

INFLUENCE OF THE INSANITY WORKOUT ON THE MOTOR CAPACITIES OF THE STUDENTS FROM THE HIGHER EDUCATION MILITARY EDUCATION SYSTEM

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Abstract

The purpose of this research is to improve the motor capacities of the military students (spring and coordinative abilities) by applying the Insanity Workout in the PE lesson.

The following scientific methods were used in our research: documentation, observation, statistical processing and graphical representation of the results.

The evaluation of the subjects was based on the Illinois Agility Test and the Vertical Jump Test (Sargent Jump Test).

The research included the following stages: stage 1 - conducting an initial evaluation; stage 2 - applying the Insanity Workout; stage 3 - performing a final evaluation of the studied subjects to assess their response (evolution / involution / stagnation); stage 4 - interpretation of results and conclusions.

The results of Sargent Jump Test shows that the average spring increased by 2 cm (4.1%), from 48.30 at the initial testing, to 50.30 cm at the final testing. The difference between the average values enters the interval (1.20 ; 2.80) in 95% of the cases. The dispersion (spread of the data) is homogenous at both testings.

Conclusions. After applying the Illinois Test, the average time decreased by 0.50 sec (2.8%), from 17.49 at the initial testing, to 16.99 sec at the final testing. With 95% confidence, the difference between the average values enters the interval (-0.89 ; -0.10). The dispersion (spread of the data) is homogenous at both testings.

Keywords: Insanity Workout, Sargent Jump Test, Illinois Test, motor capacities.

Introduction

The military physical education is a compulsory subject matter in the education plan from the higher education military institutions (Law of physical education and sports no. 69/2000, chap. 2, art. 7). Effort in the PE lesson is oriented on several directions, such as: developing motor capacities, perfecting utility-application motor skills in sports games and self defense etc. In the dynamics of the effort in the PE lessons, the affected metabolic areas lead to the increase and development of the effort capacity needed by the future officer.

Military physical education provides quantitative and qualitative biopsychometric support expressed by physiological indices of speed, skill, resistance and strength, plus a varied system of principles and motor skills (Stănculescu, 2018, p. 257).

Adyrkhaev, S.G. and Ilchenko, S.S., in their scientific research work propose the introduction of new teaching styles in higher education institutions. The success of implementing new programs in optimizing students' training is proven by local and foreign specialists. They note that the new teaching styles allow students to actively participate in the educational process and to achieve the set

objectives with high efficiency. (Osipov, 2016, p. 4, p.33).

The use of audio and visual support contributes to saving time, increasing knowledge, understanding and interest of students (Al-Haliq, 2014, p. 21). Visual aid arouses the interest of students and helps teachers to easily explain concepts (Ghulam, 2015, p.26).

The appearance of new training programs is meant to diversify the used means, and the novelty element clearly contributes to a greater availability from the subjects' part, thus avoiding the appearance of routine. Thus, applying Insanity Workout during the PE lesson represents an efficient solution to influence the whole psychosomatic system of a man.

The Insanity Workout contains simple exercises, with few changes of position, without turns and twists or complicated choreographies. The workout is based on a fitness method called a "maximum interval workout" and implies doing exercises at full power for 3 minutes, followed by 30 seconds of rest. The exercises of this workout vary from cardio, to plyometric exercises (when one exercises intensively, with quick movements to increase the muscular force), stretching and abdominal exercises.

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The correlation between physiological, biological, biomechanical peculiarities, revealed through aerobic capacity assessment tests, and the results obtained by performing the Insanity Workout allows us to establish objective effort parameters. (Marinescu, G., 2014, p.249)

Structure of motor capacity after M. Ardelean-Roman, 1996: (speed, strength, strength); coordination skills (skill); complementary capacities (flexibility); conditional motor capacity - force.

R. Thomas and his collaborators in the „Driving Skills" quoted by Smîdu, N.(2017, p. 225) classify the force and according to the different phases of its production:

- the starting force is to increase the intensity of the contraction even in the initial phase of the force and results in a high initial speed;
- explosive force which is characterized by the speed of force increase due in particular to the speed of shrinkage of the fast fibers;
- maximum force expressed by the maximum ability of the athlete to produce a voluntary contraction against unstoppable resistance. It is set statically.

Coordinative abilities are considered by A. Dragnea (2002, p.) as a "complex of qualities mainly psycho-motor which involves the ability to quickly learn new movements, rapid and efficient adaptation of various conditions, specific to different types of activities, restructuring through the existing motor fund".

The same greater capacity is defined as "a psychomotor quality, which is to establish the correlation between central nerves and skeletal muscles while maintaining movement" (T. Virgil, 1999, p.121). Standing sideways on the wall with one arm raised, mark the maximum height that the athlete can reach without lifting the sole off the ground, then ask to perform a maximum jump, on two legs, touching the wall at the highest possible point. The test measures the distance between the two points.

Blume (1981, quoted by R. Manno, 1992) considers that the need for information that allows the analysis of the evolution of the coordination capacity includes:

- capacity for space-time continuum orientation;
- ability to combine and match movements;
- balance capacity; - kinesthetic differentiation capacity;
- motor reaction capacity;
- ability to transform movement;
- sense of rhythm (rhythmic ability).

Coordination capacity can be defined as a psychometric quality, which is based on the

correlation between the central nervous system and skeletal muscles while performing the movement (Smîdu, N., 2014, p.91)

The purpose of the research is to offer solutions to optimize the PE lessons from the higher education military system by applying a workout to achieve the proposed objectives.

Hypothesis. When establishing the hypothesis of the experimental research, we started from the idea that the application of the Insanity Workout during the PE lesson from the higher education military education system leads to an optimization of the students' motor capacities.

The research subjects were 30 military students, from the age group 1998-1999, and the used assessment tests were: the Illinois Agility Test and the Vertical Jump Test (Sargent Jump Test).

The vertical Jump Test (Sargeant Jump) - its objective is to measure explosive force at the lower limbs. (Mackenzie, B., 2005, p. 128)

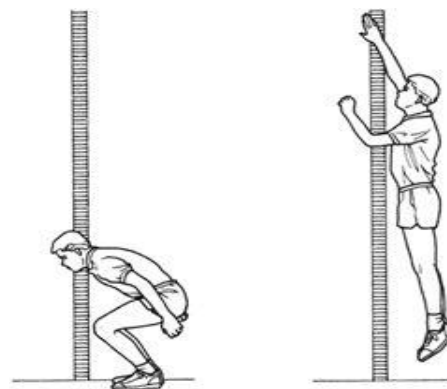


Figure 1. Description of the Sargeant Jump

Standing sideways on the wall with one arm raised, mark the maximum height that the athlete can reach without lifting the sole off the ground, then ask to perform a maximum jump, on two legs, touching the wall at the highest possible point. The test measures the distance between the two points. The best success is recorded.

Rating - excellent > 70cm; very good 61-70; above average 51-60; average 41-50; below average 31-40; poor 21-30; very poor < 21;

Illinois Agility Test aims to assess

agility(Mackenzie, B., 2005 ,p.62). The length of the test route is 10 m, and the width of 5 m, we use 4 milestones to mark the rectangle of 10/5, the distance of 10 m in the middle of the width of 5 meters is divided into 4 at a distance of 3.33 m from each other.

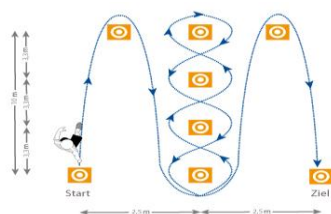


Figure 2. Illinois Agility Test Route Description

Rating- males(seconds)excellent < 15.2; above average- 15.2 – 16.1 ; average- 16.2 – 18.1; below average 18.2 - 19.3; poor>19,3;

The initial testing was performed in the gymnasium of „Mihai Viteazul” National Intelligence Academy in the period 15th – 18th October 2018, and the final testing in the period 10th – 13th June 2019.

The actual research consisted in using a workout (*Insanity*), which was applied to the group of students twice a week, in the 6th phase of the PE lesson, in the period 22nd October 2018 – 7th June 2019.

The *Insanity* Workout contains simple exercises, with few changes of position, without turns and twists or complicated choreographies. The workout is based on a fitness method called a “maximum interval workout” and implies doing exercises at full power for 3 minutes, followed by 30 seconds of rest. The exercises of this workout vary from cardio, to plyometric exercises (when one exercises intensively, with quick movements to increase the muscular force), stretching and abdominal exercises.

Table 1. Summary table with the results obtained by the students at the Vertical Jump Test (Sargent Jump Test)

I.T. = Initial Testing

F.T. = Final Testing

Nr.crt.	Subiecți	Sargeant Jump	
		T.I.	T.F.
1	G.M.	40	42
2	C.E.	60	60
3	G.M.	50	50
4	N.D.	50	55
5	C.V.	40	45
6	N.O.	50	55
7	V.G.	50	55
8	O.G.	65	65
9	E.D	45	45
10	T.D.	42	42
11	C.B.	45	43
12	B.O.	47	50
13	M.V.	42	42
14	C.A.	41	41
15	M.C.	50	52

16	Ș.R.	50	50
17	M.A.	50	55
18	C.C.	47	50
19	C.A.	51	55
20	T. R.	50	52
21	S. S.	50	55
22	G.T.	54	55
23	U. A.	36	37
24	D.A.	50	53
25	C.A.	47	50
26	B.C.	50	50
27	Ș.G.	50	50
28	J.A.	35	35
29	D.C.	57	60
30	P.L.	55	60

Statistical indicators	I.T.	F.T.	Statistical indicators	Differences F.T.-I.T.
Average value	48.30	50.30	Difference between average values	2.00
Median	50.00	50.00	Achieved progress	4.1%
Standard deviation	6.53	7.14	95% C.I.	(1.20 ; 2.80)
Minimum	35	35	Standard deviation	2.15
Maximum	65	65	Bilateral paired t-test	t = 5.096 p < 0.001
Amplitude	30	30	Effect size	0.93
Variability rate	13.5%	14.2%		

significant, $p < 0.001 < 0.05$ for $t = 5.096$ and $df = 29$.

Table. 2 Sargent Jump Test-statistical indicator

At the Sargent Jump Test, the average spring

Difference between average values	Progress	Difference size	The difference is:	Null hypothesis
2.00	4.1%	high	statistically significant	rejected

increased by 2 cm (4.1%), from 48.30 at the initial testing, to 50.30 cm at the final testing. The difference between the average values enters the interval (1.20 ; 2.80) in 95% of the cases. The dispersion (spread of the data) is homogenous at both testings.

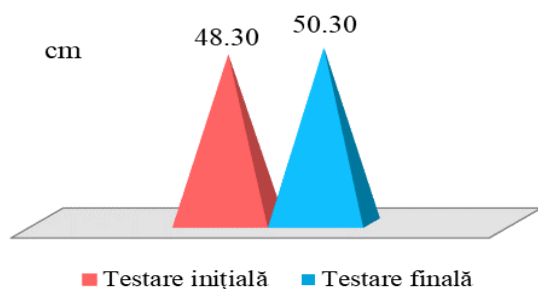


Figure.1

According to the t-test, the increase of the spring at the end of the training period is statistically

The effect size index indicates a high difference between the two average values. The average values determined at both testings and the students' individual progress are graphically shown in fig. 1 respectively fig. 2.

Table 3.Synthesis

Jump Test – individual progress

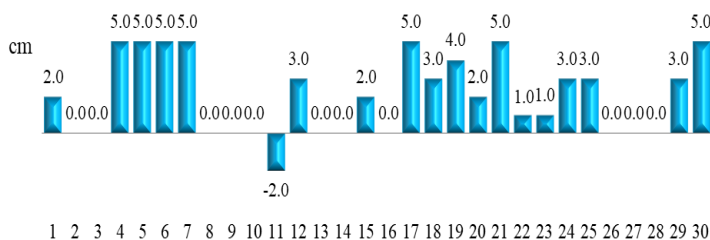


Figura 2.

Table 4. Summary table with the results obtained by the students – experiment group at the Illinois Agility

No.	Subjects	Illinois	
		T.I.	T.F.
1	G.M.	17,8	17,8
2	C.E.	15,5	15,3
3	G.M.	16,6	16,5
4	N.D.	16,6	16,6
5	C.V.	16,9	16,,9
6	N.O.	16,0	15,9
7	V.G.	15,9	15,9
8	O.G.	15,8	15,4
9	E.D.	17,8	17,5
10	T.D.	16,9	16,7
11	C.B.	18,3	18,1
12	B.O.	17,5	16,9
13	M.V.	23,4	17,5
14	C.A.	17,0	16,9
15	M.C.	17,3	16,8
16	Ș.R.	16,8	16,8
17	M.A.	17,7	16,9
18	C.C.	18,0	17,8
19	C.A.	17,1	16,4
20	T. R.	16,9	16,5
21	S. S.	17,9	17,6
22	G.T.	17,5	16,7
23	U. A.	17,7	17
24	D.A.	18,3	17,5
25	C.A.	16,3	15,9
26	B.C.	19,4	19,2
27	Ș.G.	19,0	18,5
28	J.A.	18,2	18
29	D.C.	17,9	17,8
30	P.L.	16,6	16,5

Table 5. Illinois Test –statistical indicator

The average time at the Illinois Test decreased by 0.50 sec (2.8%), from 17.49 at the initial testing, to 16.99 sec at the final testing. With 95% confidence, the difference between the average values enters the interval (-0.89 ; -0.10). The dispersion (spread of the data) is homogenous at both testings.

The decrease of the average time at the end of the training period of the experiment group is statistically significant, $p = 0.016 < 0.05$ for $t = 2.564$ and $df = 29$. The effect size shows a low to medium difference between the two average values. The average values determined at the two testings and the individual progress of the sportsmen/sportswomen are graphically displayed in fig. 3, respectively fig. 4.

Table 6. Synthesis

Statistical indicators	I.T.	F.T.	Statistical indicators	Differences F.T.-I.T.	
Average value	17.49	16.99	Difference between average values	-0.50	
Median	17.40	16.90	Achieved progress	2.8%	
Standard deviation	1.45	0.89	95% C.I.	(-0.89 ; -0.10)	
Minimum	15.5	15.3	Standard deviation	1.05	
Maximum	23.4	19.2	Bilateral paired t-test	t	p
Amplitude	7.9	3.9		2.564	0.016
Variability rate	8.3%	5.2%	Effect size	0.47	

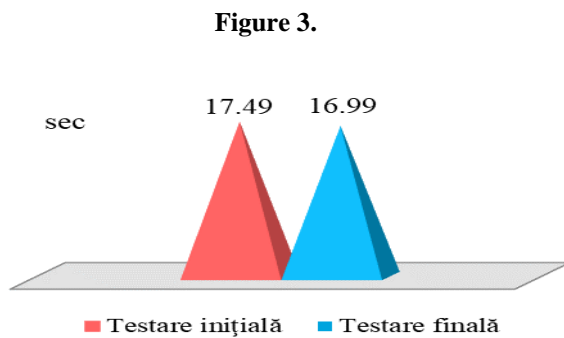
Difference between average values	Progress	Difference size	The difference is:	Null hypothesis
-0.50	2.8%	low to medium	statistically significant	rejected

Thus, at the Sargent Jump Test, the average spring increased by 2 cm (4.1%) and, at the Illinois Test, the between the two averages.

Test and a low to medium difference at the Illinois Test between the two averages. In conclusion, it is confirmed the hypothesis of the research.

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The Illinois Test –individual progress

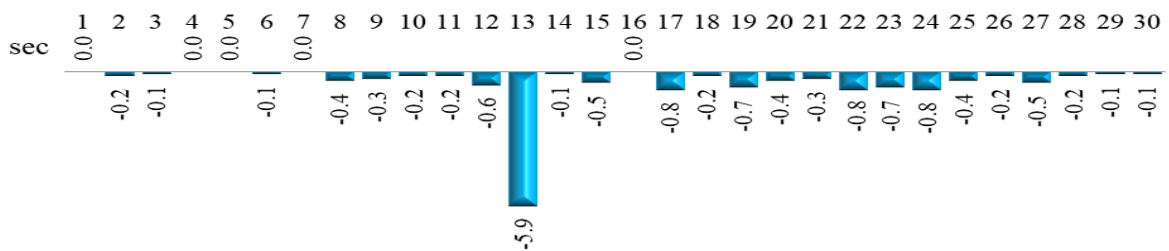


Figure.4

Conclusion

After applying the Insanity Workout during the PE lesson from the higher education military education system, we noticed an improvement of the students' motor capacities.

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Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XX, ISSUE 2, 2020, Romania

The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
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