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Original article

CONTRIBUTIONS REGARDING THE LEVEL OF SPECIFIC PHYSICAL TRAINING OF UNIVERSAL PLAYERS IN PROFESSIONAL VOLLEYBALL

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Abstract

Aim. In the training of volleyball players, it is necessary to use various means and methods depending on the training period, the characteristics of the volleyball game, the individual characteristics of the players, the playing position (universal/hitter), and the age of the athletes to achieve efficient training and obtain excellent results in competitions. The team is a social microgroup in which each player has their proper place and role to fulfill the tasks, and where the morphological particularities of each player, their physical and social skills, or their technical and tactical potential must be considered in order to create a favorable climate to achieve high performance. Due to the specifics of volleyball, sports performance is the result of the synergistic action of several factors, the most important of which are: the somatic type, motor capacity, and mental capacity. The universal player (also known as the Opposite Hitter) - is a tall player with a large arm span. They are strong hitters with good jumping skills, good execution speed, and a great sense of the ball. They are the players who, alongside the setter, are the most used in the attacking phase and provide safety and stability to their team with a solid block and a powerful serve.

Method. Various means and methods are used according to the training period, the characteristics of the volleyball game, the individual characteristics of the players, the playing position (universal/hitter), and the age of the athletes to achieve efficient training and obtain excellent results in competitions.

Result. We consider this position to be one where these players have an acceptable contribution to the game, but we need to work on increasing the efficiency values in attack, block, and serve.

Conclusion. In conclusion, training should be conducted using various methods adapted to the requirements of participating in competitions, while also harmonizing the player's individual physical training in line with their potential and skills level, as well as the requirements for their integration within the team.

Key words: volleyball, specific training, universal player.

Introduction

„The high level of performance in modern sports requires the continuous improvement of all aspects of the athletes' training" (Bompa & Haff, 2014). This level, and the further increase in performance capacity, depends directly on several factors and directions for improving sports training.

„Based on methodical planning, information and study offers must be developed, enabling the athletes to accumulate complex game perspectives and the effects of actions specific to positions" (Simion, et al., 2011).

Players must be prepared for total and complex actions as a unit of situational orientation, goal settingprograming decision making, execution, and control. This includes considering the individualization aspect.

Niculescu & Rada, (2017) consider that „o increase human performance, it is important to focus on less exploited resources to improve efficiency in many respects, including the motoric gestures, the preparation process, the use of time and energy and the organizational system that involve the overall activities in performance sports."

„The reported differences in the performances of volleyball players of different training levels in jumping and agility demonstrate that specific training is an asset in elite volleyball" (Niculescu &Vladu, 2005).

„The objective of this period is to bring out the absolute fitness in the athlete and, for this, to systematically use what he has (Prevost, 2013, p. 113)".

In most senior volleyball matches, the role of the universal player is the very strength or key to winning a set, a match in a national or international competition.

This universal player is used especially on the offensive side (serve and attack), where he has to make his mark, but also on the defensive side (blocking, taking over from attack).

Method

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The updating and upgrading of the training process is determined by the need to ensure consistency between the content of the sports training and the contemporary requirements of high-level volleyball.

Specific physical training can be considered more precisely as „the planning and organization of a transformation process that consists of moving the practitioner, athlete or not, from an observed initial state to a desired final state" (Roger, 2003, p.6)

The most important aspect of specific physical training is the choice of exercises and the development of training programs, because each individual player exhibits different indices that must be improved to be effective in the game.

According to the intended research plan of the experiment, it aimed to highlight the effectiveness of the implementation of specialized training programs in the training of universal volleyball players and its effect on specific physical training. Therefore, we were interested in how the motor factor evolved according to the implementation of the experimental program throughout the pedagogical experiment.

The research priority was the training objectives specific to the sample under research, with an emphasis on specific physical trainingto increase the efficiency of the technical and tactical actions in the game by using methods and means specific to the positions in the team and improving the training depending on the evaluation of the specific actions in trainings and games.

Before training, 10 min of warmup exercises are performed: easy running, stretching. After the warm-up, work alternately: one exercise for the upper body and one for the lower body: in between exercises for the abdomen or back With each series, the load is increased so that the last repetition is performed with the maximum load.

Therefore, the programs proposed by us were developed considering the specifics of the position and the technical, tactical, psychological, and physical features and according to the specific conditions of each match will further present some models of applied programs during the preparatory period.

Table 1. Session - general-specific physical preparation

Seniors M	Universal player (libero) Session - general-specific physical preparation	Session no. 8
Warmup		
Running	Stretching	
5 SETS X 6, 6, 4, 4, 4 reps, load, 60 – 80%, lifting and bending the arms.		
3 SETS X 30 reps (each side), alternately bending and extending arms.		
3 SETS X 7 reps on each side. Load 70-85% of RM, side bends.		
3 SETS X 7 reps. load 70-85% of RM, squats.		
5 SETS X 6,6,4,4,4 reps, lifting and lowering the pelvis.		
Stretching		

Results

The general mobility index calculated according to the FRV formula: Jump Index + Lateral movement Index + Triple Jump Index + Flexibility Index + Movement Index + Abdomen Index;

Jump index calculated according to the FRV formula

Jump Index = [(Height / net height) (2-hand standing jump – net height + One-hand spring jump – net height)] / 100
men: [player height] [blocking jump – 2.43] + [attack jump – 2.43]/100

Table 2. Summary table assessing the results

Gender	Age (years)	Height (m)	Jump index		Movement index		Flexibility index		Abdomen index		Triple jump index		Sprint index		Volleyball index	
Men	18	1.92	1.11		0.50		0.50		0.50		0.50		0.50		3.61	
	19	1.94	1.25		0.60		0.60		0.60		0.60		0.60		4.25	
	20	1.96	1.39		0.70		0.70		0.70		0.70		0.70		4.89	
	TOP 20	1.96	1.52		0.80		0.80		0.80		0.80		0.80		5.52	
			TI	TF	TI	TF	TI	TF	TI	TF	TI	TF	TI	TF	TI	TF
LL	42	2.00	1.66	1.76	0.70	1.0	0.30	0.40	0.35	0.85	0.45	0.60	0.30	0.50	5.76	7.11

MC	33	2.03	1.65	1.76	0.60	0.95	0.30	0.30	0.30	0.80	0.40	0.60	0.35	0.55	5.63	6.99
CG	31	2.00	1.58	1.70	0.55	0.95	0.20	0.25	0.30	0.80	0.40	0.60	0.35	0.50	5.38	6.80
Average															5.59	6.96
Standard deviation															0.193	0.156
The coefficient of variability															3.452 %	2.24 %

The general motor index calculated according to the FRV formula shows improvements from the evaluation of entries from the initial to the final testing, and summing up the final results, we notice that the volleyball index shows an improvement in the average at the final testing by 1.37 points compared to the initial testing. If at the initial testing the average was at the level of the requirements for this age category in only one indicator (jumping), at the final testing the average improved in all indicators and in two more indicators the results proposed by the federation were obtained (the movement index, abdomen index).

The attack jump test records an average of 345.333 cm during the initial testing, and the research subjects managed to obtain values between 342 and 348 cm in the vertical jump by touching a fixed point with one hand. In the final testing for this indicator, the average was 351.333 cm, with values between 353 and 349 cm. The coefficient of variability shows a homogeneous group both at the initial and final testing.

Table 3. Statistical parameters for the attack jump test

Parameters	$T_{1\ (cm)}$	$T_{2\ (cm)}$
Arithmetic mean	345.333	351.333
Standard deviation	3.055	2.081
Maximum	348	353
Minimum	342	349
The coefficient of variability	0.884%	0.592%

The second test of the federation, aimed at the block jump, records in the initial testing an average of 338.333 cm with values between 340 cm and 337 cm. The final test results improved by 7 cm, therefore, the final test average was 345.333 cm. The group is homogeneous, with a coefficient of variation of 0.451% at the initial testing and 0.442% at the final testing.

Table 4. Statistical parameters for block jump

Parameters	$T_{1\ (cm)}$	$T_{2\ (cm)}$
Arithmetic mean	338.333	345.333
Standard deviation	1.527	1.527
Maximum	340	347
Minimum	337	344
The coefficient of variability	0.451%	0.442%

Movement index 4 m lateral movement (maximum number of reps/minute)

In terms of speed testing, the 4 m lateral movement test averaged 32.333 touches (0.60 points) in the initial testing, with values ranging from 34 (0.70 points) to 31 touches (0.55 points). In the final testing, the average improved by 7 touches (0.38 points), meaning the average reached 39.333 touches (0.996 points). The coefficient of variability indicates a homogeneous group for this sample in both tests (T1 – 4.723%; T2 – 14.669%).

Table 5. Statistical parameters of the movement index

Parameters	T_1		T_2	
	No. of touches	points	No. of touches	points
Arithmetic mean	32.333	0.616	39.333	0.996
Standard deviation	1.527	0.076	0.577	0.028
Maximum	34	0.7	40	1
Minimum	31	0.55	39	0.95
The coefficient of variability	4.723%	12.337%	14.669%	28.112%

Flexibility index: Sitting with legs outstretched on the gym bench, bending the torso, palms reaching the toes

During the initial testing, in the test measuring the anteroposterior flexibility, an average value of 8.333 cm (0.283 points) was recorded, with values between 6 and 10 cm. In this test, the variation of the results was high, the group being heterogeneous, and the coefficient of variation was 24.972% in the initial testing and 20% in the final testing. In this test, a lack of flexibility is observed in the posterior muscular chain of the body.

Table 6. Statistical parameters of the flexibility index

Parameters	T_1		T_2	
	cm	points	cm	points
Arithmetic mean	8.333	0.283	10	0.333
Standard deviation	2.081	0.076	2	0.076
Maximum	10	0.35	12	0.40
Minimum	6	0.20	8	0.25
The coefficient of variability	24.972%	26.855%	20.000%	22.822%

The abdomen index: From lying on the back, simultaneously raising the torso and legs vertically. It tests how many sit-ups they perform in one minute.

In the abdominal strength test, an average value of 27.333 reps (0.366 points) was recorded during the initial testing, with values between 27 and 28 reps. Regarding the final testing, the average improved by 9 reps; thus, the average reached 36.333 reps (0.816 points) with values between 36 and 37 reps. The coefficient of variability indicates a small variation, with the group are homogeneous (T1 – 2.111%; T2 – 1.588%).

Table 7. Statistical parameters of the abdomen index

Parameters	T_1		T_2	
	No. of reps	points	No. of reps	points
Arithmetic mean	27.333	0.366	36.333	0.816
Standard deviation	0.577	0.028	0.577	0.028
Maximum	28	0.40	37	0.85
Minimum	27	0.35	36	0.80
The coefficient of variability	2.111%	7.650%	1.588%	3.431%

Triple jump index: 3 consecutive jumps from two feet to two feet.

In the test that measures explosive strength in the lower limbs as well as coordination, an average value of 708.333 cm (0.416 points) was recorded during the initial testing with values between 700 and 725 cm and with a value of the coefficient of variability that indicates a homogeneous group (T1 – 2.037%). The average at final testing improved by 86.667 cm; therefore, the arithmetic mean at final testing was 795 am (0.583 points), and the coefficient of variability showed a homogeneous group (T2 – 0.628%).

Table 8. Statistical parameters of the triple jump index

Parameters	T_1		T_2	
	cm	points	cm	points
Arithmetic mean	708.333	0.416	795	0.583
Standard deviation	14.433	0.028	5	0.028
Maximum	725	0.45	800	0.60
Minimum	700	0.40	790	0.55
The coefficient of variability	2.037%	6.730%	0.628%	4.802%

Sprint index (20 m): Speed of running.

Another test that evaluated speed was the 20 m run, which recorded an average of 3.833 s (0.333 points) during the initial testing, with values between 3.9 and 3.8 s, and the average at the final test was 3.466 s (0.516 points). The coefficient of variability shows a relatively homogeneous group at the initial testing (T1 – 14.870%) and a homogeneous group at the final testing (T2 – 1.644%).

Table 9. Statistical parameters of the sprint index

Parameters	T_1		T_2	
	seconds	points	seconds	points
Arithmetic mean	3.833	0.333	3.466	0.516
Standard deviation	0.057	0.028	0.057	0.028
Maximum	3.9	0.35	3.5	0.55
Minimum	3.8	0.30	3.4	0.50
The coefficient of variability	14.870%	8.408%	1.644%	5.426%

Discussions

A solid general and specific physical training is the support of effective technical executions, establishing conditioning relationships between this and the other aspects of the training, which is actually decisive in the achievement of sports performances.

Physical preparation in performance volleyball is the foundation on which all other factors of sports training are optimized, having particular importance at all training levels and at the senior level being the one that often makes the difference in achieving performance.

The evaluation of the physical training of athletes must be carried out periodically through tests and control samples, through investigations using specialized equipment, and interdisciplinary methods to determine the level of motor capacity, the recorded data representing the objective basis in directing and planning sports training.

Another basic requirement of training at the senior level is individualization, the training concept being modeled according to the athlete 's physiological and psychological traits, an aspect that naturally improves the training objectives. The individualization of specific physical training implies the variation of the load and the type of exercise depending on the ability of each athlete to positively respond to the demands of training and the particularities of the position.

The tests applied through the general motor index calculated according to the FRV formula showed elevations of all measured indices, but the most significant were the jump index, movement index, and triple jump index.

Conclusions

The dynamics of the evolution of sports performance in volleyball require the identification of development trends, elements that generate progress, and those that limit progress for their maximization.

This paper opens up new research perspectives regarding training methodology to remove deficiencies identified in Romanian teams from the perspective of specific physical training indicators.

As is well known, the universal player is the hitter in a volleyball team to whom most passes are directed, the universal being the main attack weapon in this sport. For this reason, I consider that in addition to the individual physical attributes specific to each volleyball player and universal attacker, specific physical training plays an overwhelming role and often reflects the training level of the entire team.

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