QUANTITATIVE MODELS, APPLIED IN LEARNING THE JUNIOR HANDBALL TECHNIQUE

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Abstract: As complex process, technical performance, in our case handball, is conditioned by many factors with different weights in achieving it.
It is imperative to decipher the conditionality, establishing the relationships of inter determination of weights and priorities manifested by factors, in order to manipulate them in the management and control of training athletes.The study is investigating learning and perfecting the handball technique folded, trying to capture its elements quantitatively mostly technical knowledge.
The approach developed aims to provide data on the percentage of means included in the structure and efficiency of the learning programs developed, the execution time, the number of repetitions, etc.
Keywords: *analysis, learning, training, program.*

Introduction

The training session aims to influence sports performance variables, in our case, learning the handball technique by a conscious and synergists action based on a scientific and motivated methodology.
The access and use of knowledge from various fields, life sciences, pedagogical, psychological or technical fields, brings significant contribution both in terms of capacity evaluation, analysis or interpretation but also scientific rigor.
The performance issue has aroused particular interest and was approached from different points of view expressed in the structure models designed by specialists.
The specialists concerns in this direction, heading generally toward "using individual models applicable with athletes who practice individual sports." [1]
"Using models to analyze and find solutions to enable the optimal development of sports technique, avoiding risks, isolating individual factors that characterize them and reduce the research time."[2]
The federation has elaborated specialized individual patterns, to help the coaches, for specific handball team structure posts and patterns of game and instruction.[3]
Training the technique (technical training), aims to improve the handball motor behavior by increasing the capacity of movements control, accuracy and executions stability, thus increasing the possibilities for adaptation imposed by the ever-changing conditions of the game.[4]
The technique is "a set of motor skills specific in form and content, which refers to handling the ball and the players' movements in handling, the skills that take place according to higher nerve activity and biomechanics laws in order to achieve the maximum of the game" .[5]

The aim of the study

In our approach we intend to pursue the quantitative values used in the execution program structures used (model) for the learning and improvement of the selected techniques.
Through this study we aim to find solutions to efficiency increasing and to the improvement of learning handball technique, given the availability of children in this age
The study is an analysis of the level of assimilation of subjects' technique compared to the models developed by Handball FR approached for the age (12-14 years old); establishing the learning procedures to be submitted; actuating the selection means and structures to achieve it; developing training programs based on the structures; the implementation of programs in the general training structure.

2. Materials and methods

The study was designed as a controlled experiment that aimed to identify the expression of factor-level expertise (technical).
Using the evaluation results determined by examination and control testing, served in the design and implementation of training programs in order to improve the technical training.

The arguments used in the sample selection (SSC. Craiova junior III) were;
- the correspondence of a level of performance recognized by its results and the school juniors participating in the championship;
- the level of the technique learning allows linking individual characteristics with the methods and means used in learning;
- The age (12 - 14) is a very active learning handball technique.

The research that we have undertaken, as a controlled experiment carried out, will gain significance in the context of the discussion of a technical learning level of processes by the subject, compared with the model expressed internationally.

Assumptions

a. The selection and use of appropriate means of control, promoting effective handball technique learning.

b. Knowledge and use of quantitative parameters of execution, ensures handball technique ownership.

Working method

We assessed the level of manifestation of the specialized technical knowledge;
- Technical knowledge whose evaluation was done by assigning values with a certain degree of relativity (notes), which aimed at the degree of assimilation of technical and tactical content of handball.
- Comparing estimated values with the model developed by FRH on the age investigated (J. III) and the comparison with the model values (ideal).

The analysis and evaluation of subjects technique allowed the identification of techniques that present a minimal degree of assimilation (4), which is the objective of the learning program.

Selecting, grouping, and using the learning structures envisaged specific tasks, and also the integration into the general training plan.

The designed program for learning and improving the technique consisted of a group of means that targeted aspects of the game content (game phases) as well as game specific(selectedprocesses).

The intervention program was established as integrated part of the training, establishing the quantified parameters of use, macro-meso and micro-cycle (number of executions; runtime).

Results

Program; quantitative model implemented in order to improve the technique:

Table 1

training indicators values expressed as a percentage

Total training hours	Percent share						% program	
	physical		Tehnical		Tactical			
333,5	94,5	28%	112	33,5%	127	38%	55.5	13,7%

Table No. 2

The means used in implementing the group of 9m players program

Phase game	tehnical Procedure	Execution structures	Dose	methodical indications
1st attack phase	P1- long pass from running to the center forward	S1- explanation, demonstration, taking a correct execution picture through video views.		-
		S2- Running passes transmitted from the stationary players, who are in the opposition semicircle.	2 x 20 passes, p.r.30 sec.	Watch the positioning
		S3- Running passes transmitted from distance, moving to the wingers, among arranged milestones.	2 x 15 pase. p.r.2' sec.	**Placement for favorable pass angle**

		S4- Passes sent away to wingers in motion, marked by semi-active defenders	3 x 15 pase p.r 30 sec	Choosing the passing solution
		S5- complex exercise with two players of 9 m., receiving the ball from the goalkeeper moving and transmitting to the wingers among the half defenders in the middle of the field.	2 x 15 pase p.r 20 sec.	Watch the passes orientation
2nd attack phase	P2- overtaking, while handling the ball, the defender retiring	S1- demonstration, presentation options for action.		Watch the documentation over the position.
		S2- complex exercise of passing and overtaking cones arranged along the length of the field, with support players.		
		S3 Running passes transmitted from distance, moving to the wingers, among arranged milestones.		
			2 x 20 x p.r.30sec	**Focus on the pace of execution**
			2 x 15 x p.r.30 sec.	**Focus on ensuring foreground**
		S4- passes in two and three attackers with overtaking deffenders placed in the central zone of the court.	3 x 10 p.r 30 sec.	**Focus on ensuring the ball**.
4th attack phase	P3- Hoop shot on goal from side stepping and avoiding defender	S1- demonstration, presentation options for action.		- execution mechanism
		S2- executing an impetus ball throwing on a marked trail in ball possession with a starting the simulating the procedure from the departure (from standing, dribbling; or receiving passes)	10 – 15 x	**Emphasis on pace and execution time**
		S3- same exercise, executing the beating on the jumping foot is done on a podium in the same positions as in the previous exercise.	15 -20 x	- focus on throwing phases
		S4- complex exercices (1 x 1;2 x 2 ; 3 x 3) of passing and shooting to the goal.	4 x , 2, 3 min. pr.20,	Focus on execution rhythm and

			30, 40 sec.	throwing moment

Table 3.
Model for the use of structures within the learning program- semicircle players

Nr. Crt.	1.game phase	2. Procedure	3. learning structure	4 repetitions no.	5. execution time
1	F I	P1	S 1.1	5 -8 x	1. - 2 min.
2			S 1.2	2 – 3 x	10 – 15 min.
3			S 1.3	40 x	4 min.
4			S1.4	30 x	3 min.
5			S 1.5	15 x	3 min.
6			S 1.6	15 x	3 min.
7			S 1.7	30 x	6 min.
8	F II	P2	S 2.1	5 -8 x	2-3 min.
9			S2.2	10 x	5 min.
10			S 2.3	30 x	4 min.
11			S 2.4	40 x	6 min.
12	F III	P3	S 3.1	10 x	3 min.
13			S 3.2	45 x	3 min.
14	F IV	P4	S 4.1	8 x	2-3 min
15			S 4. 2	30 x	5 min.
16			S 4.3	30 x	6 min

Legend:
1. game phase
2. technical procedure execution
3. codified learning structure
4. Reps
5.execution time

Table 4
Model for the use of structures
within the Learning Program - 9 m. players

Nr. crt	1.game phase	2. Procedure	3. learning structure	4 repetitions no.	5. execution time
1	F I	P1	S 1.1	6-8	2 min.
2			S 1.2	40 x	4 min.
3			S 1.3	30 x	2 min.
4			S1.4	30 x	4 min.
5			S 1.5	30 x	5 min.
6	F II	P2	S 2.1	4 – 6	4 – 6
7			S 2.2	40 x	4 min.
8			S 2.3	30 x	4 min.
9			S 2.4	30 x	..4 min
10	F IV	P4	S 4.1	6 – 8	2 min.
11			S 4.2	15 x	3 min.
12			S 4.3	20 x	5 min.
13			S 4.4	6-8 10-12 6-8	4 min. 6 min. 10 min.

Legend:
1.game phase
2. technical procedure execution
3. codified learning structure time
4. Reps
5.execution

Table 5
The micro cycle of learning structures distribution, the semicircle players

Monday			Tuesday			Wednesday		
Pr.struc.	Rep.No.	Execution time.	Pr. struc.	Rep.No.	Execution time.	Pr.struc.	Rep.No.	**Execution time.**
P1S 1-1	6 /8	2 min.	P4 S4.1	1 x	2-3 min.	P1,S 1-4	4-6	1
S 1.2	40 x	4min.	P1S1.3	40 x	4 min.	P1,S1-6	15x	4 min.
S 1.4	40x	5 min	P2 S2.2	10 x	5 min.	P2,S 2-3	30x	4min.
S1.3	15x	4min	P4 S4.2	30x	5 min.	P4,S4-2	30x	5min
total	59	15		80	15		80	15

Wednesday			Friday			Saturday		
Pr.struc.	Rep.No	Execution time.	Pr.struc.	Rep.No	Execution time.	Pr.struc.	Rep.No.	Timp ex.
P1,S1.5	15x	3 min.	P1,S1.5	15x	3 min.	P2,S2.1	6-8	2min.
P3,S3.1	10x	3 min.	P2,S2.4	40x	6 min.	P1,S1,7	30 x	6 min.
P4,S4.3	30x	6 min.	P4,S4.4	20x	5 min.	P4,S4.2	30x	5 min.
P3,S3.2	45x	3 min.	P1,S1.1	4-6x	1-2 min.	P3,3.2	10x	3 min.
	95	15		81	15		78	15

Legend:
1. P- identified by the procedure
2. S is the technical structure
3. no. of repetitions of the structure
4. T .ex.- execution time

Table 6

The quantified parameters of learning structures use in the annual cycle
- semicerc players -

1.Proc.	2.learning structures used	3.reps no in the micro .cycle.	4.execution time in . the micro .cycle.	5.total no of reps	6. total repetition time	
P 1	S 1-1	2x	4min.	16 x	8 min	
	S 1-2	1x	5 min.		5 min	6896 ex.
	S 1-3	2x40	8 min.	2560 x	256 min.	961 min.
	S 1-4	2x30	6 min.	1920 x	192 min.	dens .7,17
	S 1-5	2x15	6 min.	960 x	192 min	
	S 1-6	1x15	3 min.	480 x	96 min.	
	S 1-7	1x30	6 min.	960 x	192 min.	
P2	S 2-1	1x	2 min.	6-8 x	2 min	
	S 2-2	1x10	5 min.	320 x	160 min.	2568 ex.
	S 2-3	1x30	4 min.	960 x	128 min	482 min

	S 2-4	1x40	6 min.	1280 x	192 min.	dens.5,32
P3	S 3-1	1x10	3 min.	10 x	2 min.	1450 ex.
	S 3-2	1x40	3 min.	1440 x	96 min	98 min. dens.14,8
P4	S 4-1	1x6-8	2 min.	8	2 min.	3848 ex.
	S 4-2	3x30	15 min.	2880 x	480 min.	674 min.
	S 4-3	1x30	6 min.	960 x	192 min.	dens.5,7

Legend

1.learning process
2.learning structure used
3. Number of repetitions within the micro cycle
4. time affected to the micro cycle structure
5. total no of repetitions used in the annual cycle
6. total annual time affected to executions

Table 7
Quantified parameters model of the learning structures use on the annual cycle-players 9 m.

1.Proc.	2.learning structures used	3.reps no in the micro .cycle.	4.execution time in . the micro .cycle.	5.total no of reps	6. total repetition time	
P1	S 1-1	2x 8	4	16	4 min.	
	S 1-2	40x	4min.	1280x	128min.	5120 x
	S 1 3	1x30x	2min.	960x	64 min.	332 min.
	S 1-4	1x30x	4 min.	960x	120 min.	dens.7
	S 1-5	2x30x	5min.	1920x	160 min.	
P2	S 2-1	1x6-8x	2 min	8x	2 min	
	S 2-2	2x40x	8 min.	2560x	256 min.	5448 x
	S 2-3	2x30x	8 min	1920x	256 min.	634 min.
	S 2-4	1x30x	4 min.	960 x	120 min.	den. 8,9
P4	S 4-1	2x6x	2min.	12x	4 min.	4492 x
	S 4-2	2x15x	6 min.	960x	192 min.	1560 min.
	S 4-3	4x20x	25 min	2560x	800 min.	dens. 3
	S 4-4	3x10x	18 min.	960min.	570 min.	
	Total					

Legend

1. learning process
2. learning structure used
3. Number of repetitions within the micro cycle
4. time affected to the micro cycle structure
5. total no of repetitions used in the annual cycle
6. total annual time affected to executions

Discussions

The data encompassed by the study is the factual content of the experiment, which allows us to appreciate the effectiveness of the means selected and used in accordance with the data shown in the tables. Conducting the study meant logical steps that can be found in the contents of the study:

- the design and selection of means aimed at learning and improving technical processes highlighted as deficient. The main problem of the study was the peculiarity and addressing quality of the means (see table 2).
- establishing action structures targeting game phases on positions groups, starting from the idea of the specificity and peculiarities that various posts require
- the application of deployment of action structures strategies within microcycles, in order to control parameters (volume, intensity and complexity) and their handling in order to increase the efficiency of learning the technique.

TableNo. 8
The average of x accomplished technical indicators values compared to with x values of the technical procedures subject to learning

Game phases		I			II			III			IV		
		T1	TF	DIF	T1	TF	DIF	T1	TF	DIF	T1	TF	DIF
Values	x.players. 9 m.	8,31	8,45	+0,14	8,33	8,50	+0,17	8,38	8,53	+0,15	8,25	8,45	+0.20
	Pr.de Înv. players 9m	6,4	7,8	+1,42	6,6	8,2	+1,6	7,0	8,2	+1,2	6,2	8,2	+2,0
	x juc. Semicircle	8,41	8,50	+0,9	7,38	8,5	+1,12	8,15	8,37	+0,22	7,92	8,45	+0,53
	Procedure learning. Semicercle players	6,6	7,8	+1,2	7,2	8,1	+0,9	7,5	8,3	+0,8	6,2	8,4	+2,2

Comparing the technical indicators values obtained from the experimental group, following the preparation process development, to the values of the techniques targeted by the learning program, we can make the following observations:
- with the players of 9 m, the rate of progress of the technical indicators values differ from one phase to another and fall in values between; 8,25(T1, F IV) şi 8,53 (Tf, F III) iar (dif.T1-Tf) +0,14 -+0,20 ;(tab.8)
- The rate of progress in semicircle players also improves, recording values between 7.38 (T1 ,F II) and 8,5 (Tf, F I) and (dif.;+0,22 -+1,12), representing an increase of + 0,92, iar compared to values of players 9 m. + 0,72 (tab.8)

Looking at the indicators registered in the technical procedures subject to the learning processes as a result of the program adopted and developed at the same time interval we have found the following values;
- the technical processes targeted by the learning program for 9m. players registered values between; 6,2 (T1,F IV) şi 8,2 (Tf, F IV) iar (dif.Tf –T1) este de +2,0 puncte, fact who represent a significant increase.
- the technical processes targeted by the learning program for the semicircle players recorded values between, 6.2 (TI, F IV) and 8.4 (Tf F IV) and (diff. tf-T1) is + 2,2 points, which is also a significant increase in values.

Conclusion

The training programs of general training structure implemented by teams, technical processes aimed at influencing the properties selected through a fair and efficient means programming in time and space affect the experiment.

The quantification of technical procedures completion volume and time, formed the basis of the intervention in terms of the properties of a model curriculum process.

The technical training program was structured on game phases and the means of operation have as content, logical elements necessary to conduct the game phases.

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