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S U M M A R Y OF

D I S S E R T A T I O N

METHODOLOGICAL BASICS OF THE EDUCATION AND OPTIMAL DEVELOPMENT OF PHYSICAL ABILITIES (CONDITIONING) AND THEIR MORPHOLOGICAL AND FUNCTIONAL EFFECTS, ON THE BASKETBALL PLAYERS OF THE "PARTIZANI-BASKET" TEAM.

Prepared by: **Scientific Mentor:**

Msc: Arben FAGU **Prof.Dr. Adriatik META**

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Introduction

Physical preparation (conditioning) is one of the primary components of the training process. It includes: strength, speed, endurance (stamina), flexibility, agility and coordinative abilities. Nowadays, many coaches, specialists, and conditioning professionals, as well as sportsmen (basketball players) rightfully consider this component as a necessary condition for every training routine.

The lack of physical conditioning in basketball players poses a severe risk on their physical and psychological health. With this in mind, coaches, through physical conditioning, seek to achieve a quick adaption of the body to the physical activity they do. This is related to the all-round increase of exercising (muscular, cardio-vascular, etc.).Their development up to the optimal requirement, enables the reduction of the consumption of energy for the same physical activity, considerably improving all recovery phenomena.

Through this long and strenuous process, a basketball player's body can adapt to increasingly difficult conditioning requirements. However, physical conditioning is a progressive task, which requires observing and correctly alternating the ratio of training and recovering. Also, a considerable amount of physical work is required, where intensity (the nature of stimuli) changes periodically.

The length of the effects of conditioning is a function of the time spent on conditioning. This is related to the level that basketball players have and it is very important from the beginning of the systematic training.

Also, before moving on to other elements (technical, tactical, psychological and physical, etc.) of the training program, basketball players should have a broader physical conditioning, which in turn creates favorable conditions to easily execute specific elements of the different types of situations that basketball possesses.

From this perspective, we initiated this theme of study (dissertation level) titled: **Methodological basics of the education and optimal development of physical abilities (conditioning) and their morphological and functional effects, on the basketball players of the "Partizani-Basket" team.** as a result of doctoral studies at the Faculty of Science of Movement of UST.

We wish to emphasize that the completion and the quality of this thesis, are a result of the help and cooperation with principal advisor Prof. Dr. Adriatik Meta, as well as with the academic staff.

Also, I would like to thank my co-workers who, with their discussions, debates, and conversations helped in the qualitative growth of this study. Last but not least, I would like to thank all participating basketball players in this study of the team **"Partizani-basket",** for their help and sportsmanship in this study.

The Author

Abstract: In this study we present the progress of the development team VO_{2max} "Partizani-Basket" during the preparatory period of the training process. A total of 20 basketball players involved in this study, with their desire. The data presented are related to some anthropometric measurements (age, weight, height, body mass index, BMI etc.) and measurements of Vo2max on the ergo-metric "Monarch" bicycle. The mean age was 21.0 years old with SD ± 3.55; weight 85.6 kg with SD ± 11.6; height 188.9 cm with SD ± 6.21; body mass percentage 85.65% with SD ± 11.06 and BMI 23.95 with SD ± 3.03 As for maximum oxygen consumption (Vo2max) at the first measurement with an average of 3.98 l / min and with SD ± 0.65 and (Vo2 max) 47.45 ml / kg / min and SD ± 6.96. These data were taken at the beginning of the training process of the preparatory period to determine the level of current sports situation, which from the data obtained was relatively low. For this purpose, a genuine program for increasing the level of Vo2max was designed, where basketball players would train for 12 weeks with 2 training sessions per week, with 45-60 minutes with aerobic fitness exercises and mostly running in nature. At the end of the period, a significant improvement was observed from the first measurement to the second and mainly to the Vo2max indicators and specifically: Vo2max in l / min with an average of 4.34 l / min and an improvement margin of 0.35 l / min. Vo2max in ml / kg / min with an average of 52.15 ml / kg / min and improvement margin 4.69 ml / kg / min. Undoubtedly, the above changes with an increasing improvement in aerobic level indicators constitute a sound basis for the continuity of physical training (engines) in general and other types of training component components in particular, which together converge to the performance of game and consequently on the technical results of the games.

Also we have aimed to evaluate and compare the effects of the plyometric training method of force, in improving the ability of basketball players.The participants of the study were the same as in the Vo_{2max} study. Participating basketball players of this activity were made aware of the purpose of this study and the invitation to participate in it.The team would be trained for 12 weeks, according to a defined physical fitness program for the preparatory period, focusing twice a week on plyometric exercises in

addition to other elements of physical preparation as a whole. All the basketball players taken in this study were measured before and after the 12 week period of conditioning in the off season on vertical jump, long jump, and parameters associated with these tests. The data subjected to statistical processing using the IBM SPSS Statistics software 22 method. The overall team at the end of the preparation period had a significant improvement in propensity ($p < 0.05$) in the vertical jump (<14.3 cm) on the longest (<15.8 cm). The results of this study showed that the effects of the plyometric training method of the force increased with significant indicators especially in the conditional (motors) of ability performance in the basketball of the "Partizani-basket" team.

Study thesis:

- : **Methodological basics of the education and optimal development of physical qualities (conditioning) and their morphological and functional effects, on the basketball players of the "Partizani-Basket" team.**

Object of study

- Scientific determination of the rational methodological procedures and their continuity in the training process (with male basketball players), increasing the optimal physical quality indicators, related to their morphological-functional influences.

Study goals

- Informing the basketball community on the contemporary trends of basketball development and their application regarding our country's conditions.
- Showing the motivation, the thoughts that basketball players have on the training process as a whole and the components of the object of study in particular, through pre-determined testing designed for this purpose, to improve the work of the directing staff continuously.
- To perfect the fundamental methodical strategies of education and development of physical qualities in general, and the morphological-functional influences on the basketball players of the "Partizani-basket" team.
- The results of this study aim to give the community of basketball (coaches, specialists, sportsmen etc.) the most rational methodology of control and education evaluation as well as the development of the corresponding and morphological-functional physical qualities of basketball players.

Study methods and techniques

- After determining the objectives and theme, the study was focused better in research and specialty literature (existing documentation mainly from the doctorate curriculum). This has aimed at the focusing of the corresponding and morphological-functional physical qualities of basketball players.
- From the data, we managed to determine the methodological strategies for compiling training sessions, microcycles, mesocycles for optimal development of predetermined physical qualities, through training models produced specifically for this purpose, as well as the selection of the didactic tools which would be used in the training process with the basketball players.

- The relatively high level of the technical, physical, and tactical indicators of basketball players, show a qualitative growth, in synergy with the contemporary advances of training sessions according to the training plan, mainly focusing on the corresponding physical qualities.
- To conclude, during our study we used the methods of observation, experimentation, control, comparison and statistical work.

Study hypotheses

- How are contemporary trends of basketball development seen related to the components of the training process (mainly physical preparation and the reciprocal connection between physical qualities and skill)?
- Is there enough time offered for physical preparation development , enough infrastructure and tools, as well as good enough scientific knowledge of the basketball coaches?
- Should the content and the form of physical development regarding the requirements, tendencies and challenges that the actual development of modern basketball offers change?
- Will there be positive effects as a result of executing and continuously verifying practice sessions modeled for the optimal growth of the physical preparation of the players studied?
- Which would be some of the fundamental methodical orientations for the qualitative growth of the content and form of physical preparation regarding the contemporary standards which offer scientific data on basketball in general and the player's physical performance in particular?

Structure

- Introduction
- Focus, Goal and Study Methods
- Study hypotheses
- Short abstract on the study
- Study subjects
- Comparison and other used methods
- Discussion
- Study conclusions
- Literature

I. First Chapter

1.General views on contemporary advances in modern basketball

1.1 Contemporary trends of modern basketball development

1.2 Survey of basketball players about their motives, their thoughts on practice sessions aimed at educating and optimally developing their respective physical abilities (abilities).

II. Second Chapter

2.Theoretical basics of the development of the respective physical and morphological-functional abilities (qualities) of male basketball players.

2.1. Contemporary concepts on physical conditioning of players and short terminological notions.

2.2 Data acquisition of male basketball players regarding the development of the morphological-functional qualities, as well as corresponding physical qualities (first measurement).

III.Third Chapter

3.The modeling of fundamental methodological orientations for the development of the respective physical abilities (qualities) of basketball players obtained from the experiment.

3.1 Methodological application of the education and development of the respective physical abilities (qualities) of the male basketball players, of the "Partizani-basket" team.
3.1.1.Energy for performance
3.1.2.Seasonal conditioning phases
3.1.3.The concepts and requirements of the conditioning of the player and training expectancy. 3.1.4. Education and development of aerobic endurance conditioning.
3.1.5. Conditional-coordinative exercises on the court, for the 12-week off-season conditioning program (special preparation stage) of the "Partizani-basket" team
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3.2 Acquisition of the second set of data, processing, and discussion of the results.
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- **Respective Conclusions**
- **Literature**

I. First Chapter

1.General views on contemporary advances in modern basketball

1.1.Contemporary trends of modern basketball development.

1.1.1. Mass participation(primary attribute, determines results in a given sport; for instance, basketball)

1.1.2. The retention of a relatively high volume during the training process as well as the partial increase of the dynamics of the intensity form another trend of the development of modern basketball.

1.1.3 One of the trends is closely related to the increase of exercise complexity.

1.1.4. A distinctive trend of modern basketball is the movement of the players in the field(with or without the ball), adapted to the game rules as well as the game's dynamic character

1.1.5. The continuous increase of mastery in basketball is followed by a decrease in the age threshold of basketball players. This trend is known as "the rejuvenation of basketball"

1.1.6. The concept of the reciprocal connection between conditional/coordinative skills and movement abilities

More analyses and comments of the contemporary trends of modern basketball development can be found in the original dissertation material

1.2. Survey of basketball players about their motives, their thoughts on practice sessions aimed at educating and optimally developing their respective physical abilities (abilities).

Relying on many years of personal practical experience as well as the continuous research of native and foreign literature, we tried to synthesize the methodical components of the main elements of the game with the existing motives that the players involved in the study possess. To be more objective in our results, in the determination of factors that limit physical performance of basketball players, we thought of organizing a survey, mainly for the "Partizani-basket" basketball team, but also including some other teams(50 players total), and we studied the data. The survey was designed to involve some of the most important problems in training, as well as to emphasize the interests and the motives that basketball players have regarding the training process in general and the physical conditioning component in particular. The survey contained the following questions:

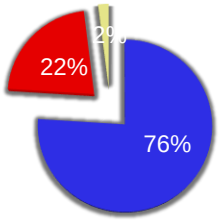
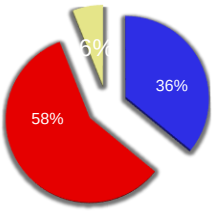
Tab:1.Survey on training process in the basketball.(*motives, goals, interests,health etc).*

1	Is the sport you practice systematically an integral part of your primary interests?	Yes	No	Uncertain
2	Do family and social relationships affect your determination in the sport you practice?	Yes	No	Uncertain
3	Do daily occupations(job or classes) form a serious drawback to your determination in the sport you practice?	Yes	No	Uncertain
4	Do you wish to continue the training process during the whole year with the relevant requirements?	Yes	No	Uncertain
5	Are the didactic material and the training areas(where the training sessions take place) adequate?	Yes	No	Uncertain
6	Do you think it is better to do 2 training sessions a day or just 1?	Yes	No	Uncertain
7	Should the coach organize the physical conditioning sessions or should they be organized individually?	Yes	No	Uncertain
8	Do you practice any other sports, excluding basketball?	Yes	No	Uncertain
9	Do you do any exercises in private sports centers(with full payment)?	Yes	No	Uncertain
10	How many times a week do you train? a) 3-4 times a week b)every day	a)	b)	Uncertain
11	How many minutes does the training session last? a)90-120 minutes. b)150-180 minutes	a)	b)	Uncertain
12	How do you wish to organize physical conditioning? a)at the beginning of the training session(after warm-up) b)at the end of the training session	a)	b)	Uncertain
13	What's your motive behind practicing this sport? a)Feeling better and being fit b)Having fun, releasing stress, and avoiding bad habits(smoking, alcohol, drugs)	a)	b)	Uncertain
14	Do you feel a sense of accomplishment in practicing this sport and achieving high results?	Yes	No	Uncertain

From the data acquired we found out that 76% of the surveyed basketball players thought the sport they were exercising systematically was an integral part of their primary interests. This fact is related to, among other factors, the wide range of information, knowledge and interests that this relatively young age has, regarding the contemporary trend of modern society for the social phenomenon of sport exercising(especially the competitive scene). 22% of the players thought otherwise. Only 2% of the surveyed basketball players confirm their uncertainty regarding the sport they exercise.

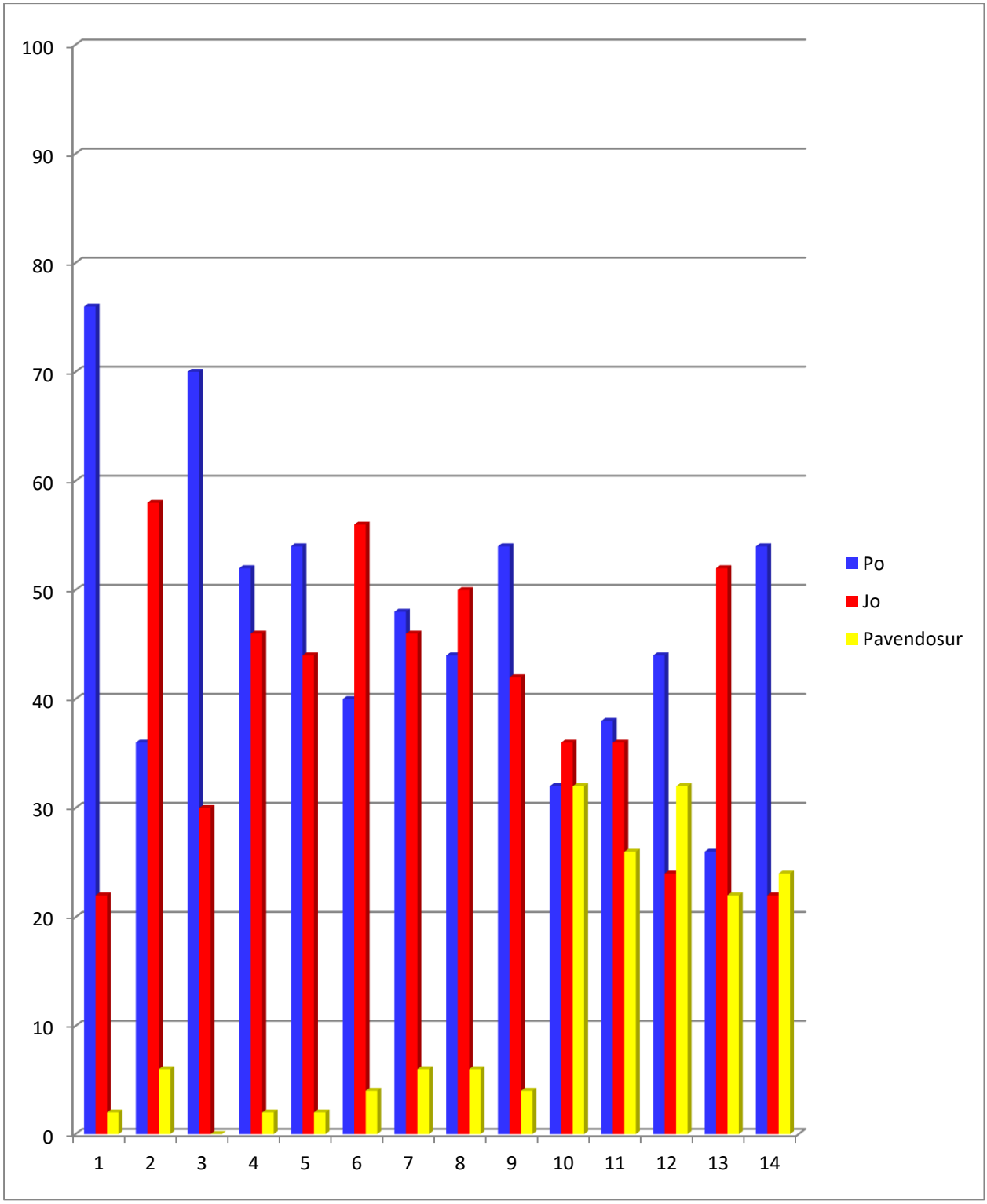
Comparing with the psycho-social characteristics of this young age, 36% of the players who thought their family and social relations affected their dedication to basketball form an acceptable result. 58% of them thought their relationships did not affect their dedication to the sport. This last result is related to(among other factors) the now-consolidated status of youngsters in families and society. 6% of the players were uncertain of the affection that social and family relations have on their dedication to basketball. The analyses of the survey answers are followed by the respective graphs as shown:

Legend: 1. Yes (a) 2. No (b) 3. Uncertain

1		1. 76% involve physical activity in their primary interests. 2. 22% do not involve physical activity in their primary interests. 3. 2% are uncertain.
2		1. 36% think their relationships affect their dedication. 2. 58% think their relationships do not affect their dedication. 3. 6% are uncertain.

Grafiku:1 e 2. The results of the survey

Below we are showing a summarized graph of the answers:



Grafiku:3. Graphical representation of the survey answers.

II..Second Chapter

2.Theoretical basics of the development of the respective physical and morphological-functional abilities (qualities) of male basketball players.

2.1.Contemporary concepts on physical conditioning of players and short terminological notions.

Conditional-coordinative abilities, movement skills, tactical abilities, character and behavior qualities and knowledge on these matters compose the structure of individual, physical performance(widely speaking) and this is undoubtedly the goal of every sports training process. In their full spectrum, we will isolate and analyze the conditional-coordinative skills of the player, which match our object of study. Conditional-coordinative abilities, being one of the five main components of the training process, make the physical conditioning of the player the core of our study. Every component, with every distinctive individual quality it has, is closely related to the other components. All of these components are more or less involved in every training program, despite age, individual potential, training level or training period. Focusing on every component of the training is done in accordance to the tasks of every training period, the sport's characteristics as well as the player's requirements.

In sports, all the training components are in tandem with one another. However, the achievement of performance, as emphasized above, has a foundation, which is physical preparation. Therein lies:

Force
Speed
Endurance
Flexibility
Agility

Note: The complete, detailed analysis can be found in the original material. Chapter 3 might be of particular interest, as it contains mainly the scientific research behind the thesis.

2.2 Data acquisition of male basketball players regarding the development of the morphological-functional qualities, as well as corresponding physical qualities (first measurement).

Tab2.Indicators of morphological-functional and conditional–coordinative abilities of the "Partizani-Basket" team(Measurement I.Dt.10.05.2017)

No	Morphological Date							Force-Speed (Power)				Speed	Agility	Max.O_2 Uptake (l/min)(ml/kg/min		Flexibility
	Subjects	Personal ID	Birth Date	Weight (kg)	Height (cm)	BMI	Body Mass(ne %)	Jump Height (m)(no hands)	Jump Height (m)(with hands)	Length jump (cm)	Thtow medicineball (m)	Running (20m)(sek)	(4x15 m)(with touching) (Sek) Agility	Maximal O2 Uptake (l/min.)	Maximal O2 Uptake (ml/kg/min.)	Sit-and-Reach Flexibility (cm)
	Mat			1	1	1	1	1	1	1	1	1	1	1	1	1
1	S1	L001685	1994	102	195	26.82	98.9	0.47	0.54	242	786	3.28	12.98	3.67	37.47	4
2	S2	L001690	1999	78	186	22.48	74.2	0.4	0.53	250	790	3.25	12.91	3.95	52	6
3	S3	L000153	1998	85	193	22.81	86.9	0.45	0.59	253	792	3.26	12.89	4.58	52	8
4	S4	L001688	1998	88	187	25.16	85.4	0.47	0.64	256	805	3.24	12.88	4.58	53.84	3
5	S5	L001686	1996	85	188	24.04	84.5	0.42	0.58	251	806	3.27	12.93	4.94	59.57	6
6	S6	L001267	1992	83	183	24.78	85.2	0.4	0.53	236	793	3.28	12.94	3.8	45.78	5
7	S7	L000419	1995	98	187	28.02	100.5	0.39	0.57	239	795	3.3	12.96	4.59	47.32	7
8	S8	L001693	1999	85	199	21.46	84.3	0.38	0.55	241	799	3.26	12.93	3.95	46.49	9
9	S9	L001694	1997	84	193	22.55	85.5	0.45	0.56	236	796	3.29	12.95	3.3	39.24	3
10	S10	L001691	1999	65	183	19.4	70.2	0.42	0.53	241	787	3.28	12.94	3.54	54.4	4
11	S11	L001696	1998	76	187	21.73	75.9	0.44	0.46	233	791	3.31	12.96	4.22	55.57	6
12	S12	L001684	1993	85	181	25.94	80.02	0.53	0.69	253	798	3.27	12.89	3.3	38.82	5
13	S13	L001687	1996	76	190	21.5	80.04	0.41	0.53	233	782	3.32	12.94	4.33	56.92	6
14	S14	L001695	1999	83	188	23.48	84.5	0.46	0.63	240	794	3.3	12.92	3.43	41.35	4
15	S15	L001689	1999	85	183	25.38	83.3	0.47	0.6	235	783	3.31	12.91	3.54	41.6	3
16	S16	L001692	1998	74	187	21.16	76.6	0.43	0.57	235	794	3.3	12.94	3.54	47.78	6
17	S17	L000252	1985	120	200	30	119.1	0.33	0.41	221	798	3.33	12.99	3.85	35.12	4
18	S18	L000416	1993	84	201	20.79	79.7	0.42	0.49	237	806	3.31	12.93	4.58	46.89	8
19	S19	L001799	1999	96	179	29.9	98	0.41	0.52	235	804	3.29	12.94	3.94	45.57	7
20	S20	L000421	1993	80	189	22.39	81.9	0.49	0.52	241	797	3.28	12.89	4.12	51.45	9

III.Third Chapter

3.The modeling of fundamental methodological orientations for the development of the respective physical abilities (qualities) of basketball players obtained from the experiment.

3.1 Methodological application of the education and development of the respective physical abilities (qualities) of the male basketball players, of the "Partizani-basket" team.

Playing basketball at a high level requires great conditioning. Being in great condition gives a player an advantage over an opponent and a team a better chance of winning. Players will be able to perform at maximum levels throughout the entire game. Lesser-conditioned athletes fatigue sooner, which negatively affects performance, resulting in slow defense and poor shooting and execution of plays. You can see in the following chapter our physical conditioning programs in detail, aiming at the preparation of a better player in this scope.

Conditioning for basketball should be more than just playing basketball. For example, our off-season conditioning program should include 3-6 km crossing, beginning at a moderate pace and continuing progressively, aiming to quickly consolidate aerobic preparation, which will then serve as the foundation for the players in their following training sessions. Then, we continue with 100s and 200s and 400s and, finishing up with general conditioning for basketball on the court. In the compilation of the program documentation and furthermore, its correct application in the training sessions of the "Partizani-basket" team, work began on the study of the requirements of basketball, regarding the optimal energy requirements, to successfully overcome the challenges that the basketball Super-league has to offer for the season 2017-2018.

3.1.1.Energy for performance

The body uses three separate energy systems: ATP-CP system, the glycogen lactic acid system, and the aerobic system. The ATP-CP and the glycogen lactic acid systems are anaerobic. The game of basketball is estimated to be 85 percent anaerobic and 15 aerobic. Therefore, most of the conditioning for basketball should be anaerobic in nature- repeated short, high-intensity efforts with quick recovery times.

Figure 1, shows that each energy system is based on time of exercise, and all systems work together during different time periods. The ATP-CP system is the energy source for approximately the first 10 seconds of high-intensity activity. Once the ATP-CP system is

nearly depleted, more fuel for energy is available from the glycogen lactic acid system. This system lasts approximately 10 seconds to 2 minutes. The aerobic system slowly transitions in and is the main fuel source for longer, less intense activities.

Glycogen lactic acid

ATP-CP ◄--------► Glycogen lactic acid ◄--------► Aerobic ◄----------► Aerobic

Time: 10 sekonda 1 minute 2minutes 4minutes 9 minutes 30minutes 2hour+

Distance: 100m 400m 800m 1500m 3000m 10000m Maraton

Figure 1: The primary energy systems, their exercise times, and approximate running distances. The arrows between the systems represent the transition phases from one system to another.(FIBA).

- **Optimal recovery for basketball**

Basketball is a game of repeated, quick, high-intensity bursts of action with short rest periods in between. It is critical for players to be able to recover quickly during hard practices and games. Well-conditioned players recover more quickly and are able to maintain higher performance intensity for longer periods of time. By following the proper work-rest intervals in the 12-Week Off-Season Conditioning Program, you will develop and improve your recovery system.

- **Short-Term Recovery**

A well-conditioned athlete can recover from intense bouts of work very fast. The ATP-CP energy system recovers 50 percent in about 30 seconds (the rest period during a free throw or 20-second timeout). It is fully recovered in 2 to 5 minutes (the rest time during timeouts, end of quarters, and when a player is taken out of the game). The glycogen lactic acid system recovers 50 percent in about 20 to 30 minutes and is fully recovered in 1 hour or more.

- **Long-Term Recovery**

Long-term recovery can be from 2 days to several days depending on the extent of nutrient depletion, enzyme depletion, and tissue breakdown. A good diet that includes complex carbohydrates (the primary energy source for basketball), proper rest, and a quality training program will aid recovery, repair, and replenishment. Through the clarification of the aforementioned requirements regarding the demand for energy sources for the performance in modern basketball, we were able to compile the full documentation regarding the purpose, objectives, and the methods that we would use etc., followed by the training schedules of the training session macrocycle of the "Partizani-basket" basketball team, participating in this study. Below we are concisely showing the training schedules prepared for this purpose:

Table: 3. Graphic- Plan of the training process of the "Partizani-Basket" team(10 May-31 December 2017, The 1-st phase)

Macrocycle of the double		½ M A C R O C Y C L E																																					1/2
Cycles		THE 1-st CYCLE																																					1
Period		Transition period									Preparatory period																			Competitive period (Matches)									3
Phases							Phase /Transit				Preparat. phase 1					Preparat. Phase 2					Precompeti. phase				Competitive phase (Matches)													5
Mesocycle		May					June				July					August				September				October				November				December					8
Date		01-07.2017	08-14.2017	15-21.2017	22-28.2017	29-04.2017	05-11.2017	12-18.2017	19-25.2017	26-02.2017	03-09.2017	10-16.2017	17-23.2017	24-30.2017	31-06.2017	07-13.2017	14-20.2017	21-27.2017	28-03.2017	04-10.2017	11-17.2017	18-24.2017	25-01.2017	02-08.2017	09-15.2017	16-22.2017	23-29.2017	30-05.2017	06-12.2017	13-19.2017	20-26.2017	27-03.2017	04-10.2017	11-17.2017	18-24.2017	25-31.2017	35
Mikrociklet(Javore)		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	35
Sport-Calendar				Control of physical ability											Control of physical ability					Control of physical ability	Control Match	Control Match	Control Match	Control of physical ability	Kamza-Partizani-Basket	Partizan Basket-Vllaznia	Ttrana-Partizani-Basket	Partizani-Basket-Eagles	Teuta-Patrtizani -Basket	(Recovery week)	Partizani Basket-Kamza	Vllaznia- Partizani Basket	Partizani Basket-Tirana	Eagles-Partizani Basket	Partizani Basket-Teuta	(Active rest)	13
Work- load	Maximal																																						8
	High																																						6
	Medium																																						2
	Low																																						1
Number of training sessions during the days	Monday	1	1	1	1	1	1	1	1	1	1	2	2	2	1	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	42
	Tuesday	1	1	1	1	1	1	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	38
	Wednesday	1	1	1	1	1	1	1	1	1	1	2	2	2	1	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	42
	Thursday	1	1	1	1	1	1	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	38
	Friday	1	1	1	1	1	1	1	1	1	1	2	2	2	1	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	42
	Saturday	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	35
	Sunday																																				0
Nr. of training days					30				24					30				24				24				24					30				24		210
Nr. of control match																					1	1	1														3
Nr. of holidays		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	35
Nr. of training sessions					30				30					39				24				24				24					30				24		225
Nr. of training hours					60				60					78				72				48				48					60				48		450

Table: 4. Graphical plan of the training process with the focus physical preparation of "Partizani-Basket" team (10 May-31 December 2017)

Dates	Month	May				June				July					August				September				October					November				December			
	Week ending	07	14	21	28	04	11	18	25	02	09	16	23	30	06	13	20	27	03	10	17	24	02	09	17	23	30	06	13	20	27	04	11	18	25
Competitions	Away match																						c		C				C			C		C	
	Home competition																					c		c		C	C	C			C		C		C
	Name of competition																					ContMach	ContMach	ContMach	Mach-nac	Mach-nac	Mach-nac	Mach-nac	Mach-nac	Recovery	Mach-nac	Mach-nac	Mach-nac	Mach-nac	Mach-nac
Periodization	Training phase			Phase Transition						Phase preparatory													Phase Precompetitiv					Phase Competition							
	Training subphase			Phase Transition recreati						Phase General preparatory									Specific prep.				Control match					Nacional Championship							
	Macrocycle	½ Macrocycle																																	
	Mesocycle	5				6				7					8				9				10					11				12			
	Microcycle	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
	Peaking index	5	5	5	5	4	4	4	4	4	4	3	3	3	3	3	3	5	5	5	4	4	4	3	3	3	3	2	2	2	2	1	1	1	1
	Testing dates		T											t										T											
	Recovery weeks				R				R					R				R				R					R				R				R
Resistance training	Primary focus	Recovery				Endurance & Strength				Basic Strength					Endurance and Strength specific								Strength & Power					Strength & Power				Strength & Power			
	Strength and endurance	-	-	-	-	-	-	-	M	M	M	L	L	L	L	L	L	H	H	H	H	H	M	M	M	L	L	-	-	-	-	-	-	-	-
	Basic strength	-	-	-	-	-	-	-	L	L	M	M	M	M	H	H	H	M	M	L	L	M	M	L	L	M	M	L	L	L	L	L	L	M	L
	Strength and power	-	-	-	-	-	-	-	L	L	L	L	M	M	L	-	-	H	M	L	M	M	L	M	M	M	M	L	L	M	L	M	L	M	L
	Peaking																			H			H				H	H			H		H		
Endurance, speed and endurance agility, and speed and	Primary focus	Recovery				Endurance				Speed&agility					Speed & agility Endurance								Tactics & Maintenance					Tactics & Maintenance							
	Endurance	M	M	M	M	L	L	L	L	H	M	M	L	L	L	L	L	L	L	M	M	L	L	L	L	M	M	L	M	M	L	L	M	L	L
	Speed and agility	-	-	-	-	L	L	L	M	M	M	M	-	M	M	M	H	H	M	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	Speed & agility Endurance	-	-	L	M	M	M	L	L	L	L	M	L	L	M	M	M	M	H	L	L	L	M	L	L	M	M	L	L	L	L	M	L	L	L
Techni-tacti training	Technical	-	-	-	L	L	M	M	M	M	L	L	L	M	M	M	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	Tatctical	-	-	-	L	L	L	L	L	L	L	L	L	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
Work load	100%																																		
	90%																																		
	80%																																		
	70%																																		
	60%																																		
	50%																																		
	40%																																		
	30%																																		
	20%																																		
	10%																																		
	0%																																		

LEGEND:

Competition key	Abbreviations	Peaking index	Fokus
P = major peak	R = recovery week	1 = highest level of preparedness	H=high
P = minor peak	Specific prep = specific preparatory	2= high level of preparedness	M=avarage
C = competition	T = testing	3= average level of preparedness	L=low
		4 = low level of preparedness	
		5 = lowest level of preparedness	

3.1.2.Seasonal conditioning phases

The 4 phases of seasonal conditioning are off-season, preseason, in-season and postseason. Each phase has unique priorities. The off-season is the time to make the greatest gains in conditioning before the start of practices and games. The focus during the preseason and in-season phases is on practices and games. The postseason is the time for recovery.

- **Off-Season Conditioning**

The 12-Week Off-Season Conditioning our Program prepares you physically for the demands of a long, intense season. Find out when the first day of practice is, and start the conditioning program 12 weeks before that. The program starts with 100, 200, and 400-meter strides on the track and progresses to basketball-specific conditioning on the court. Two conditioning workouts are scheduled per week and coincide with the two workouts per week of plyometrics and agility training in the off-season calendar.

- **Preseason Conditioning**

Preseason is the time between the first practice in the fall and the first game. This is the time when your coach fine-tunes conditioning with quality practices and the addition of more basketball-specific drills. Players who follow the off-season program will go into the preseason in great shape.

- **In-Season Conditioning**

During the season, the majority of conditioning comes from practices and games. If practices include performing intense, all-out drills, running the court hard, and executing quality defensive work for 1 to 2 hours, you probably don't need extra conditioning. If you are not getting much playing time or need extra conditioning, choose from the on-court conditioning drills in the 12-Week Off-Season Program or use other shooting, passing, and dribbling drills. Off-court conditioning options include running on a treadmill, riding a stationary bike or elliptical trainer, using a stair climber, and swimming or running in a pool.

- **Postseason**

The time immediately after the season and before the off-season is the postseason. Initially players should just recover physically from a long basketball season. Some athletes may go right into a spring sport such as baseball, tennis, or track. Some teams may have a postseason program that includes strength training, conditioning, and basketball skill development. For the others it is the "active rest" time of year.

During the active rest period, players should stay fit by playing other sports, by working out in the beginning phase of the strength training program, or by playing pickup basketball games. Players who are not getting any activity need to do some general fitness activities such as hiking, biking, jogging, or swimming. Conditioning on treadmills, stair climbers, elliptical trainers, or stationary bikes for 20 to 40 minutes, 2 or 3 times a week would also work.

3.1.3.The concepts and requirements of the conditioning of the player and training expectancy.

To achieve a better performance, we must possess optimal conditional-coordinative abilities. The following graphical representations are designed to emphasize the requirements of basketball as a function of physiological requirements. Here we must pay attention to the game itself in the conditional-coordinative training scope and the special properties that basketball has, where we would emphasize:

- Nature of activity (aerobic- anaerobic), energy supplies(ATP, CP, and glycogen etc.)
- The intensity of activity(average intensity, average heart rate, energy cost, oxygen deficit, rest intervals)
- And work volume

According to table 5.a , b, we have managed to control, mark and correct the ongoing work of every player during the systematic training sessions.

Method(training type)	**Work intensity(m/sec.-%)**	**Heart rate(bpm)**	**Work duration energy supplies**	**Heart rate before activity**	**Rest intervals Energy restoration**
1	**2**	**3**	**4**	**5**	**6**
High and average intensity (subcompens) (I)	High(75%-85%). Average(65%-75%)4-6m/sec.	(175-185) (165-175)	5-50 min. aerobic-anaerobic	(140-130)	Short pause (60-70%) energy restored
Submaximal intensity (compensation) (II)	(85-95%) 6-8 m/sec.	(185-195)	From 20-40 sec to 3-5min. anaerobic-aerobic	(120-110)	Average pause (90-100%) energy restored
Maximal intensity (supercomp) (III)	(95-100%) 9-10m/sec.	(190-220)	10-20sec. Mainly anaerobic.	(100-90)	Long pause. More than 100% energy restored
Low, moderate intensity (IV)	Low(30-50%) Moderate(50-60%).2-2.5m/sec.	Less than(150-165)	More than 50 min. Mainly aerobic.	(80-70)	Very long pause Approx. 100%.
Variable intensity (V)	Variable (30-100%)	Depends on intensity	Aerobic-anaerobic	Resting heart rate	Excessively long pause 100%.

Tabela:5.a. Relation between heart rate, energy supplies and recuperation period.(According to FIBA)

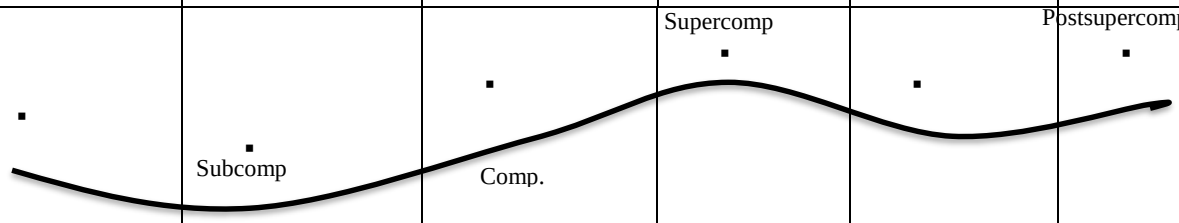
Work	Short intervals **I**	Medium intervals **II**	Long intervals **III**	Very long intervals **IV**	Excessively long intervals **V**
					
Energy restored	(60-70%)	(90-100%)	(over 100%)	(approx.. 100%)	(approx 100%)
Heart rate	(140-130)	(120-110)	(100-90)	(80-70)	(Resting) (60-70)

Tabela:5.b. Relation between heart rate, energy supplies and recuperation period.(According to FIBA)

3.1.4. Education and development of aerobic endurance conditioning.

Generally, every sport literature and particularly basketball emphasizes that every physical activity (systematic) has to begin with general endurance conditioning (commonly known as aerobic conditioning), as a foundation for the whole following training process. With this quote in mind, the preparation of the "Partizani-basket" team in the off-season training for the National Super-league of Albania (2017-2018) began. (The full, detailed analysis is found in the original material).

3.1.5. Conditional-coordinative exercises on the court,for the 12-week off-season conditioning program (special preparation stage) of the "Partizani-basket" team

Conditional-coordinative exercises are a transitional phase of the player's training (second stage of the off-season training), as well as the specific movements of basketball, which are required when the game scenario practices have begun according to the compiled plan. The exercises have been designed for players, individually as well as in pairs, according to the specific roles that they have in the team (center, guard, etc.). This doesn't mean that these exercises will be team-based. The following figures show the exercises for the players during training sessions in the off-season conditioning stage. (The figures are labeled using the conventional terminology of the NBCCA).

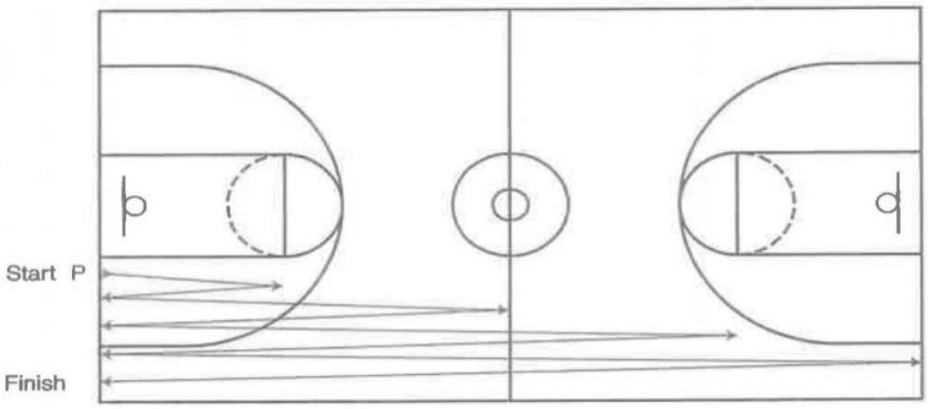


Fig:2. Suicides (detailed in the figure)

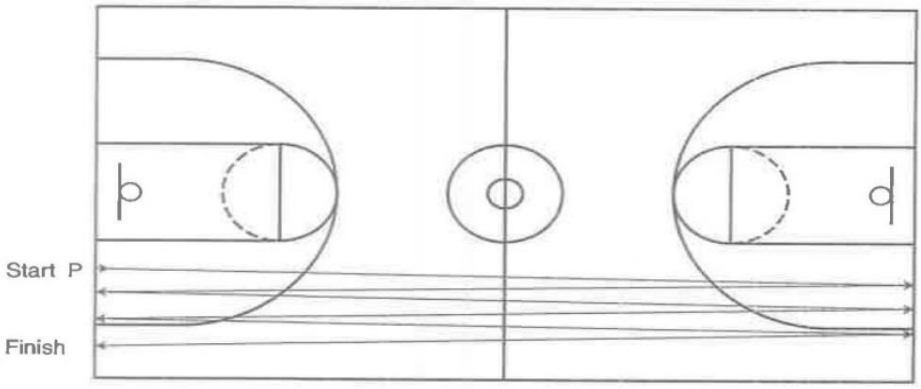


Fig:3. Deep 6s.

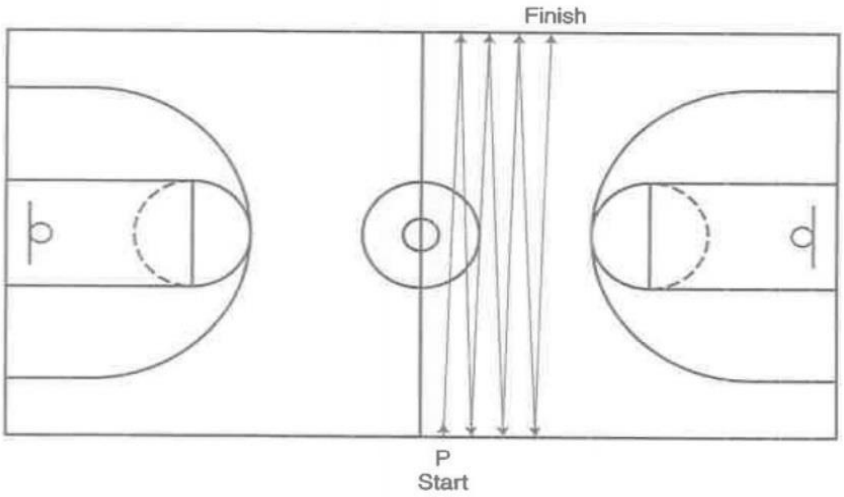


Fig:4. 17s.

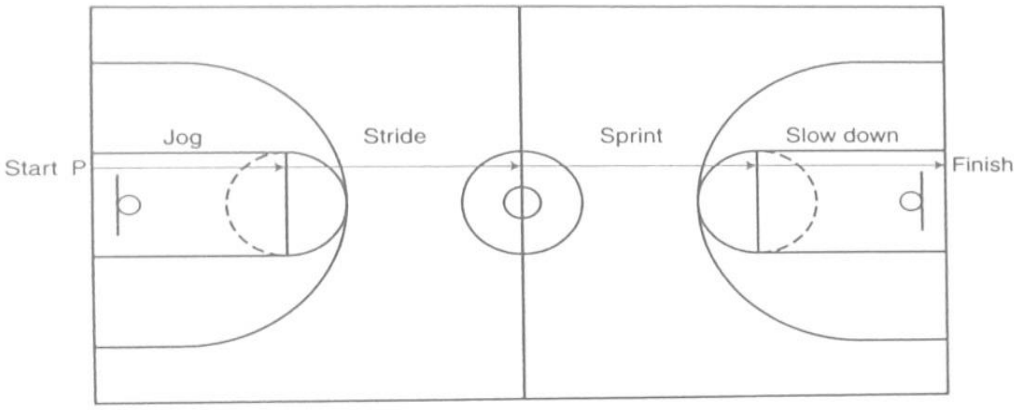


Fig:5. Accelerators.

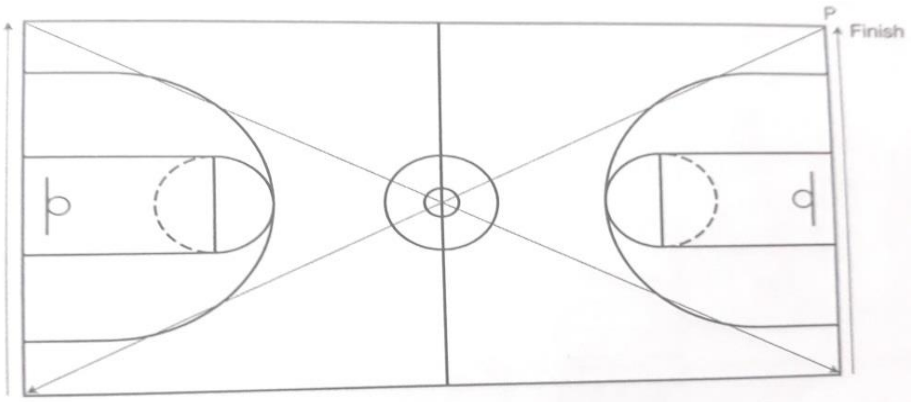


Fig:6. X Drill.

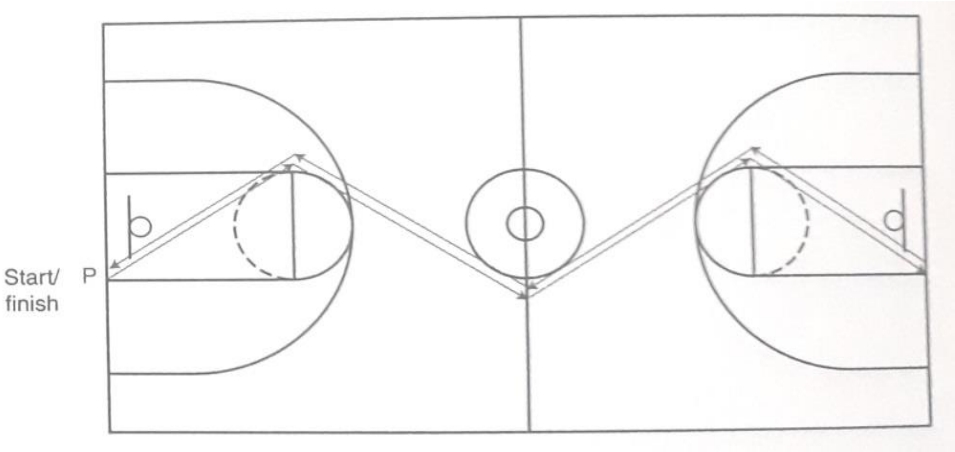


Fig:7. Full-Court Zigzag Sprint Dribble.

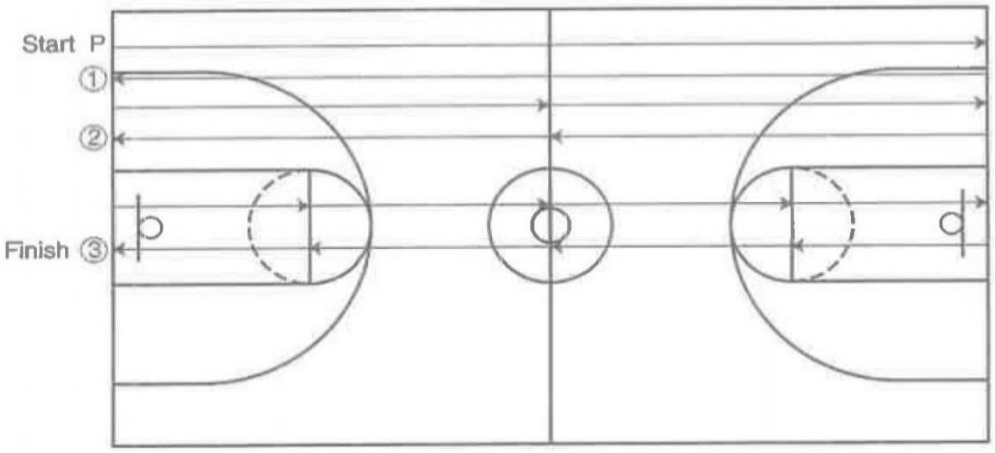


Fig:8. Full-Court Sprint Dribble.

Fig:9. Sideline Sprint Layup.

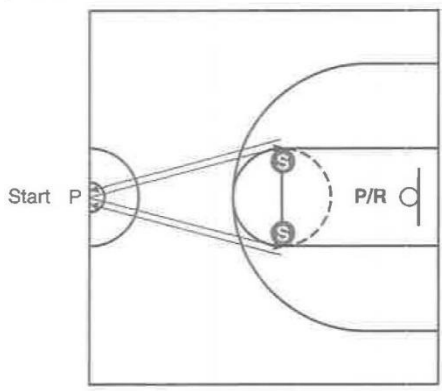


Fig:10. Half-Court Sprint, Elbow Jump Shot.

3.1.6. Warm-up and flexibility.

In today's competitive world of basketball, athletes need every edge, no matter how small. That edge might be an effective warm-up and stretching routine. Often overlooked by some coaches and many athletes, a proper warm-up and stretching routine increases the flexibility of muscles and develops a greater range of motion in the joints, which will lead to improved athletic performance and fewer injuries.

An effective warm-up stretching routine will improve performance by increasing power, speed and quickness. These qualities transfer to the basketball game through improved layups, dunks, rebounding, fast breaks and defense.

- **Warming-up**

A proper warm-up is essential in preparing you for practice or competition. The warm-up increases muscle temperature, allowing for better stretching.

There are many options when it comes to warm-up activities. Some athletes warm up by jogging, jumping rope, doing calisthenics, doing a few agility drills, or by doing a dynamic warm-up.

A dynamic warm-up is the best way to prepare for basketball practice or play. It includes movements that are performed in the actual sport. A good dynamic warm-up for basketball features a variety of movements up and down the court, performed until you break a sweat. The following dynamic exercises are examples of a good basketball warm-up. These exercises have been applied by the players of the "Partizani-basket" team. (The figures have been named using the conventional terminology taken from the classical complex according to NBCCA-2017)

Fig:11. High knee skips

Fig:12. High knee run

Fig:13. Butt kicks.

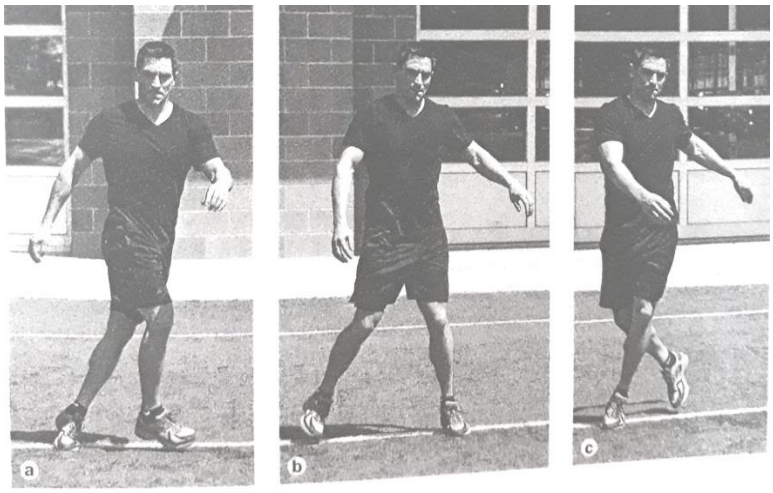


Fig:14. Carioca a, b, c.

V.O. The exercise above can be followed by other exercises such as the lateral shuffle or the backward run, etc.

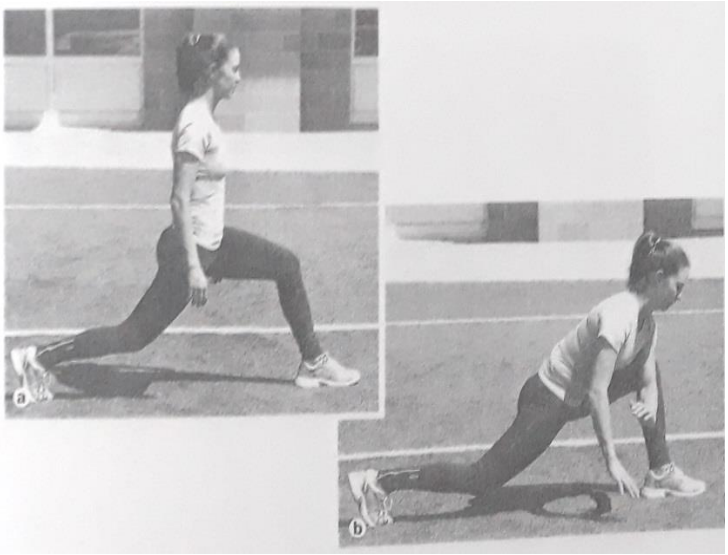


Fig:15. Walking lunge a, b.

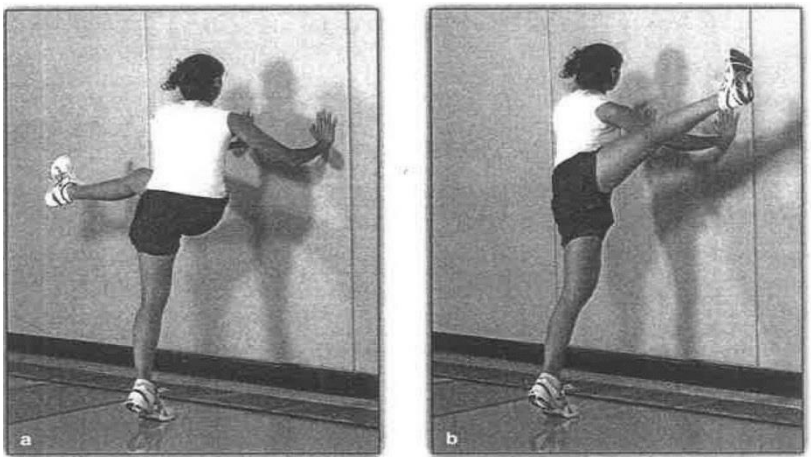


Fig:16. Side-to-side kick a, b.

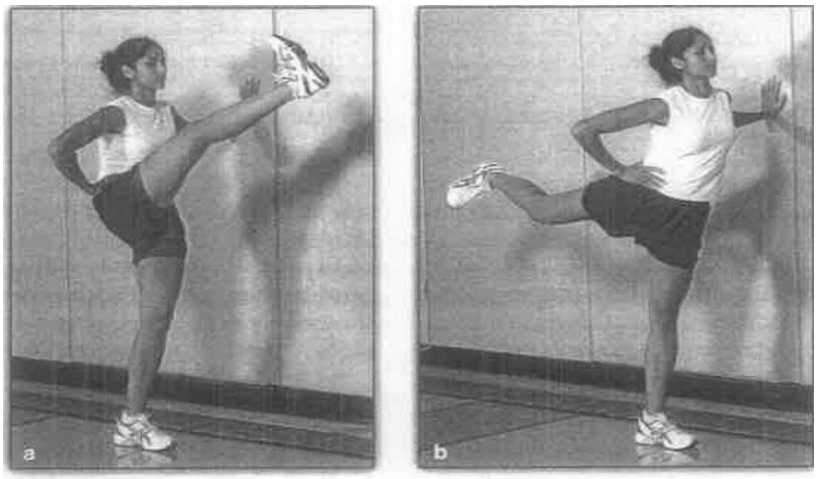


Fig:17. Front-and-back kick a, b.

- **The dynamic warm-up exercises above are followed by stretching exercises**

Athletes often don't want to stretch. Sometimes that is because of bad previous experiences, a lack of understanding about the value of stretching, or the failure of coaches and trainers to offer them the best stretching programs for their needs. Several types of stretching programs exist; some are more practical and effective than others.

Static stretching consists of stretching a muscle in a fixed position for a given time; usually it's 15 to 30 seconds but it can be a minute or longer. Dynamic stretching involves controlled movements through a full range of motion. Often dynamic stretching is used as a transition phase between static stretching and practice or competition. In passive partner stretching, an athlete assumes a stretched position and has a partner assist by helping him or her reach a fuller stretching position.

Proprioceptive neuromuscular facilitation (PNF) stretching is an advanced form of stretching that also uses a partner. There are 2 main types of PNF stretching: the contract, hold, relax technique and the contract, move, relax technique. With the contract, hold, relax technique, the muscle is

stretched to tightness and an isometric contraction is held for 5 to 10 seconds as the partner supplies resistance. The muscle then relaxes for 10 seconds and is then stretched farther before the next isometric contraction. This cycle is repeated 3 times. The contract, move, relax technique is similar, except during the contraction phase the joint is allowed to move at a predetermined range of motion.

One type of stretching that effectively warms the muscles, increases flexibility and prepares athletes for practice and competition is active isolated stretching (AIS), developed by Aaron Mattes. AIS is different from conventional stretching in that the stretch is held for only 2 seconds at the full stretch position and 8 to 10 repetitions are performed. AIS is a great warm-up stretch because of the movement involved with each stretch. The movement also keeps athletes more focused during the stretch.

Follow these rules when performing active isolated stretching.

- Isolate the muscles being stretched.
- Inhale during the relaxed stage of the stretch and exhale when the stretch is being applied.
- Take the stretch as far as possible in a comfort zone.
- Hold each repetition for 2 seconds at the full stretch position and perform 8 to 10 repetitions of each stretch.
- Try to take the stretch a little farther with each repetition.
- Use proper technique and alignment with each stretch.
- Stretch daily.
- Stretch with a positive mental attitude and good focus.

Three routines can be performed, depending on preference and time available: the Full Stretch, the Basic Stretch, and the Quick Stretch. The Full Stretch involves each of the 20 stretches that follow, performed in the order in which they are presented. The Full Stretch should be done at least once a week. The Basic Stretch is the routine most often used and involves the upper-body and lower-body stretches (6 to 20) performed in the order in which they are presented. The Quick Stretch can be used if time is a factor. For the Quick Stretch, begin with the Lateral Trunk Stretch then perform all the lower-body stretches in order (11 to 20). The Quick Stretch should be done no more than twice a week.

These stretching routines are excellent as a team stretch before practices and games. They also should be used with individual workouts. After the stretch, you may want to continue to warm up with shooting or layup drills before doing more intense work.

The following AIS stretches follow a head-to-toe pattern, starting with the neck and finishing with the calves. The first 10 stretches are done from a standing position and the second 10 are done from a seated or lying position. Three of the stretches are done with a rope 8 to 10 feet long(2.4 to 3 m).

The stretching exercises below were applied by the players of the “Partizani-basket” team (according to NBCCA-2007).

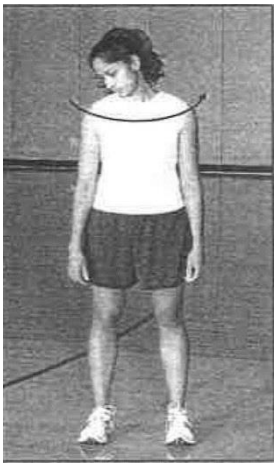


Fig:18. Neck semicircle.

Fig:19. Chin to chest.

Fig: 20. Look-up.

Fig: 21. Ear to shoulder.

Fig:22. Neck-rotation.

Fig:23. Arm circle.

<u>Note:</u> Arm stretching is done from a standing position. This kind of stretching isn't exactly AIS, but it serves as a warm up exercise as well as a relaxing exercise for the arms.

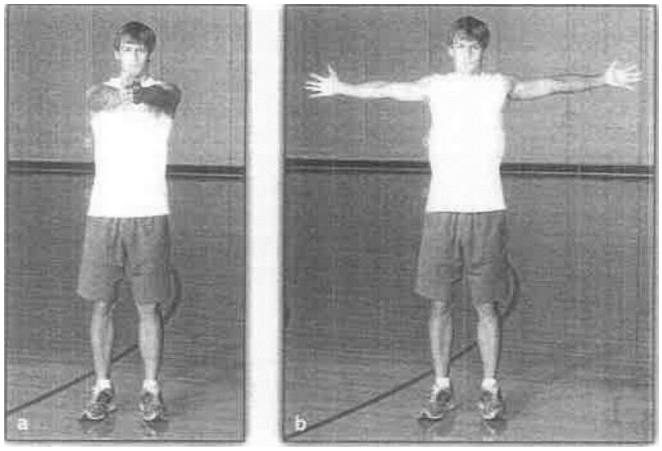


Fig:24.Pec stretch a, b.

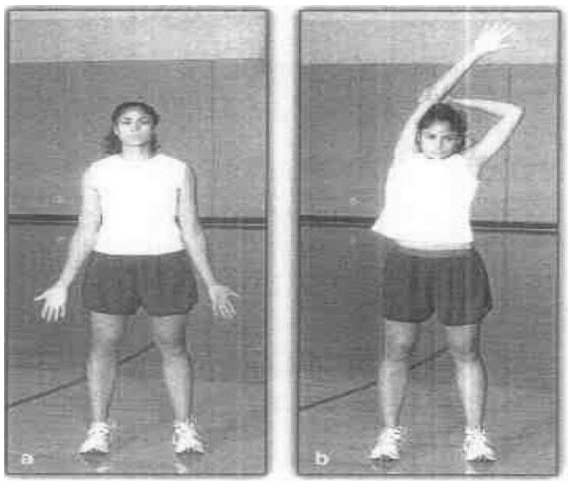


Fig:25. Lat stretch a, b.

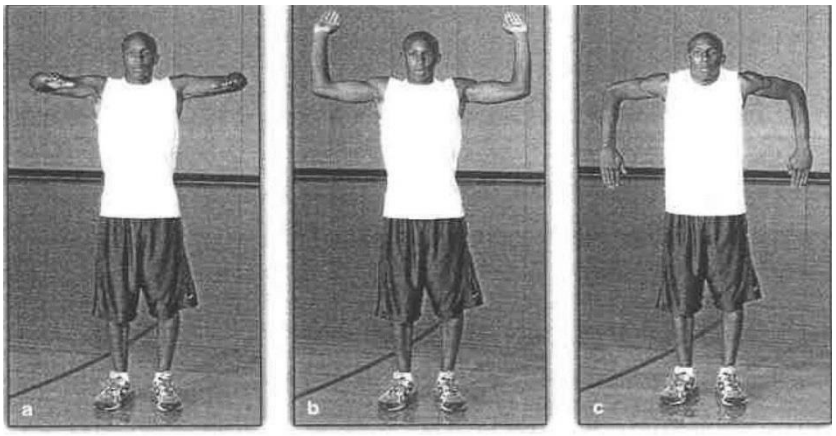


Fig:26. External and internal shoulder rotation a, b, c.

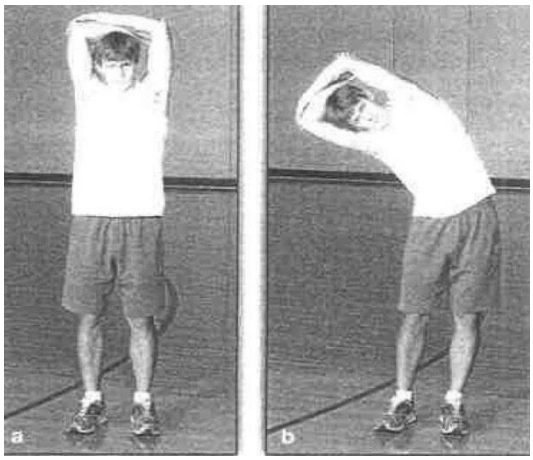


Fig:27. Lateral trunk stretch a, b.

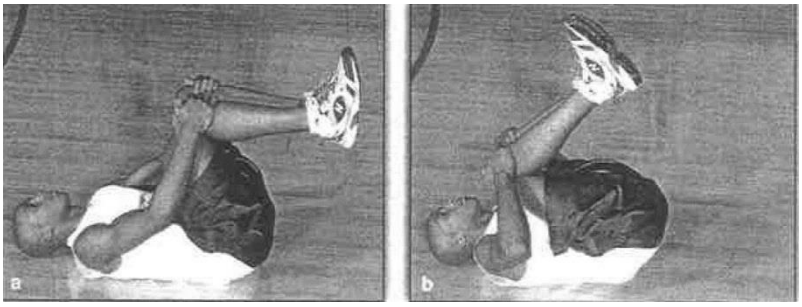


Fig:28. Knees to chest a, b.

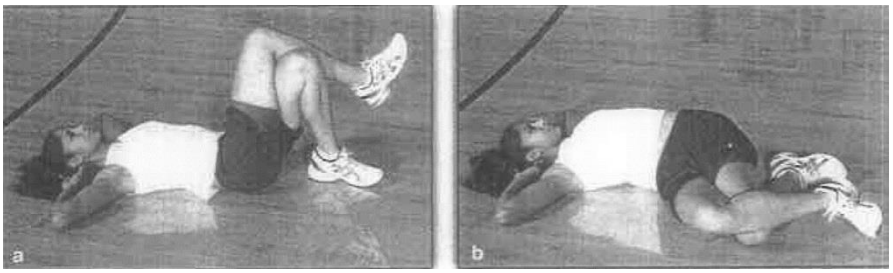


Fig:29. Leg crossover a, b.

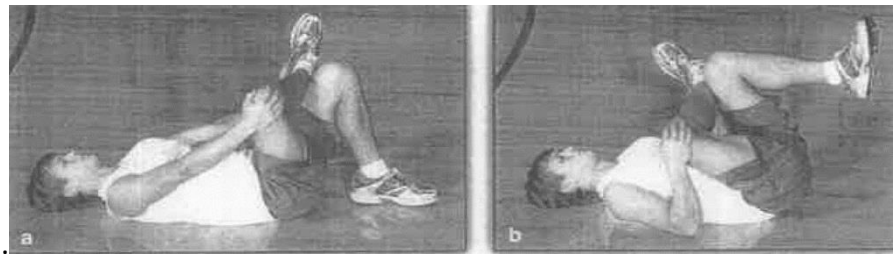


Fig:30. Glute stretch a,b.

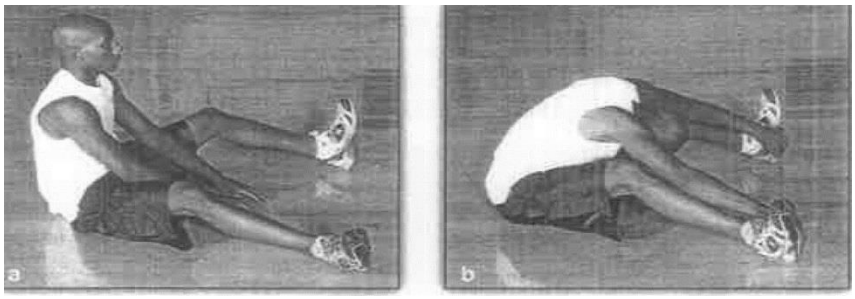


Fig:31. Lower-back stretch a, b.

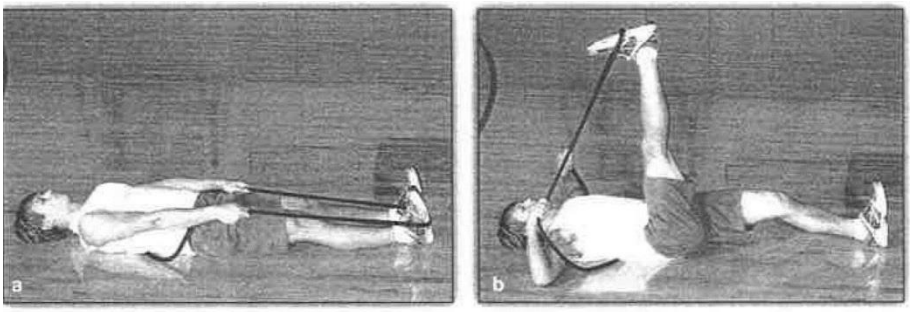


Fig:32. Straight-leg hamstring stretch a, b.

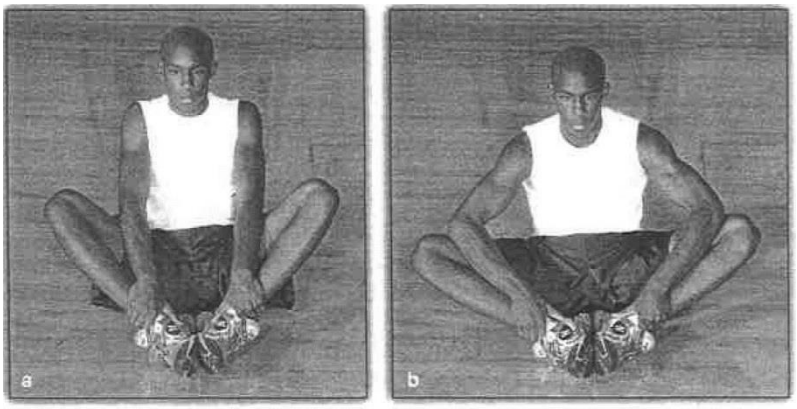


Fig:33. Seated groin stretch a, b.

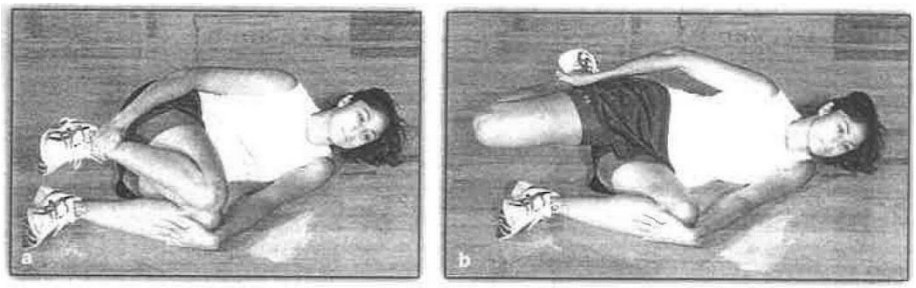


Fig:34. Quad stretch a,b.

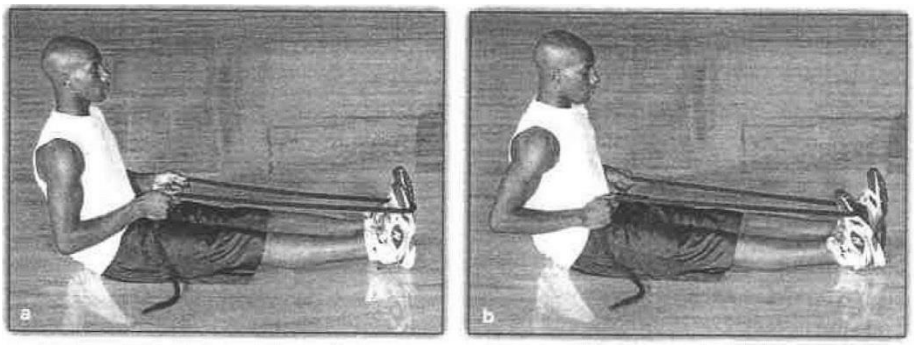


Fig:35. Straight-leg calf stretch a, b.

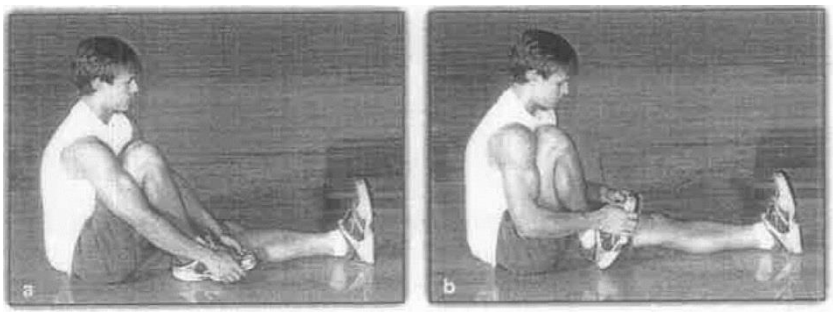


Fig:36. Bent-knee calf stretch a, b.

- **Cooling Down**

Like a good warm-up, a postworkout cool-down is important. A cool-down enhances the recovery of the muscles and helps the body return to its resting state. A good cool-down includes low-intensity exercises such as easy jogging, shooting free throws, and stretching the major muscle groups—the lower back, glutes, quads, hamstrings, and groin. So, cool-down has the same importance as a good warm-up before every training session or game. All these details have been applied by the players of the “Partizani-basket” team.

3.2. Acquisition of the second set of data, processing, and discussion of the results.

Statistical processing of the indicators of the morphological-functional and physical conditioning improvements, acquired at the end of the off-season conditioning period for the “Partizani-basket” team shows significant improvements compared to the first set of data. This shows that the design of this documentation, its graphical representation and so on, was done correctly. Also, during the development of these multi-dimensional conditioning abilities, cross-referencing and developing other important components of the training process such as technical, tactical, psychological and theoretical preparation was needed. All these were done in optimal ratios regarding the training period, for which this documentation was compiled. The following is the experimental work on force development, as well as the development of general endurance, shown in the aerobic abilities (Vo_{2max}) and the other components of the morphological-functional and conditional-coordinative abilities of the “Partizani-basket” team.

Tab2.Indicators of morphological-functional and conditional–coordinative abilities of the "Partizani-Basket" team(Measurement II.Dt.15.10.2017)

	Morphological Data							Force-Speed (Power)				Speed	Agility	Max. Uptake O_2 (l/min)(ml/kg/min)		Flexibility
Tests	Subjects	(Personal) ID	Birth-date	Weight (kg)	Height (cm)	BMI	Body Mass (in %)	Jump height(m) no hands	Jump height(m) with hands	Length jump (cm)	Throw medicineball (m)	Running (20m)(sek)	(4x15m with touching) (Sek) (Agility)	Maximal Uptake O_2 (l/min.)	Maximal Uptake O_2 (ml/kg/min.)	Sit-and-reach Flexibility (cm)
No.	Measurements			2	2	2	2	2	2	2	2	2	2	2	2	2
1	S1	L001685	17.12.1994	102	195	26.82	98.9	0.39	0.45	258	866	3.25	12.45	4.28	42	9
2	S2	L001690	13.05.1999	78	186	22.48	74.2	0.38	0.51	266	870	3.17	12.38	3.95	50.67	13
3	S3	L000153	23.07.1998	85	193	22.81	86.9	0.42	0.54	269	872	3.21	12.36	4.74	55.74	16
4	S4	L001688	01.09.1998	88	187	25.16	85.4	0.46	0.61	272	885	3.16	12.35	4.53	51.5	8
5	S5	L001686	17.09.1996	85	188	24.04	84.5	0.39	0.56	267	887	3.17	12.4	5.1	60	12
6	S6	L001267	17.11.1992	83	183	24.78	85.2	0.38	0.48	252	872	3.19	12.41	4	48.19	13
7	S7	L000419	06.01.1995	98	187	28.02	100.5	0.39	0.52	255	875	3.18	12.43	6.32	64.53	14
8	S8	L001693	29.07.1999	85	199	21.46	84.3	0.45	0.64	257	875	3.11	12.4	4.72	56.12	17
9	S9	L001694	11.11.1997	84	193	22.55	85.5	0.48	0.61	252	877	3.15	12.42	3.93	47.27	9
10	S10	L001691	11.07.1999	65	183	19.4	70.2	0.47	0.62	257	869	3.17	12.41	4.52	59.41	11
11	S11	L001696	28.04.1998	76	187	21.73	75.9	0.48	0.54	249	870	3.23	12.43	4.63	61.23	15
12	S12	L001684	19.02.1993	85	181	25.94	80.02	0.59	0.71	269	878	3.17	12.36	3.61	43.78	12
13	S13	L001687	18.11.1996	76	190	21.5	80.04	0.45	0.55	249	863	3.21	12.41	3.54	59.67	13
14	S14	L001695	07.04.1999	83	188	23.48	84.5	0.52	0.69	256	875	3.19	12.39	3.64	45.73	11
15	S15	L001689	23.08.1999	85	183	25.38	83.3	0.51	0.66	251	861	3.22	12.38	3.58	46.42	9
16	S16	L001692	09.06.1998	74	187	21.16	76.6	0.45	0.61	251	886	3.24	12.41	3.76	53.65	15
17	S17	L000252	02.07.1985	120	200	30	119.1	0.36	0.47	237	882	3.25	12.46	4.55	37.92	10
18	S18	L000416	22.03.1993	84	201	20.79	79.7	0.45	45	252	894	3.21	12.4	4.2	50	17
19	S19	L001799	04.06.1999	96	179	29.9	98	0.46	0.56	251	883	3.19	12.41	4.78	49.83	16
20	S20	L000421	26.05.1993	80	189	22.39	81.9	0.48	0.56	257	888	3.18	12.36	4.52	59.43	18

No	Morphological Data											Force-Speed (Power)								Speed		Ability		Max. O_2 Uptake (l/min)(ml/kg/min)				Flex	
	Subjects	ID	Birth Date	Weight (kg)	Weight (kg)	Height (cm)	Height(cm)	BMI	BMI	Body Mass(%)	Body Mass(%)	Vertical Jump (m)(no hands)	Vertical Jump (m)(no hands)	Vertical Jump (m)(no hands)	Vertical Jump (m)(no hands)	Length Jump(cm)	Length Jump(cm)	Throw medicineball(m)	Throw medicineball(m)	Running (20m)(sec)	Running (20m)(sec)	Agility (4x15 m with touching) (Sek)	Agility (4x15 m with touching) (Sek)	Maximal O2 Uptake(l/min.)	Maximal O2 Uptake(l/min.)	Maximal O2 Uptake (ml/kg/min.)	Maximal O2 Uptake(ml/kg/min.)	Sit-and-Reach Flexibility (cm)	Sit-and-Reach Flexibility(cm)
	Mat			1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2
1	S1	L001685	1994	102	102	195	195	26.82	26.82	98.9	98.9	0.47	0.39	0.54	0.45	242	258	786	866	3.28	3.25	12.98	12.45	3.67	4.28	37.47	42	4	9
2	S2	L001690	1999	78	78	186	186	22.48	22.48	74.2	74.2	0.4	0.38	0.53	0.51	250	266	790	870	3.25	3.17	12.91	12.38	3.95	3.95	52	50.67	6	13
3	S3	L000153	1998	85	85	193	193	22.81	22.81	86.9	86.9	0.45	0.42	0.59	0.54	253	269	792	872	3.26	3.21	12.89	12.36	4.58	4.74	52	55.74	8	16
4	S4	L001688	1998	88	88	187	187	25.16	25.16	85.4	85.4	0.47	0.46	0.64	0.61	256	272	805	885	3.24	3.16	12.88	12.35	4.58	4.53	53.84	51.5	3	8
5	S5	L001686	1996	85	85	188	188	24.04	24.04	84.5	84.5	0.42	0.39	0.58	0.56	251	267	806	887	3.27	3.17	12.93	12.4	4.94	5.1	59.57	60	6	12
6	S6	L001267	1992	83	83	183	183	24.78	24.78	85.2	85.2	0.4	0.38	0.53	0.48	236	252	793	872	3.28	3.19	12.94	12.41	3.8	4	45.78	48.19	5	13
7	S7	L000419	1995	98	98	187	187	28.02	28.02	100.5	100.5	0.39	0.39	0.57	0.52	239	255	795	875	3.3	3.18	12.96	12.43	4.59	6.32	47.32	64.53	7	14
8	S8	L001693	1999	85	85	199	199	21.46	21.46	84.3	84.3	0.38	0.45	0.55	0.64	241	257	799	875	3.26	3.11	12.93	12.4	3.95	4.72	46.49	56.12	9	17
9	S9	L001694	1997	84	84	193	193	22.55	22.55	85.5	85.5	0.45	0.48	0.56	0.61	236	252	796	877	3.29	3.15	12.95	12.42	3.3	3.93	39.24	47.27	3	9
10	S10	L001691	1999	65	65	183	183	19.4	19.4	70.2	70.2	0.42	0.47	0.53	0.62	241	257	787	869	3.28	3.17	12.94	12.41	3.54	4.52	54.4	59.41	4	11
11	S11	L001696	1998	76	76	187	187	21.73	21.73	75.9	75.9	0.44	0.48	0.46	0.54	233	249	791	870	3.31	3.23	12.96	12.43	4.22	4.63	55.57	61.23	6	15
12	S12	L001684	1993	85	85	181	181	25.94	25.94	80.02	80.02	0.53	0.59	0.69	0.71	253	269	798	878	3.27	3.17	12.89	12.36	3.3	3.61	38.82	43.78	5	12
13	S13	L001687	1996	76	76	190	190	21.5	21.5	80.04	80.04	0.41	0.45	0.53	0.55	233	249	782	863	3.32	3.21	12.94	12.41	4.33	3.54	56.92	59.67	6	13
14	S14	L001695	1999	83	83	188	188	23.48	23.48	84.5	84.5	0.46	0.52	0.63	0.69	240	256	794	875	3.3	3.19	12.92	12.39	3.43	3.64	41.35	45.73	4	11
15	S15	L001689	1999	85	85	183	183	25.38	25.38	83.3	83.3	0.47	0.51	0.6	0.66	235	251	783	861	3.31	3.22	12.91	12.38	3.54	3.58	41.6	46.42	3	9
16	S16	L001692	1998	74	74	187	187	21.16	21.16	76.6	76.6	0.43	0.45	0.57	0.61	235	251	794	886	3.3	3.24	12.94	12.41	3.54	3.76	47.78	53.65	6	15
17	S17	L000252	1985	120	120	200	200	30	30	119.1	119.1	0.33	0.36	0.41	0.47	221	237	798	882	3.33	3.25	12.99	12.46	3.85	4.55	35.12	37.92	4	10
18	S18	L000416	1993	84	84	201	201	20.79	20.79	79.7	79.7	0.42	0.45	0.49	45	237	252	806	894	3.31	3.21	12.93	12.4	4.58	4.2	46.89	50	8	17
19	S19	L001799	1999	96	96	179	179	29.9	29.9	98	98	0.41	0.46	0.52	0.56	235	251	804	883	3.29	3.19	12.94	12.41	3.94	4.78	45.57	49.83	7	16
20	S20	L000421	1993	80	80	189	189	22.39	22.39	81.9	81.9	0.49	0.48	0.52	0.56	241	257	797	888	3.28	3.18	12.89	12.36	4.12	4.52	51.45	59.43	9	18

Table:7. Indicators for the first and second measurement of the conditional-coordinative skill of the "Partizani-Basket" team (Dt.10.05.2017 and 05.10.2017)

3.2.1.The effects of plyometric on male basketball players

Abstract: This study aims to evaluate and compare the effects of the plyometric training method of force, in improving the ability of basketball players. In this study participated 20 basketball players of the "Partizani-basket" team participating in the Albanian Basketball Championship for adults (2017-18). Participating basketball players of this activity were made aware of the purpose of this study and the invitation to participate in it. They were involved in this study with their own desire. The team would be trained for 12 weeks, according to a defined physical fitness program for the preparatory period, focusing twice a week on plyometric exercises in addition to other elements of physical preparation as a whole. All the basketball players taken in this study were measured before and after the 12 week period of conditioning in the off season on vertical jump, long jump, and parameters associated with these tests. The data subjected to statistical processing using the IBM SPSS Statistics software 22 method. The overall team at the end of the preparation period had a significant improvement in propensity ($p < 0.05$) in the vertical jump (<14.3 cm) on the longest (<15.8 cm). The results of this study showed that the effects of the plyometric training method of the force increased with significant indicators especially in the motors of ability performance in the basketball team of the "Partizani-basket" team.

Key words: Basketball; Preparation Time (Conditioning); Plyometric Force Training Method; Conditioning Program; High Jump; Long Jump.

Introduction

The plyometric training of force training has now been recognized as one of the most effective and full-fledged improvement techniques in basketball, especially jumping in basketball and at the same time a significant component of most of the programs designed for physical condition. The plyometric training method of the force (or often referred to as group exercise of muscle extension and muscle contraction) is often used during basketball training programs in preparatory period (off season) as an effective method for improving motor performance [1, -159; 2, -86].

Exercise of the force as a whole is also an important part of the training program during the preparatory period for basketball players with a background experience related to benefits that improve motor performance and undoubtedly reduces in any case injuries to basketball players [3, -123; 4, -47].

Use the exercises of the method of force plyometric, certainly not excluded, but instead combine them with force exercise in general, thinking that motor performance can be increased with a greater speed quite significant, than any other program performance [5, -219; 6, -170].

Exercise of the plyometric method affects the "first" neuromuscular system (pro-perceptive). Force training requirements by the increased activation of nerve pathways, certainly increase the neuromuscular system's readiness to a higher degree [7, 117-118].

The use of not only plyometric exercises, but the whole of strength exercises to jointly involved and also in training, is an adequate strategy for the organization of the training process, which has positive effects, high, in the training practice, especially in management as rationally as her time. Also, the growing demand and popularity that have gained strength conditioning programs to basketball players have undoubtedly increased besides the potential for health benefits [8, -66] and these efficient methods for increasing winner performance, athletes in general and basketball players especially.

Hypothesis of this study

Was that in addition to other methods of developing strength of the coordinated plyometric method of force development education will undoubtedly result in an improvement of the skills of the great sinful performance motors.

Methodology

In this study participated 20 basketball players of the "Partizan" team participating in the Albanian Basketball Championship for adults, who would be trained according to a defined physical condition program, for 12 weeks of the preparatory period, focusing twice on week to develop mainly plyometric exercises for intensity, combined with other strength training exercises for other parts of the body like arms, backs, belly, or the latter known as "core" muscles. So during the entire preparation period, it would work to increase physical condition for the performance of the basketball game in the championship. Changes in all indicators (variables) were measured before and after 12 weeks of the training program.

Participating subjects are chosen randomly and at their own discretion. The team received in this study had these parameters: no. = 20; age 21.5 + 0.8, weight 85.6 + 2.6 kg; stature 188.9 + 1.4 cm; BMI 23.9 + 0.6 and a basketball training experience of 8.4 + 3.5 years.

Team participants received in this study experienced a relatively significant training ground, but often trained in the preparation period the overall training programs rather than focusing to increase indicators of the parameters to the lowest motor skills such as jumping, speed, flexibility, etc.

Basketball participants of this team were informed about the nature as this project and had been approached by them prior to the start of the study. Undoubtedly the team's technical team staff was informed and prepared about the study procedures, possible risks if the exercise requirements and the potential benefits of this study project were neglected. All the training sessions were held in the respective halls in Tirana. ("Partizan-basket" team often at its own club hall and planned to develop force in the S.U.T. Fitness hall).

Procedures: Five tests were selected for assessment of physical fitness performance. Such tests are often used in assessing the performance of athletes. Test procedures; for vertical high jump, long jump, 4 x 15 m (from high starts running) and flexibility test. All these can be found [9,-181] and 20 m sprint.

The training program used in this study was compiled by the author of this research study and is based on the following publications [10, -45].

The team was training 2 times a week with alternatives between days for 12 consecutive weeks. From the technical staff basketball players were recognized through demonstrations with the technical, rational requirements of each exercise during the study period. The training was largely supervised, directed and regulated the nature of the training intensity stimuli in accordance with the duty for training. Extension of training sessions for this purpose was 90 minutes for the team received in this study.

Basketball players participating in the training sessions developed for 15 minutes the heating period, which consisted of a moderate intensity with a complex of dynamic exercises that were different from each other. Recent surveys suggest that this may be more effective (ie heating) with the heating protocol for growth, intensification of power performance (ie force-speed ratio). After the good warm-up period with the team began with the planned plyometric exercises, divided into several repeating sets in optimal ratios with the time of rest (approximately 30-35 minutes). After that they continued the program with other elements of the force (approximately 35-40 minutes). Each training session ended with exercises for cooling, mostly stretching exercises, which lasted (approximately 5-10 minutes) [11,60-64].

During the execution of this planned program, no change or permission of any other program offered by other entities is allowed.

Protocol warm-up: The warm-up protocol consists of 10-15 minutes with moderate intensity in the fast walking (jogging) followed by a moderate intensity not, but slightly higher dynamic exercises. They include, course "skip" Running with knees up, themrat touch the buttocks, "karaoke" side ploy during jogging, hiking precipitate front, side kick (from both sides and shot to step forward or back (the withdrawal) Descriptions details of stretching exercises can be found at the national basketball training association - NBCCA (2007).

The game with basketball elements for physical preparation in this period throughout the field requires carefulness because often this type of exercise adds monotony and above all exerts a chronic stress on the skeleton muscle system [12, -248].

Plyometric training: The plyometric training program consists of three levels. The participants perform 10 plyometric exercises from the first to the fourth week (1 set of 10 reps per week 1-2 and 12 reps per week 3-4) and 12 plyometric exercises during the fifth to the tenth week (1 set of 10 Repeat for the week 5-6 and 8 reps per week 7-8). For the third level, 12 exercises have been re-selected for the week 9-12 (1 set of 8 repetitions per week 9-10 and 6 repetitions per week 11-12). The exercises were according to
the protocols outlined by: [13, -36]

Table: 8. Overview of plyometric training program

Week 1-4 1 Set / 12-10 repeats	Week 5-8 Set 1 / 10-8 repeats	Week 9-12 Set 1 / 8-6 repeats
1 – “Skip” running fast	1 - Dance and kick with the heels and behinds	1 - Jump gallop with great step forward
2 - "Pogo" (Jump-up, knee to chest)	2 – Jump-up	2 - Alternate jump 1 foot on the box
3 – “Rocket jump”	3 - Jump with open legs	3 - Fast jump
4 - Jump with ball / medicine over and above	4 - Jump scissors	4 - Jump of depth
5 – Jump with turn 360º over medicine ball.	5 - Jump alternating legs	5 – Jump with pod "box" (CR) multiple answer
6 - Jump with MB from the chest	6 – Throwing MB with jump and turn	6 - MB throwing from down-up-behind
7 – Fast jump with two legs	7 – MB before-up running to catch it	7 – Jump and throwing MB over heads and await (CR)
8 - Progressive fast jump on both legs	8 – Jump-up, knee to chest and sprint	8 – Jump and throwing MB below hand
9 – Jump side	9 – Jump with one leg and kick	9 – Jump side
10 – Jump side - sprint	10 – Jump with one leg and progressive kick	10 – Box – skip
	11 – Jump with one leg diagonal	11 – Box –bound
	12 – Jump with one leg side	12 – Jump of depth

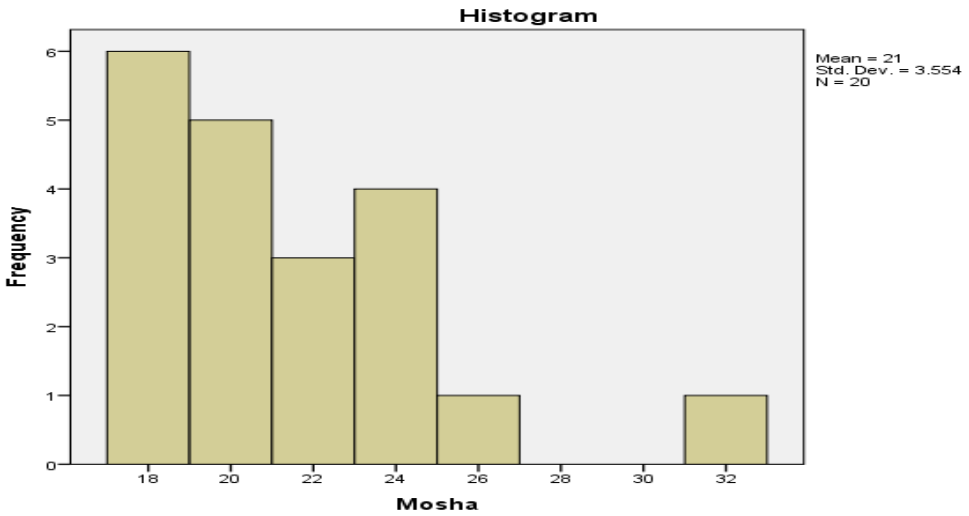
MB = Medicine ball CR = Consecutive repeats

Summary of Descriptive Statistics										
Morphological Data						**Standard Deviation**	**Asymmetry**		**Slope**	
	Nr	**Minimum**	**Maximum**	**Average**	**Standard Error**	**Statistical Indicator**	**Statistical Indicator**	**Standard Error**	**Statistical Indicator**	**Standard Error**
Age	20	21	32	21.00	.795	3.554	1.680	.512	3.573	.992
Weight (kg)	20	65	120	85.60	2.602	11.637	1.315	.512	3.267	.992
Height(cm)	20	179	201	188.95	1.389	6.211	.560	.512	-.347	.992
BMI	20	19	30	23.95	.679	3.034	.668	.512	-.179	.992
Body Mass (%)	20	70	119	85.65	2.473	11.061	1.587	.512	3.364	.992

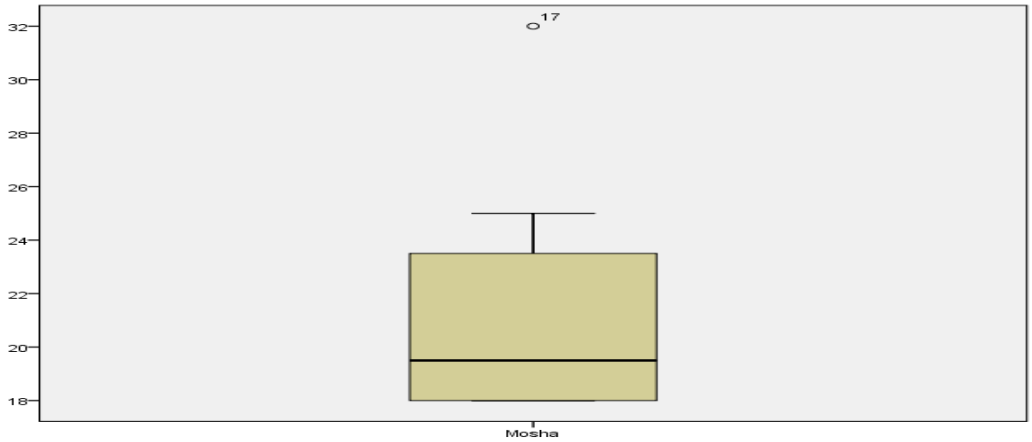
Table:9. Summary of the descriptive statistics for the morphological data of the players of the "Partizani-basket" team.

Statistical analysis: The Statistic Analysis was performed using the IBM SPSS Statistics software 22. The statistical techniques used include: general descriptive analysis, evaluation of data distribution, and search hypothesis search through differential techniques between two measurements, using t-test. T-test was used to identify the effect of the training plan applied to the "Partizani-basket" team during the preparatory training period. The size of the study selection includes 20 basketball players aged 21 ± 0.8. All the morphological data of the players of the "Partizani-basket" team is shown in the following table.

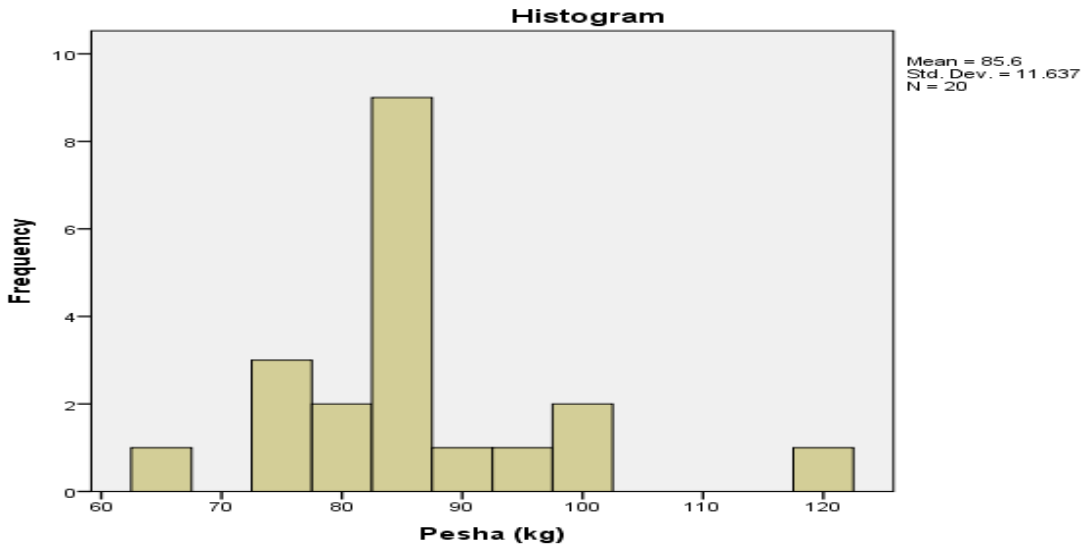
The summary of the descriptive statistics for the morphological data of the players is shown graphically below:



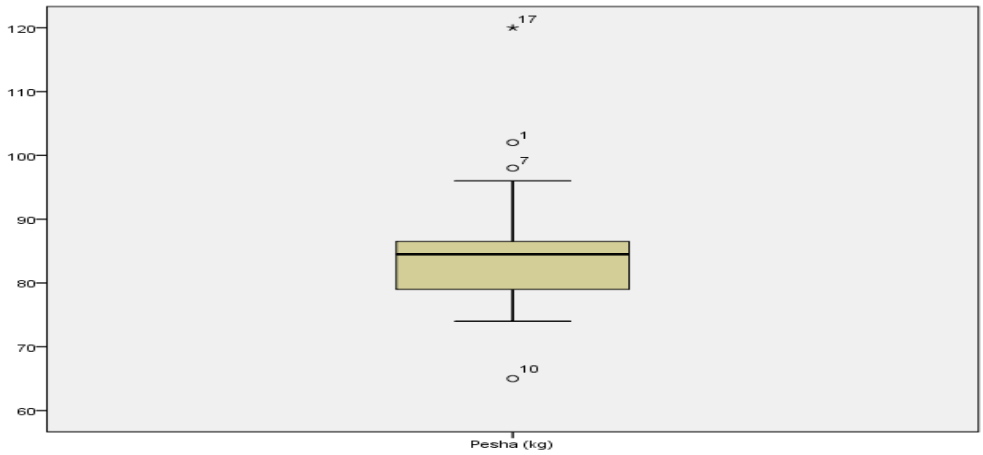
Grafiku:4. Age data of the players of the "Partizani-basket" team.



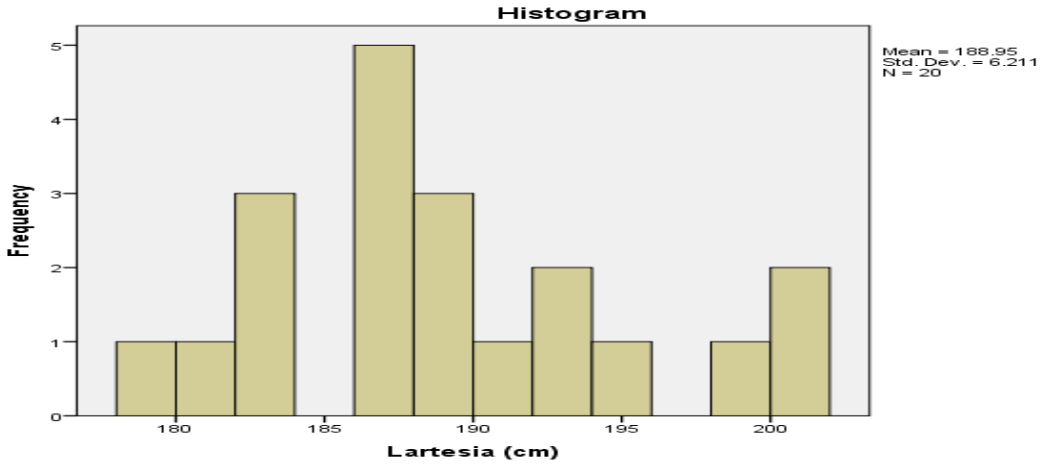
Grafiku:5. Average age data of the players of the "Partizani-basket" team.



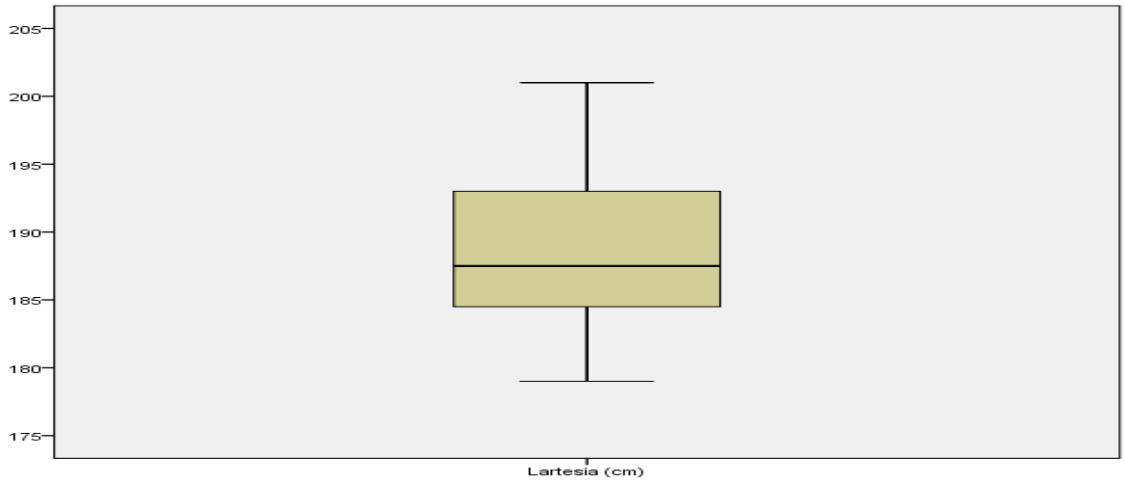
Grafiku:6. Weight data of the players of the "Partizani-basket" team.



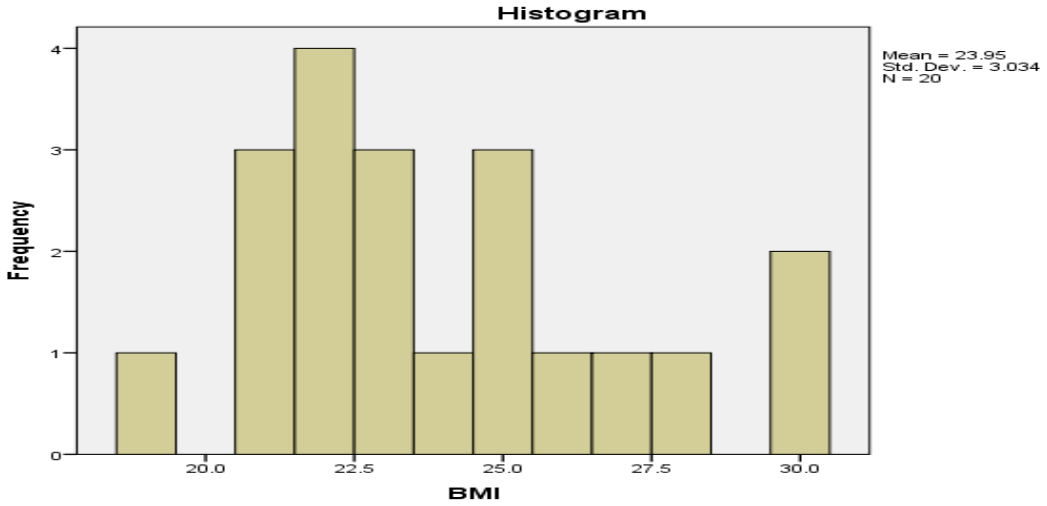
Grafiku:7. Average weight data of the players of the "Partizani-basket" team.



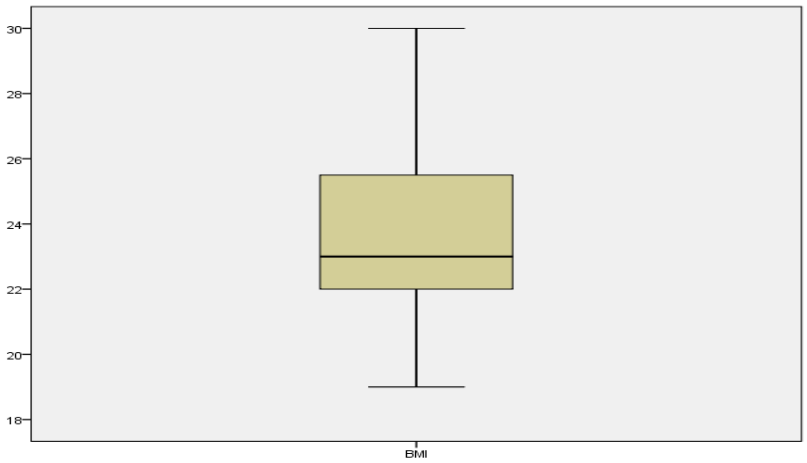
Grafiku:8. Height data of the players of the "Partizani-basket" team.



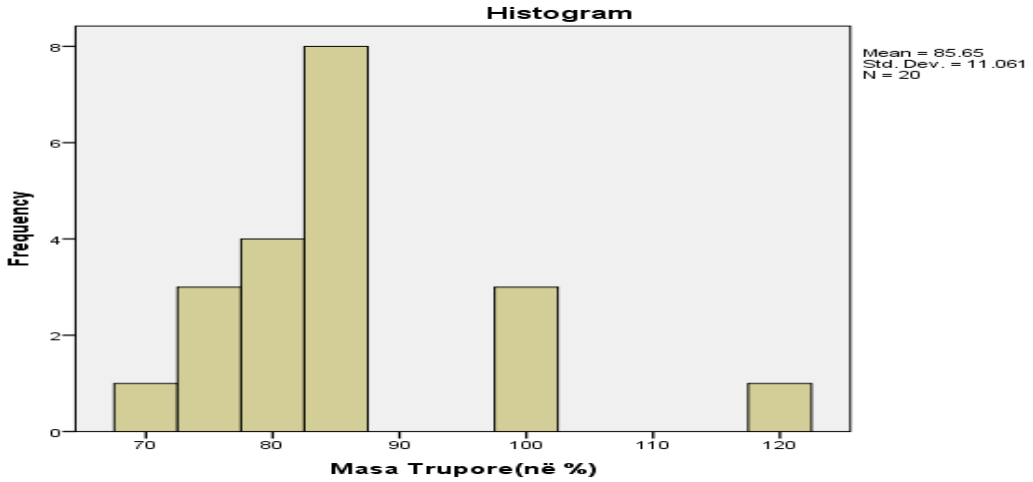
Grafiku:9. Average height data of the players of the “Partizani-basket” team.



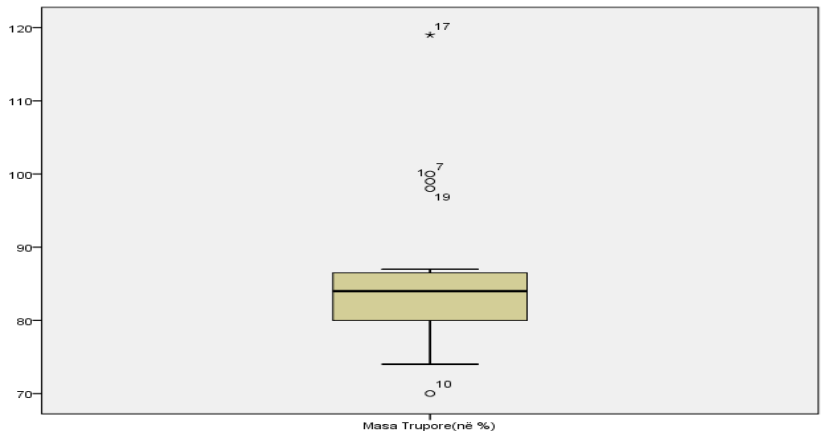
Grafiku:10. BMI data of the players of the “Partizani-basket” team.



Grafiku:11. Average BMI data of the players of the “Partizani-basket” team.



Grafiku:12. Body mass(in percentage) data of the players of the “Partizani-basket” team.



Grafiku:13. Average body mass(in percentage) data of the players of the “Partizani-basket” team.

Results

In the table below are given theperformance data motors before the start of the training process of the preparatory period and at the end with the team "Partizani basket". Participating basketball players in this study carried out almost 100% of the training sessions, with the consent of each of them, without causing any injury during the realization of this training process. In general, the data obtained from the variables after the realization of the program of study result positive, with the increase of initial values, though not significant and significant in some cases. Let's take them apart and discuss each one of them.

Table: 10. Motor performance results before and after the training period.

No.	Tests	IT	FT	Benefits	
				Absolute	%
1.	High jump vertical (cm.)	41.9 ± 6.8	56.2 ± 5.7	14.3 *	34.1%
2.	Long jump (cm.)	240.1 ± 10.1	255.9 ± 12.3	15.8 *	6.6 %
3.	Running 20 m. sprint (sec.)	3.29 ± 0.2	3.21 ± 0.1	- 0.08	2.4 %
4.	Running 4x15 m. (sec.)	12.94 ± 0.6	12.41 ± 0.5	- 0.53	4.1 %
5.	Throwing MB (cm.)	793.7 ± 50.7	873.7 ± 66	80.0 *	10.1 %
6.	From sit trunk flexibility (cm.)	5.65 ± 4.1	12.85 ± 3.9	7.20 *	127.4 %

Note: * Significant improvements compared to the measurement before the start of the training process

Discussion

The hypothesis that a combined plyometric training program results in relatively significant improvements in motor performance abilities. Basketball players in this study have made a significant improvement to strength in the upper and lower body parts, which are seen as essential requirements for basketball performance [14,-53]. Vertical jump in the first measurement to the second comparison results in a significant increase in the average absolute benefit of 14.3 cm, which in percentage 34%. These results are a testimony of previous achievements demonstrated by: [15, 86-87].

We can also say that we have a more even increased improvement in the long-jump distance of 15.8 cm from basketball, which in percentage 6.6% achieved the same results [12,-248].

Regarding the speed of 20 m (sprint test), study showed that plyometric and strength training improved the performance of basketball players taken in this study and concretely with the following results: - 0.08 sec. which in the percentage results 2.4% [16, 221-222].

The performance of the 4x15m running start-up test consists speed of start frequency with non-stop, as well as change in direction and apparent detectability in the level of muscle strength and flexibility we have pointed out, the plyometric training and strength training program increases the muscular power and flexibility, which is related to success in the 4x15m agility test. As we have pointed out, the plyometric training and strength training program increases the muscular power and flexibility, which is related to success in the 4x15m agility test [17, -74].Basketball players in this study have a significant improvement in throwing medicine balls by 80 cm and in percentage 10.1%. The same can be said for the flexibility test, where the improvement is significant of 7.20 cm with a profit of 127.4%. Thus, the strengths and power of the basketball players have already been proved, after applying, merging or joining some types of training of the force in the content of the training sessions in basketball [18, 230-231]. This reality is similar to previous studies which suggest that regular participation in a well force development program will obviously result in some levels of motor performance improvement [17, -76].

Correct and fully supervised application of training programs, far from overload (extra) in the skeleton muscles of the athletes, proves and eliminates injury during the training process. Therefore, contemporary of condition programs, which include plyometric and force training, and which are applied correctly and rigorously, have proven to be an effective way to avoid or reduce injuries to athletes [19, -113; 20, -60].

Conclusions

- The discovery, the selection of the most efficient ways to increase the performance of athletes, in our case of basketball players, is the first and very important step in the progress of the training process.
- The results of this study are a potential added value in the application of the plyometric method and force program for the preparatory period, with the sole purpose of maximizing the performance of basketball players in the game.
- Design of the training program by us in combination with plyometric method with that of forces, provides an efficient time in modalities, rational movements in training, associated with significant improvements in motor performance in the following matches.
- On this basis and the preliminary achievements of this study, conclude that the effects of plyometric training and strength are often synergistic in the impact of engine performance increase on basketball players rather than the effects of using a single strength training program.
- The offered study also confirms that it is important to achieve significant statistical progress in providing performance motors, from the training program applied to basketball players in our case.
- Finally, we think that combined plyometric training with that force is a very useful tool for innovative trainers in the field of strength training, as well as contributing to other timely efficient training.

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3.2.2. Maximum Oxygen Consumption during the Preparatory Period of Basketball

Abstract: In this study we present the progress of the development team VO2max "Partizani-Basket" during the preparatory period of the training process. A total of 20 basketball players involved in this study, with their desire. The data presented are related to some anthropometric measurements (age, weight, height, body mass index, BMI etc.) and measurements of Vo2max on the ergo-metric "Monarch" bicycle. The mean age was 21.0 years old with SD ± 3.55; weight 85.6 kg with SD ± 11.6; height 188.9 cm with SD ± 6.21; body mass percentage 85.65% with SD ± 11.06 and BMI 23.95 with SD ± 3.03 As for maximum oxygen consumption (Vo2max) at the first measurement with an average of 3.98 l / min and with SD ± 0.65 and (Vo2 max) 47.45 ml / kg / min and SD ± 6.96. These data were taken at the beginning of the training process of the preparatory period to determine the level of current sports situation, which from the data obtained was relatively low. For this purpose, a genuine program for increasing the level of Vo2max was designed, where basketball players would train for 12 weeks with 2 training sessions per week, with 45-60 minutes with aerobic fitness exercises and mostly running in nature. At the end of the period, a significant improvement was observed from the first measurement to the second and mainly to the Vo2max indicators and specifically: Vo2max in l / min with an average of 4.34 l / min and an improvement margin of 0.35 l / min. Vo2max in ml / kg / min with an average of 52.15 ml / kg / min and improvement margin 4.69 ml / kg / min. Undoubtedly, the above changes with an increasing improvement in aerobic level indicators constitute a sound basis for the continuity of

physical training (engines) in general and other types of training component components in particular, which together converge to the performance of game and consequently on the technical results of the games.

Keywords: max oxygen consumption (Vo2max), basketball, players, anthropometric data.

Introduction

For several years, different authors have conducted studies on measuring the maximum level of oxygen consumption (Vo2max) in various sports (in our case in basketball). Such authors and the first ones would be mentioned (Robinson 1939), later followed by Astrand 1960. In further studies the data were enriched and showed correlations and correlations with other indicators such as age, sex, inheritance, training experience, refinement of efficient training methods, and so on. [2,-69]

The absolute level of maximal aerobic capacity calculated by body weight had a significant increase from the measured measurement of 4.69 ml.kg / min or expressed as a percentage increase of 2.44%. If these levels of Vo2max are compared to the elite basketball players, they are low. There are a few reasons for this: selecting the protocol of the exercises that has already changed; sometimes the subjects have been uninformed about the exercises they would perform for this purpose, their methodology, etc. It is also possible to mention when these studies have been conducted in selected subjects and in high-profile aerobic type sports such as marathon athletes, long distance swimming, etc. [3,-124]

In the presented study, the goal has been to increase the oxygen consumption level (O^2) from the first to the second measurement to provide a fundamental for the continuation of physical preparation at optimal levels, an ever-increasing performance level of the game in the national basketball competition. We would also add that aerobic power and related variables not only showed a good level of health screening for the basketball players, but also the required increase in the performance level of the engines, especially Vo2max, of the force and its types, but also speed and coordination skills (agility) etc. [4,141-142]

Methodology

The tested subjects are 20 basketball players of the "Partizani-Basket" adult team who involved with their approval and desire. They underwent training sessions for the

development of Vo2max for 12 weeks with 2 times a week from 45 to 60 minutes per session, mainly spending 3.5 to 5 km of running with a timing and time change. The preliminary test of the beginning of the training process for this purpose was ergo-metric bicycles (Astrand protocol) with respective indicators for each basketball player. Data on age, weight, height, body mass percentage, BMI, etc. were also obtained as well as the maximum oxygen consumption (Vo2max) measured on the ergo-metric "Monarch" bicycle, with Astrand test protocol in the S.U.T. (N.I.CH.S.) laboratory. The total workload test (t w m / min) was 9 min, test time 6 min, heart rate average at 126.4 (bpm) and heart rate increase 198.6 (bpm) and the average of the correlation factor Vo2max 1.02 and an average of the maximum oxygen consumption (Vo2max) of 3.98 (l / min) and the average of Vo2max of 47.45 ml.kg / min. Consequently, Vo2max was calculated according to the [1, 81-82] test by measuring oxygen consumption below maximum and accompanied by heart rate. At the end of the preparatory period, a significant improvement was observed from the first measurement to the second and mainly to the Vo2max indicators and specifically: Vo2max in l / min with an average of 4.34 l / min and an improvement margin of 0.35 l / min. Vo2max in ml / kg / min with an average of 52.15 ml / kg / min and improvement margin 4.69 ml / kg / min. In summary, these indicators can be seen in the following table:

Table: 11. Comparisons of Vo2max indicators. (l / min and ml / kg / min) from the first measurement to the second.

Nr	Measurements	Average $Vo_{2max.}$ (l/min)	Standard Deviation	Error Standard Average	Average $Vo_{2max.}$ (ml/kg/min)	Standard Deviation	Error Standard Average
1	M. I	3.987	0.488	0.10	47.459	6.964	1.557
2	M. II	4.345*	0.659	0.14	52.154*	7.226	1.615
3	Difference	0.358	0.171	0.04	4.695*	0.262	0.058

Results

The mean age was 21.0 years old with SD ± 3.55; weight 85.6 kg with SD ± 11.6; height 188.9 cm with SD ± 6.21; body mass percentage 85.65% with SD ± 11.06 and BMI 23.95 with SD ± 3.03. In terms of maximum oxygen consumption (Vo2max. L / min) in the first measurement with an average of 3.98 l / min and with SD ± 0.65 and (Vo2max.ml / kg / min) 47.45 ml / kg / min with SD ± 6.96. These data relate to the start of the training process of the preparatory period to determine the current level of sports status, which from the data obtained was relatively low. For this purpose, a genuine program for raising the level of Vo2max was designed, where basketball players would train for 12 weeks with 2 training sessions per week, with 45-60 minutes with aerobic fitness exercises and mostly running in nature, swimming, etc. [5,-271] At the end of the period, a significant improvement was observed from the first measurement to the second and mainly to the Vo2max indicators and specifically: Vo2max in l / min with an average of 4.34 l / min and an improvement margin of 0.35 l / min. Vo2max in ml / kg / min with an average of 52.15 ml / kg / min and improvement margin 4.69 ml / kg / min. Undoubtedly, the above changes with an increasing improvement in aerobic level indicators constitute a sound basis for the continuity of physical performance (motors) in general and other types of training components in particular, which together converge to the performance of game and consequently on the technical results of the sensations. The dependent t-test results are briefly reflected in the following:

Table: 12. Results of t-test indicators

Nr	Measur.	t-test		
		Average change	Standard Deviation	Error Standard Average
1	$Vo_{2max.}$ (l/min)	0.35750*	0.52990	0.11849

2	$Vo_{2max.}$ (ml/kg//min)	4.69550*	4.14035		0.92581	

Nr	Measur.	t-test				
		Confidence Interval 95%		t	Diff.	Sig (2-tailed)
		Lower limit	Upper limit			
1	$Vo_{2max.}$ (l/min)	0.10950	0.60550	3.017	19	0.007
2	$Vo_{2max.}$ (ml/kg//min)	2.75776	6.63324	5.072	19	0.000

The t-test results for the dependent variable "Vo2max" (l / min) showed a statistically significant difference between the first and second measurements. We conclude that a higher average was detected in the second measurement and the t-test results show that a statistically significant difference ($p > 0.05$) is tested between measurements for the dependent variable. The t-test results for the dependent variable "Vo2max" (ml.kg/min) showed a statistically significant difference between the first and the second measurements. Consequently, a higher average was detected in the second measurement and t-test results show that a statistically significant difference ($p > 0.05$) is tested between measurements for the dependent variable. We conclude that improvement is only for Vo2max.

Discussion

If we refer to the first measurement at the beginning of the training process with respect to Vo2max, basketball players "Partizani-Basket" resulted in low values from a mean of Vo2max to (l / min) 3.98 with standard deviation (SD) 48 of standard error of average of 0.1. The low scores also match the technical results of matches in the classification of national teams, where "Partizani-basket" was ranked of the end at last season. For this purpose, a detailed curriculum was developed where physical preparation or physical fitness, and in particular the improvement of Vo2max as the starting point for

any physical activity, or rather a competitive national team, developed in the pre-start of this new competition. Thus, a 12-week training session of 2 times a week with a duration of 45-60 minutes was held to develop and improve Vo2max. After the completion of the second measurements, which resulted positive, partly in the anthropometric data and with significant values of Vo2max (l / min) with an average of 4.34 l / min and the standard deviation mean (SD) 0.65 and standard error of 1.47. If we take the Vo2max (ml.kg / min) it resulted 52.15 ml / kg / min, with a mean improvement of 4.69 ml.kg / min from the first measurement or the average of 0.35 l / min the difference from the first measurement to the second. These results created the belief that on their basis could be performed on the other performance indicators motors, strength, skill, speed, etc. Related to the other components of the training process such as technical, tactical, psychological etc.

Conclusions

1.Vo2max. is the basis of any physical activity on which a successful sports performance can be established, as our study showed in this team that had increased results.

2.Vo2max. provides a progress in addressing the training loads without causing trauma and providing a good health which was observed in the conduct of systematic frequency of training sessions. [6,-188]

3.Also, besides aerobic training, it is necessary to co-ordinate work at the same time for the education and development of other motor performance skills such as strength, speed, agility and stretching.

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Study Conclusions

- The discovery, the selection of the most efficient ways to increase the performance of athletes, in our case of basketball players, is the first and very important step in the progress of the training process.
- The results of this study are a potential added value in the application of the plyometric method and force program for the preparatory period, with the sole purpose of maximizing the performance of basketball players in the game.
- Design of the training program by us in combination with plyometric method with that of forces, provides an efficient time in modalities, rational movements in training, associated with significant improvements in motor performance in the following matches.
- On this basis and the preliminary achievements of this study, conclude that the effects of plyometric training and strength are often synergistic in the impact of engine performance increase on basketball players rather than the effects of using a single strength training program.
- The offered study also confirms that it is important to achieve significant statistical progress in providing performance motors, from the training program applied to basketball players in our case.
- Vo2max. is the basis of any physical activity on which a successful sports performance can be established, as our study showed in this team that had increased results.
- Vo2max. provides a progress in addressing the training loads without causing trauma and providing a good health which was observed in the conduct of systematic frequency of training sessions. [6,-188]
- Also, besides aerobic training, it is necessary to co-ordinate work at the same time for the education and development of other motor performance skills such as strength, speed, agility and stretching.

Finally, we think that combined plyometric training with that force and aerobic/anaerobic endurance are a very useful tools for innovative trainers in the field of strength training, as well as contributing to other timely efficient training.

RESPECTIVE LITERATURE

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