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PHYSICAL PROFILE OF PARTIZANI TEAM IN GREEK-ROMAN WRESTLING FOR YOUNGSTERS

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Abstract

Purpose. The goal of this research is to understand and analyze the physical skills of the Greco-Roman wrestling team, applying a systematic scientific procedure. Through various physical tests that we will apply, we aim at arriving to results that will reflect the current state of the wrestlers and the new opportunities for all weight categories. These results will help us to compare the youngsters' results with those of the professionals and FILA's standards.

Methods. The youngsters are of age 18-21 years, various physical tests will be used and all possible results for each category will be recorded. For the realization of this study we consult the various literature and studies by international and national authors. The data obtained from the tests were processed in Excel and the various tables and graphics were constructed.

Results. After processing the data of the tests for the following components: aerobic power, speed and power, speed endurance, speed strength, strength endurance, dynamic strength endurance, flexibility and special mobility; we notice that the wrestlers of light and medium weight are faster than those of heavy weights especially in such tests where body weight is the primary determinant e.g. rope climbing or gymnastic iron. Also, the wrestlers of light weights quickly perform actions typical of the sport of wrestling, such as Dummy Throws. This is explained by their relative strength compared to those of heavy weights. Interesting are the results of the sprint, which is predominated by those weighting 84 kg. Perhaps this is related to the great muscular mass those wrestlers of this weight have, yet it remains to be confirmed in future studies.

Conclusions. The results of this study can serve as a guide for all wrestling coaches, who can use these results for a more harmonious preparation of their athletes. Having said that, the study has applicable implication and serves to increase the quality of sports in this discipline.

Key words: Greek-Roman wrestling, aerobic power, speed strength, flexibility, dynamic strength endurance.

Introduction

Aim and objectives

Wrestling is a sport that requires force and power production from both the upper and lower extremities muscles as well as isometric and eccentric force for the various wrestling techniques. (Fatouros, Destouni, Margonis, Jamourtas, Vrettou, Kouretas, Mastorakos, Mitrakou, Taxildaris, Kanavakis, Papassotiriou, 2006), (Diezemann, 2005). Accomplishments in wrestling can be by improvements of some criteria relevant to high performance, such as physical and physiological power, technical ability, mentality tactics, experience and motivation. (Niebel, Niebel, 1982)

The aim of this study is to explore, to try to understand and to study the physical capacities of the team which exercise the Greco – Roman wrestling which is the subject of our research applying systematic scientific procedures. The origin of this scientific research comes from the great performance of Partizani team in the national and international activities, and which from year to year has experienced a visible growth in the context of results and physical performance.

Via the different physical tests which are going to be applied, we will reach to results that will reflect the actual state of the young wrestlers of the all weight categories. These results will be helpful in the comparison process of them to those of Elite and FILA standards, as well as to give solution to a problem raised even though the solution of this problem isn't our main aim.

The final results and the conclusions which will come out from this research may suggest the possible solution drafting this way a training plan which will be used to improve the wrestlers capacities according to the required standards. The aim of this research in itself is to understand better the phenomena, passing through different systematic steps and following some well defined procedures aiming that the results obtained in the end of this process are as less as possible subject influenced. Respecting rigorously the scientific method during the research, aims to minimize as much as possible this subjectivity in order that the final research result is as objective as it may be possible. As a conclusion, the study will give valuable recommendations for the future of the team, as well as

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for other teams in general in the future.

Study methodology

We have chosen as a study case "Partizani" team of the Greco – Roman wrestling for youngsters, which for many times has won the champion title. There are taken into consideration all weight categories from 50 kg to 120 kg, in a total of 8 weights. Some from the subjects which were taken as a study case, have been announced national champions for 2012. They were tested 10 days after the ending of the national championship and as a reference for the weights category it was taken the weight of the sportive activity. The atmospheric conditions during the test have been very favorable. The temperature have varied from 20⁰ -22⁰ C.

Study methods used:

1. This is a study which bears a natural character because it has a small financial value (this kind of tests don't need big financial support) and this is the main reason why we chose this method. This kind of test method it is widely used from the Russian researchers. The technology and laboratories usage to test this method, it was firstly used from the American and German researchers, and this is still not present in our country even for the fact that it is very expensive.

2. The subjects are of the age 18-21. There are been used different physical tests and there are given results for every wrestler according to the weight categories.

3. There are used the instruments and equipments such as: cronometer, meter, calculator, whistle, dummy with different weight, rope, astound, flag etc. They are taken from the Wrestling and Athletics Federation and they are standartized and certificated. All tests are standartized according to FILA-s studies. For this research realization, it was used literature and different studies from our country and foreign authors. The data obtained from the tests were elaborated in Excel and presented in different tables and graphics.

4. There have been realized various activities and the time for tests implementation was dividend into 3 days (tests are implemented every day in the morning and in the afternoon). Running and Standing Long Jump are realized at "Qemal Stafa" National Stadium, where it is found a running track according to the international athletics standards and which it is certified from the international sports institutions. The wrestling tests were realized in the Olympic carpet which is certified from FILA. The pull-ups tests and rope climbing were implemented in the gym of the artistic gymnastic (with olympic paralels certified from the National and International Gymnastic Federation). While, the weight

lifting test in horizontal bench was performed in the weightlifting gym with Olympic astound. They were tested for the following physical elements: *Speed endurance*: Dummy Throw (Curby, 2005). *Aerobic Power*: Running 3 x 750 meter (Curby, 2005). *Speed & Power*: 60 meter sprint, Standing Long Jump (meters) (D.G. Curby, 2005), (D. Curby, 2010). *Speed strength*: Weight lifting test in horizontal bench 8 times (implementation time). Pull-ups 10 times (implementation time) (Curby, 2005). *Strength endurance*: Pull-ups (no limited time) (D. Curby, 2010). *Dynamic strength endurance*: 5 meter height rope climbing (5 minutes) (Curby, 2005). *Flexibility and special mobility*: Flips from a wrestling bridge (Curby, 2005). A change of position from bridge face down to bridge face up by moving feet (6 times to the left, 6 times to the right) (s). (Curby, 2010)

The main reason why I decided to use the above mentioned components is because they are the basic elements for the physical preparation and they play key a role in reaching high results. *Time of tests implementation lasted three days*:

In the first day it was tested: The 60 meter running it was developed divided into 4 batteries (2 wrestlers in each). Standing Long Jump was realized in the running track (each from the athletes were tested twice, and the best time was recorded as the final result). The 3 x 750 m running was realized into two batteries (every battery with a content of 4 wrestlers), between every period it was made a one minute break.

In the second day it was tested: Dummy Throw which was realized 3 x 30 sec, with 30 sec break between every session. For every session it was recorded the throw number for each of the weight categories. Flips from a wrestling bridge 1 x 30 sec where for every weight it was recorded the passing number. 360⁰ rotations from wrestling bridge, it was measured the time of 6 rotations into one direction and 6 into the other direction (there were joined both results and it came out a time). The weight lifting test in horizontal bench, for each category it was calculated for the astound weight to be 75% of the corporal wrestler weight. *In the third day it was tested*: Pull-ups which were realized in two phases: with no limited time and with limited time in the pull-ups implementation (10 pull-ups for how many seconds of implementation). Rope climbing which was realized with a 5 meter long rope, time of climbing 5 min, results of how many times can its' climbing can get realized within this time for each of the weight categories. Climbing rules used: they couldn't use their legs, horizontal leg position, and no contact with the ground during 5 minutes etc.



Study results

Table nr.1: The Dummy throw standard 3 x 30 sec according to FILA-s.
 (D.G. Curby, 2005).

N r.	The throw standard based on FILA	The Dummy throw 3 x 30"			Max	Min	Ave	Ideal max	Ideal Ave	Throw Test Index
		30"	30"	30"						
		I	II	III						
1.	The ideal throw Nr.	16.0	13.0	10.0	16	13	13.00	16	13	100 %

In table nr.1 it is reflected Dummy throw with amplitude (suplex), 3 x 30 seconds with 30 sec break between every session. This method it was used from the American scientist David Curby in his study titled "The physical test of the Greco – Roman Wrestlers". In the table it is presented the throws result which should

be realized for every 30 sec session. The maximal, minimal and average throws as well as the throw test index which is 100% based on the standard results of FILA. For every weight categories we will come out with our results and we will make the respective comparisons based on their index.

Table nr.2: The Dummy throw 3 x 30 sec. (D.G. Curby, 2005).

N r.	Weight category	Dummy Weight	The Dummy throw 3 x 30			Max	Min	Ave	Ideal Max	Ideal Ave	Throw Test Index
			1st 30 sec	2nd 30 Sec	3rd 30 sec						
1.	50 Kg	50 Kg	13	10	9	13	9	11	16	13	77.72 %
2.	55 Kg	55 Kg	12	10	8	12	8	10	16	13	70.67 %
3.	60 Kg	65 Kg	12	9	8	12	8	10	16	13	70.67 %
4.	66 Kg	65 Kg	13	11	8	13	8	11	16	13	75.02 %
5.	74 Kg	65 Kg	11	10	7	11	7	9	16	13	63.63 %
6.	84 Kg	85 Kg	10	10	8	10	8	9	16	13	63.51 %
7.	96 Kg	85 Kg	10	8	9	10	9	9	16	13	66.20 %
8.	120 Kg	95 Kg	10	7	6	10	6	8	16	13	56.59 %

In table nr.2 we have presented the test results of the Dummy throw 3 x 30 sec with 30 sec of break for every session. There were tested 8 categories, from 50 kg to 120 kg. The Dummy weight used is different for all wrestlers' weight categories. The weight categories 50, 55, 60 and 66 kg have reached the highest result compared to those from 66 kg to 120 kg which fall in regressive manner.

For the extraction of the index of the Dummy throw it was used this formula:

$$(((\text{Lowest \# Throws/Ideal High}) * 3.5) + ((\text{Highest \# Throws/Ideal High}) * 4.5) + ((\text{Average \# Throws/Ideal Average}) * 2)) / 10 * 100. \text{ (D.G. Curby, 2005)}$$

The highest result is that of 50 kg, while the lowest one is that of 120 kg.

Figure nr.1. Comparison of results between Partizani team and the

standard of FILA for Dummy throw.

In figure nr.1 we have presented the Dummy throw results for all weight categories, in order for us to compare them later with those of FILA (for all three throw sessions). If we compare the results of our team for the first throw session with those of FILA, it is visibly noticed that the weight categories 50, 55, 60 and 66 kg are far from the standard of 16 throws. They have reached nearly the average realizing 12-13 throws (13 throws for the second session according to FILA). While the other weights 74, 84, 96 and 120 kg are far away from this standard which for the first session have reached the same number of throws as it is realized at FILA in the third session. So, they have not reached acceptable results, because they are not close even to the second throws session of FILA standard which marks the number 13.



Table nr.3: Running 3 x 750 m. (D.G. Curby, 2005).

Nr.	Weight category	1 ST Period	2 ND Period	3 RD Period	Maximal	Minimal	Average
1.	50 Kg	2.40	2.49	3.01	3.01	2.40	2.50
2.	55 Kg	2.46	2.56	3.05	3.05	2.46	2.56
3.	60 Kg	2.50	3.01	3.12	3.12	2.50	3.01
4.	66 Kg	2.52	3.00	3.12	3.12	2.52	3.02
5.	74 Kg	2.54	3.13	3.22	3.22	2.54	3.10
6.	84 Kg	3.09	3.19	3.30	3.30	3.09	3.26
7.	96 Kg	3.15	3.30	3.41	3.41	3.15	3.29
8.	120 Kg	3.55	4.11	4.24	4.24	3.55	4.10

At table nr.3 for all weight categories it is presented: running results 3 x 750 m,

implementation time for all three periods, results average, maximal and minimal for all periods.

Figure nr.2. Running 3 x 750 m

In the figure nr. 2 it is presented the running test which measures the aerobic power for all weight categories. As you may see from the results, the weight 50 kg obtains the best results for all three periods. Whereas, the poorest results belong to the weight category 120 kg. The weights 50 and 55

kg have a high aerobic power, directly followed by the weight 60 and 66 kg with a slight decrease. Whereas, the weight category 74, 84, 96, 120 have a high aerobic power. This is reflected this even with the long time needed for the running realization for all three periods.

Table nr.4: Tests

Nr.	VARIABLES	WEIGHT CATEGORY							
		50 KG	55 KG	60 KG	66 KG	74 KG	84 KG	96 KG	120 KG
1	Age	20.31	20.11	19.03	18.53	19.35	20.55	18.45	18.02
2	60 meter sprint	7.70	7.93	7.99	7.87	7.88	7.34	7.45	7.85
3	Standing Long Jump	215.50	220.40	226.50	231.10	243.25	250.10	255.10	258.50
4	Rope climbing 5 m, time 5 minutes.	5 times	5.5 times	6 times	6.5 times	7 times	7 times	6 times	5.5 times
5	Pull-ups (unlimited time)	26 times	28 times	29 times	31 times	30 times	25 times	21 times	19 times
6	Pull-ups (10 pull-ups)	16.01 sec	17.22 sec	17.88 sec	18.29 sec	18.77 sec	19.87 sec	21.99 sec	23.86 sec
7	Speed strength, weight lifting test in horizontal bench, 8 lifting /time/sec.	9.01 sec	8.46 sec	8.12 sec	8.01 sec	7.40 sec	7.23 sec	7.72 sec	8.91 sec
8	Flips from a wrestling bridge	13.5	13	12.5	13	11	10.5	9	8



	(30 sec)	times	times	times	times	times	times	times	times
9	A change of position from bridge face down to bridge face up by moving feet (6 times to the left, 6 times to the right) (s)	26.32 sec	26.24 sec	25.06 sec	27.46 sec	28.11 sec	30.50 sec	33.67 sec	34.02 sec

At the table nr. 4 are presented several tests: 60 m sprint, standing Long Jump, 5 meter rope climbing, pull-ups with no limited time, pull-ups (10 times) realization time, weight lifting test in horizontal bench (75 % of your weight class weight for 8 reps) realization time, flips from a wrestling bridge (30 sec, how many passing are realized for every weight), 360° rotations to the left and to the right (from wrestling bridge) realization time.

Discussion

In speed endurance test which was measured through the Dummy throws, from the results it is visibly seen that in the first period we have acceptable results for all weight categories.

But, in comparison to the FILA standards presented in table nr. 1, they are low. From 50 kg to 66 kg the first period results are nearly the same to those of the second period. Whereas, from weight 74 to 120 kg for the first period we have very low results, which if we compare to those of FILA, are the same as the third period. In the second period, for all weight categories we have a great decrease of the Dummy throws results. It is seen also a greater decrease in the third period. If we compare the Dummy throws index for all weights, to the table nr. 1 index according to the FILA standard, then it is visibly noticed that from 100% of the index, based on all weight categories we have the same index for all three periods where; weight 50 kg with 77.72 %, 55 kg 70.67 %, 60 kg 70.67 % and 66 kg 75.02 %. These categories have endurance of average speed whereas weights 74 kg with 63.63 %, 84 kg 63.51 %, 96 kg 66.20% and 120 kg 56.59% have low speed endurance, under average. From the results, it is visibly noticed that with the corporal weight increasing, the speed endurance Dummy throws it is greatly decreased. This may come as a result of the Dummy weight increase. In the aerobic power measurement test which is realized 3 x 750 m with a minute break, at the table nr.3, it is easily noticed that the light weights have better and sustainable results. On the other hand, in the average and heavy weights we have a progressive decrease of aerobic power. This is perhaps related with the heavy weight and great muscular mass of them, which remains to be verified in the following studies. In the 60 m sprint running (table nr. 4), we have nearly the same results where it is noticeably seen the weights 84 and 96 kg, directly followed by 50 kg.

While, in the Standing Long Jump (table nr. 4), for the light and average weights, we have average results which increase with the weight increase and where we can see a dominance of the weight 120 kg with 258.50 cm and 96 kg with 255.10 cm, from 50 kg to 120 kg the Standing Long Jump results are increased in a progressive way. This is explained with the fact that as much as the weight is increased, as much we see an increase of the results. A factor of this may be the subject height, as well as their muscular mass which increase from the lightest weight to the heaviest ones. In the dynamic strength endurance, which was tested in the rope climbing, resulted that the weight 74 kg and 84 kg reached the highest result compared to other weights. They climbed for 7 times, in a 5 m long rope for 5 minutes without interruption. The lowest result is obtained from the weights 50, 55 and 120 kg mean while the average one is for other weights. These results show a high performance of the dynamic strength endurance in general for Partizani team. The strength endurance was measured via pull-ups with no limited time, where the average and the light weights reached the highest number of pull-ups. On the other hand, the heavy weights have a noticeable decrease compared to the other weights. In general, these results are according to the standards. In the pull-ups, 10 pull-ups, for which it was, measure the time the light weights reached the highest results in comparison to the average and heavy weights. With the weight increase, it is also increased the exercise implementation time. In the weight lifting test in horizontal bench, the best time was realized from the weight 96 kg with time 7.72 sec followed from 84 kg with 7.23. The best time for the speed strength implementation was reached from the light and average weights as well as that of 120 kg. The flexibility it is measured through the subjects test for flips from a wrestling bridge with limited time of 30 sec, where the weight 50 kg reached the highest result with 13.5 passing, 55 and 65 kg with 13.60 kg with 12.5. Meanwhile, from 74 to 120 kg we have a great decrease of the result starting from 11 with 10.5, 9 and 8. Mobility from a wrestling bridge, we have results which vary in progressive way starting from the weight 50 to 120 kg. The best result was reached from the weight 66 kg with 25.06 sec and the best time was reached from the weight 120 kg. The results are gathered for rotations, 6 in one direction and 6 to the



other. Wrestling is a complex sport, where the exerciser should be prepared in all physical elements such as, strength, cardiovascular endurance, flexibility. Our study introduces a detailed identification of all these skills. Here are some muscular strength and endurance factors. Testing such as this can detect athlete weaknesses, set standards, and provide motivation (Curby, 2009). It is noticed that the light and average weight wrestlers are faster than those of heavy weights in such tests where the corporal weight is a main definer, such as rope climbing or gymnastic iron. It is also seen that the light weight wrestlers perform faster typical exercises of the wrestling sport such as dummy throw. This is explained with their relative bigger strength compared to the wrestlers of the heavy weights. The sprint results are very interesting, where we can notice a predominance of the weight 84 kg. Perhaps, this is connected to the greater muscular mass of the subjects of this weight, but this remains to be verified in the future studies. At the same time, muscular endurance is necessary for performing techniques and also, for attack and defense-related fatigue tolerance which must be considered in the planning of the training program. (Mirzaei, Arazi, Curby, Barbas, Ghahramani Moghaddam, Hosseini, 2012).

Conclusions

The average and heavy weights should work more in the context of improving the speed endurance, strength endurance, aerobic power, speed strength (pull-ups) and in the special flexibility mobility. They reached great results in the dynamic strength endurance as well as standing long jump but this is not enough, because the majority of the main elements which play a key role in a wrestler are not in satisfying levels. In general, the average weights have a under average level. On the other hand, the light weights have an over average level of preparation compared this to other weights. They are more prominent in dummy throw, pull-ups, mobility etc. It is necessary that in the future are drafted programs which affect in the improvement of the results, especially for average and heavy weights. While for the other weights we need to concentrate in some preparation elements where we see the worst results. Some studies have reported that an increased training volume does not produce any performance change in Olympic lifts during short-or long-term training periods. (AC. Fry, WJ). Kraemer, Stone, Warren, Fleck, Kearney, Gordon, 1994), (Hakkinen, PV. Komi, Alen, Kauhanen, 1987). It seems that when a given optimal volume is reached, a further increase in training volume does not produce more gains and can even lead to reduced performance. (Gonzalez-Badillo, . Gorostiaga, Arellano,Izquierdo, 2005).

The results of this study may serve as a guide for all wrestling coaches, who have the possibility to use these data for a better and more harmonic preparation of their athletes. Seen from this point of view, the study has applicative values and serves greatly for the sportive quality increase in this sport.

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