

THE ROLE OF THE FUNCTIONAL TRAINING IN OPTIMISING THE MOTRIC CAPACITY OF JUNIOR FEMALE TEAMS I-VOLLEYBALL

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ABSTRACT. Premises: The recent trends on obtaining high quality technical executions in female volleyball players, junior I, requires besides the technical and tactical component, a great physical condition is the base of the athletes performance and efficiency (on the field). Concerning the junior I level, volleyball, the first important component is the physical training to create the motor and functional support in order to sustain the effort which is specific for this sport. Sports performance requires new adaptations to the programmes, innovative methods that can be adapted to the sports games. Because of a high level of the game and an international level of physical training, but a low level of training in the domestic area, both concerning the level of the game and the player's physical training, it's compulsory to modify the physical training programmes since early junior ship. Functional training programmes have as a main aim the optimization of the physical and functional capacity of the athletes, but also the prevention and rehabilitation of injuries. **Objective:** To emphasize the importance of the functional training in optimizing the physical capacity of the volleyball players, juniors I. **Methods:** The research was performed over a period of 11 months (July 2013 to May 2014), during the National Volleyball Championship, edition 2013-2014, juniors, and it comprised 2 groups: the experimental group of 12 junior I volleyball players from CSU Medicine CNUE Tg. Mures and a control group of volleyball players from ACS Provolei Tg. Mures juniors I. At the beginning of the training period (July) were performed the initial size tests concerning body mass index, and as physical tests, were performed tests as: vertical jump test with one hand, front flexibility test and abdominal strength. Before starting the final tournament, in May 2013, were performed the final tests. **Conclusions:** The functional training had a better influence on the physical training of the volleyball players belonging to the experimental group compared to the ones from the control group.

Keywords: *functional training, motric capacity, method, volleyball, optimization*

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REZUMAT. Rolul antrenamentului funcțional în optimizarea capacității motrice a echipelor de junioare I - volei. Premise: Tendințele din ultima perioada privind obținerea unor execuții tehnice de mare calitate la nivelul jucătoarelor de volei, junioare I, necesită pe lângă componenta tehnico-tactică, o bună pregătire fizică care se constituie în baza de susținere a prestației și eficienței jucătoarelor. La nivelul junioarelor I, volei, prima componentă pe care se pune accentul este reprezentată de pregătirea fizică pentru a crea suportul motricofuncțional care să susțină efortul specific acestui sport. Performanța sportivă solicită noi adaptări la programele, metodele și mijloacele de acționare inovative care se pot adapta jocurilor sportive. Datorită nivelului de joc ridicat și a pregătirii fizice superioare la nivel internațional, și a nivelului scăzut pe plan intern, atât în ceea ce privește nivelul de joc, cât și în ceea ce privește pregătirea fizică a jucătoarelor, se impune modificarea planurilor de pregătire fizică încă de la nivelul junioarelor I. Programele de functional training (antrenament funcțional) au ca obiectiv principal optimizarea capacității fizice și funcționale a sportivilor, dar și de prevenire și reabilitare după accidente suferite. **Obiectiv:** Cercetarea își propune evidențierea rolului antrenamentului funcțional în optimizarea capacității fizice a jucătoarelor de volei, junioare I. **Metode:** cercetarea s-a efectuat pe o perioadă de 11 luni (iulie 2013 - mai 2014), de-a lungul Campionatului Național de Volei ediția 2013-2014, junioare și a cuprins 2 grupe: grupa experiment formată din 12 voleibaliste junioare I în cadrul CSU Medicina CNUE Tg-Mureș și grupa control, compusă din voleibalistele de ACS Provolei Tg-Mureș. La începutul perioadei de pregătire (luna iulie) s-au efectuat testările inițiale privind indicii de masă corporală, iar ca teste fizice au fost utilizate: proba de săritură pe verticală cu elan, cu o mână; proba de flexibilitate frontală; forța abdominală. Înainte de începerea turneului final, mai 2013, au fost efectuate testările finale. **Concluzii:** antrenamentul funcțional a avut o influență mai bună asupra pregătirii fizice a jucătoarelor de volei din cadrul grupei experiment, comparativ cu grupa control.

Cuvinte cheie: antrenament funcțional, capacitate motrică, metodă, volei, optimizare

Introduction

"The motric capacity/motor skill is the totality of natural and acquired motric possibilities, whereby is possible to achieve a variety of efforts as structure and dosage." (According to "Terminologia educatiei fizice si sportului, 1978, quoted by Dragnea & Bota, 1999, p. 41)

Dragnea & Bota (1999, p. 44) consider that "motor skill is a complex of mostly motric manifestations (movements) (skills and abilities), conditioned by the development level of the motor skill, by the morpo-functional index, by the

mental processes (cognitive, affective, motivational) and by the biochemical and metabolic processes; all these summed up, correlated and mutually conditioned, will have as a result the efficient performing of the actions required by the specific conditions in which the motor skill will be performed.”

The authors Pailjous & Bonnard (1999) quoted by Epuran (2005), state that generally and restrictedly “motor skill designates a function that indicates the relationship with the environment and it has as peripheral support the skeletal muscles”.

The essential philosophy of volleyball consists of “do not make only mistakes in the own court, but to win everything that’s played towards/or in the opponent’s court” (Mârza, 2006, p. 66).

The particularity of the volleyball game is given by the following essential characteristics (Bădău & Tănase, 2006, p. 12):

- Volleyball is a game that can be performed by all age groups (children, teenagers, adults), in an organized way or as extracurricular activities;
- Volleyball can be performed as a recreational, hygienic and compensatory activity;
- The effort that is specific to the volleyball game has a variable intensity, depending on age, physical training level and technicality level;
- Volleyball game needs a good multilateral training due to the several jumps and acrobatic procedures performed during the game, as well as of the attack and service hits, both requiring force and precision.

Professional volleyball players concluded that sports training should use the scientific progresses of the researches and should undergo to some rational principles. This is because modern training became a science, due to the fact that more and more specialists are interested to know the training process in order to improve it. Regardless of the surface on which is performed (court or sand), volleyball contributes to the development of motor skills and also to the formation of driving skills, thus, having an important role in motility.

The analysis of the volleyball game performed by junior female players reveals that the physical training programmes are outdated and they are no longer available for the requirements of the game nowadays.

The specific physical training has a “content mainly oriented towards the development of capacity concerning the specific effort in sports, as well as towards the combined qualities that determine a specific superior efficiency” (Teodorescu, 2009, p.150).

Training a team of female junior players must rely on a well organized and planned programme with a very good knowledge of all the factors that are involved in the game, thus contributing to the formation of the valuable players.

The trainers who work with juniors must ensure their development to the highest level of the motor and technical potential. The first concern should be to create a multilateral training base for the first stage of the volleyball training (beginners-advanced), a base that contributes to the formation of a motric (motor foundation) specific to the game's requirements, this being a major concern in sports specialization (cadets-juniors).

Bădău & Tănase (2006, p. 112) state that "the specific physical training represents a selective process of the motricity and of the body's function in accordance with the specific effort and with the highest requirements of the volleyball game."

Aerobics, borrowing means of action specific to fitness, managed to create an optimal combination which is called functional training and whose main objective is to optimize the motric and functional capabilities of those who practice it.

Functional training is a reinterpretation of the traditional training methods and it implies the relinquishment of fixed equipment and heavyweights (Cannone, 2007).

Functional training, considered the new trend in fitness, implies simple, natural moves which are performed on a daily basis.

The exercises that compose a functional training programme aim at a large variety of muscle groups. This offers muscular stability and, at the same time, reduces the possibility of injuries in athletes and increases the effort capabilities of the individual.

Materials and Methods

The research was conducted over a period of 11 months (July 2013-May 2014), during the 2013-2014 edition of the National Volleyball Championship junior I, on a sample of 14 players, divided into two groups: experimental and control. The players in the experimental group were trained using specific means of functional training and control group athletes were trained by conventional means.

During the pre-competitive period athletes in the experimental group were trained exclusively on functional training programs, so that during the competitive period to introduce during the last 20 minutes of training functional training-specific circuits.

Research sample included a total of 24 athletes, junior I, aged between 16 and 18 years. The experimental group was composed of 12 athletes, player of CSU Medicine CNUE Tg - Mures, and the 12 athletes from the control group are part of the CSS team Blaj (the same age as subjects from the experimental group).

The methods used in this research were: methods of data collection: bibliographic study, experiment, test.

Results and discussions

The first measurements in this research were designed as anthropometric measurements: body mass index (BMI).

Table 1. Results of BMI

ID.	Experimental group	TI	TF	Control group	TI	TF
1.	A.C	21,0	20,15	M.A.	19,94	19,94
2.	F.O.	20,1	20,15	P.O.	21,60	21,37
3.	L.M.	20,6	20,09	H.A.	21,13	20,60
4.	L.R.	20,3	19,97	C.R.	20,83	20,60
5.	S.T.	20,1	19,81	T.A.	20,52	20,09
6.	J.P.	20,6	20,38	D.A.	20,20	19,96
7.	C.I.	21,0	20,76	B.R.	20,99	20,68
8.	S.C.	20,6	19,79	N.A.	21,20	21,20
9.	B.R.	21,4	20,83	F.A.	20,37	20,15
10.	C.L.	19,4	18,51	C.O.	18,72	18,72
11.	M.C.	19,6	19,59	K.R.	19,82	19,27
12.	S.I.	20,2	19,94	D.E.	20,68	20,23

Table 2. Statistical indicators for BMI

Groups	Statistical markers	X	S	CV	t-Student	P (dif. Tf & TI)
	Testing					
Experimental	Ti	20,40	0,60	2,71	0,58	0.0009
	Tf	20,0	0,57	2,85	0,59	
Control	Ti	20,50	0,74	3,59	0,77	0.0007
	Tf	20,23	0,71	3,52	0,74	

Physical tests:

1. Vertical jump test with one hand

Table 3. Summary results on vertical jump test with one hand

No.	Experimental group initials	TI (m)	TF (m)	Control group initials	TI (m)	TF (m)
1	A.C	2,68	2,7	M.A.	2,42	2,42
2	F.O.	2,81	2,85	P.O.	2,59	2,6
3	L.M.	2,72	2,74	H.A.	2,81	2,83
4	L.R.	2,75	2,79	C.R.	2,71	2,71
5	S.T.	2,78	2,83	T.A.	2,74	2,74
6	J.P.	2,81	2,84	D.A.	2,56	2,57
7	C.I.	2,86	2,9	B.R.	2,83	2,84
8	S.C.	2,62	2,66	N.A.	2,58	2,59
9	B.R.	2,45	2,47	F.A.	2,62	2,64
10	C.L.	2,51	2,55	C.O.	2,82	2,85
11	M.C.	2,52	2,55	K.R.	2,55	2,56
12	S.I	2,58	2,63	D.E.	2,59	2,6

Table 4. Statistical indicators for Vertical jump

Groups	Statistical markers	X	S	t-Student	P (diff. Tf & TI)
	Tests				
Experimental group	Ti	2,67±4,86	0,13	0,135	0,001
	Tf	2,70±4,90	0,13	0,138	
Control group	Ti	2,65±4,65	0,12	0,128	0,0016
	Tf	2,66±4,78	0,12	0,132	

The experimental group because the exercise program used, there was an increase in the arithmetic mean between the two assays of 0.03 cm, resulting from the initial average value of 2.67 m, and final testing of 2.70 m.

In the control group, progress was less than the initial value of the mean was 2.65 and the final value of 2.66 units.

2. Frontal flexibility

Table 5. Results from frontal flexibility test

No.	Initials Experimental group	Ti	Tf	Initials Control group	Ti	Tf
1	A.C	9	11	M.A.	11	12
2	F.O.	7	9	P.O.	9	11
3	L.M.	7	8	H.A.	7	9
4	L.R.	8	10	C.R.	7	8
5	S.T.	11	13	T.A.	8	8
6	J.P.	10	11	D.A.	8	9
7	C.I.	9	12	B.R.	9	10
8	S.C.	7	9	N.A.	10	11
9	B.R.	11	12	F.A.	9	9
10	C.L.	10	11	C.O.	8	9
11	M.C.	9	12	K.R.	11	12
12	S.I	8	10	D.E.	12	14

Table 6. Statistical indicators for frontal flexibility

Groups	Statistical indicators	X	S	t-Student	P (diff. Tf & Ti)
	Tests				
Experimental group	Ti	8,83±15,8	1,40	1,46	0,0001
	Tf	10,66±13,4	1,43	1,49	
Control group	Ti	9,08±17,0	1,55	1,62	0,16
	Tf	9,25±17,2	1,63	1,71	

In testing this sample, experiment group athletes have achieved a higher progress than control group athletes, due to the specific means of functional training. As it can be seen in Table 6, in the group experiment the difference between the two tests is 1.83cm, while in the control group is only 0.17cm.

3. Abdominal strength

Table 7. Results from Abdominal strength

No.	Initials Experimental group	TI	TF	Initials Control group	TI	TF
1	A.C	59	63	M.A.	58	59
2	F.O.	64	68	P.O.	60	61
3	L.M.	62	66	H.A.	62	64
4	L.R.	59	62	C.R.	62	62
5	S.T.	60	63	T.A.	58	60
6	J.P.	62	65	D.A.	59	61
7	C.I.	64	66	B.R.	62	63
8	S.C.	63	65	N.A.	64	65
9	B.R.	63	67	F.A.	64	64
10	C.L.	60	63	C.O.	61	63
11	M.C.	61	65	K.R.	60	62
12	S.I	61	65	D.E.	60	61

Table 8. Statistical indicators for abdominal strength

Groups	Statistical markers	X	S	t-Student	P (diff. Tf & TI)
	Testing				
Experimental group	Ti	61,5±2,77	1,70	1,784	0,0001
	Tf	64,83±2,65	1,72	1,801	
Control group	Ti	60,83±3,20	1,95	2,037	0,081
	Tf	61,1±2,89	1,80	1,880	

According to Table 8, in the experimental group, because an adapted aerobics program was used, the differences were significant compared to the control group, the initial testing showed a value of 61.5 executions, and the final testing 64.83, with a difference mean value of 3.33 executions. The control group recorded during the initial testing a mean value of 60.83 and the final testing 61.1 with a difference of 0.27 executions.

Conclusions

1. Due to the selection and adaptation of methods and means of improving the physical preparation of the volleyball players, their driving ability, resulting in increased exercise capacity, was positively influenced.

2. The modernization program of physical training content through the introduction of specific means of training function was found a balance between clues: somatic (morphological) and motive.

3. The use of tailored functional training programs produced smooth development of athletes. An increase in height by an average of 1 cm, average weight loss with 1 kg and decreased body mass index (BMI) was observed in athletes from the experimental group when compared with athletes from the control group.

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