental group, we present

the values recorded in the final stage of the pedagogic experiment in the table and chart below (Table 3 and figure 3).

The presented data prove statistical differences in all types of testing. Although these differences are within the limit of t = 2.09 – 2.22 and value of P< 0.05, a certain increase is felt in the results obtained by the experimental group. They record 37.64±2.35 kg in pull without thrust, as compared to the subjects of the control group who obtained 30.18±2.40 kg in this stage. This weight difference (about 7 kg) is statistically significant with t = 2.22; P<0.05.

Exemplifying with another difficult exercise, upright row without thrust, we notice a difference of about 8 kg, where the control group obtains an average of 35.59±3.02 kg and the experimental group – 44.41±2.92 kg.

A similar exercise is tossing without thrust. Here, the subjects of the experimental group have better results too, recording an average of 46.44±3.16 kg, as compared to the control group: 36.78±3.17 kg (here t=2.16; P<0.05).

Table 3. Values of the indicators of the specific training of the experimental and control group subjects in the final stage of the pedagogic experiment

Pos.	Tests	Statistical characteristics			
		Control group	Experimental group	t	P
1	Pull without thrust (kg)	30.18±2.40	37.64±2.35	2.22	< 0.05
2	Upright row without thrust	35.59±3.02	44.41±2.92	2.10	< 0.05
3	Toss without thrust (kg)	36.78±3.17	46.44±3.16	2.16	< 0.05
4	Back genuflections (kg)	66.82±5.60	83.25±5.58	2.08	< 0.05
5	Chest genuflections (kg)	62.00±5.17	77.40±5.05	2.13	< 0.05
6	Straightening (kg)	54.21±4.51	68.22±4.46	2.21	< 0.05
7	Pull tractions (kg)	41.13±3.50	51.43±3.47	2.09	< 0.05
8	Toss tractions (kg)	52.64±5.32	69.16±5.30	2.20	< 0.05

Note: P - 0.05; 0.01; 0.001. n = 12 f = 22 t = 2.074; 2.819; 3.792

In the other types of tests, we notice the same differences only that the lifted weights are heavier due to the participation of the large groups of muscles, as previously shown.
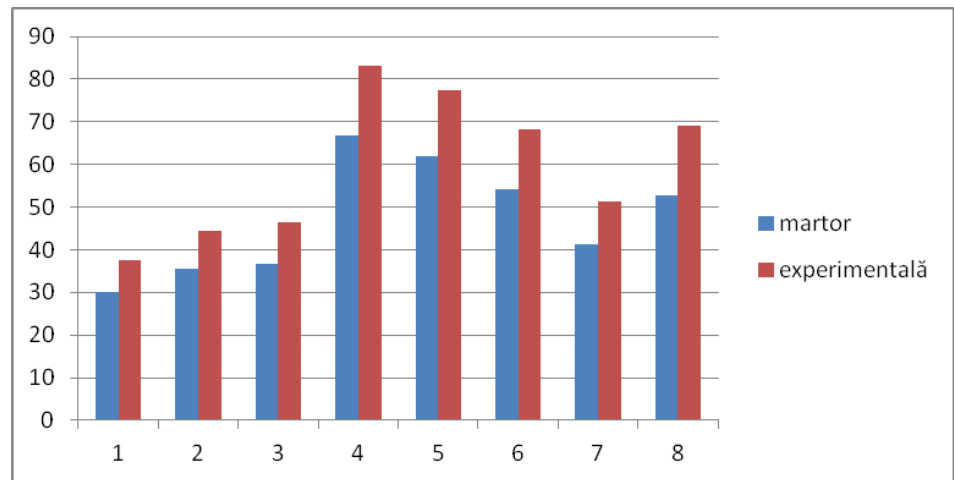
Note: 1, 2, 3, 4, 5, 6, 7, 8 – categories of tests
Fig. 3 Graphic illustration of the specific training of the control and experimental group weightlifters in the final stage of the pedagogic experiment (expressed in kg)

Given these arguments and the description of the real situation obtained in the pedagogic experiment, we can conclude that the algorithmic syllabus applied to the experimental group is efficient and should be further developed and applied.

As previously stated, in view of assimilating the barbell lifting technique in the two classical contest exercises (pull and toss), we searched and provided the most favourable movements and actions and the most representative specific and additional training methods [1, 6].

Conclusions

The comparative study of the indicators which characterise the somatic parameters of weightlifters within the pedagogic experiment has proven that the subjects of the experimental group had priority and superiority in most of the tests, with insignificant differences from a statistical-mathematical point of view. We find, however, an increase of indicator t above 1.0 in the subjects of the experimental group where, obviously, the value of P remains above 0.05.

This fact proves that somatic changes cannot be greatly influenced at this age by various external interventions.

Even if in the given case, these changes are numerically and statistically insignificant, the programme of exercises represents the beginning of these changes, therefore, the contribution of this methodology can be promoted, proving to be necessary and efficient in the specific exercises of the training sessions.

The typology of learning the technique of the two classical exercises, pull and toss, has led the specific training of weightlifters towards the acquisition (learning) of the motor skills and abilities specific to the correct lifting of the barbell, contributing at the same time to the chain assimilation of the fragments of the weight lifting stages. This is due to the permanent interaction between the specific training and technical training which, in the end, have resulted in marked statistical differences of $t= 4.11 – 4.83$; $P<0.01$; <0.001 in favour of the subjects of the experimental group. The progress of these weightlifters leads us to the conclusion that, practically and methodologically speaking, the changes which take place in the weightlifters' training can be guided and monitored through the intervention of specific exercising programmes. Subsequent to this, a better level of the execution technique was achieved (pull and toss), which the subjects have proven in various contests and competitions.

Exercising according to the systemic algorithmic structure has led to a significant increase in the level of acquisition of the weight lifting technique which is very important for the beginning stage.

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ANALIZA COMPARATIVĂ A PREGĂTIRII SPECIFICE ȘI TEHNICE A HALTEROFILILOR LA ETAPA INIȚIALĂ

Cuvinte cheie: grupa experimental, grupa martor, date inițiale, date finale

Rezumat: Conţinutul activităţilor practice ale antrenamentului sportiv, precum şi ansamblul de operaţiuni cu caracter experimental nu poate fi desfăşurat fără aprecierile respective efectuate asupra diferitelor direcţii, tipuri de pregătire, nivele de pregătire etc., a anumitor stări, funcţii, nivele de dezvoltare şi creştere a organismului sportivilor luaţi spre examinare, asupra nivelelor care, în fond, ar reprezenta pregătirea tehnică, element care a fost anticipat cu insistenţă în cadrul cercetărilor noastre şi altele.În multitudinea particularităţilor specifice deosebit de necesare unei pregătiri adecvate şi corecte s-a ţinut seama şi de aspectul somatic al sportivilor considerând acest aspect de o mare importanţă, deoarece încărcăturile planificate în cadrul şedinţelor de antrenament pot fi selectate şi sunt condiţionare şi de asltfel de măsurători. Printre testările de ordin somatic (de altfel au fost apreciate mai multe stări prin intermediul diferitelor teste), se regăsesc şi aprecierile făcute asupra anumitor indicatori ale subiecţilor din grupările experiment şi martor, cu rezultatele descrise în tabelele şi figurile de mai jos.