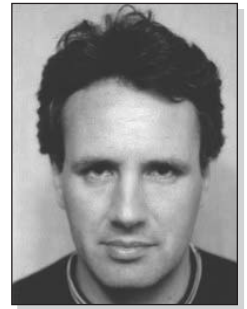


The training programming during the competition microcycle in handball

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1. INTRODUCTION

The aim of the training process in modern handball, which is based more and more on the principles of integration, optimization, and creating the situation, is achieving good sports results in accordance with the available potentials and time, material and technical limits. The use of the integrative method makes it possible to rationalize the training process because it influences 3 basic components of sport competence at the same time: technical, tactical and physical. The optimization of training means the application of the precisely defined elements of training, methods and loads that are entirely suitable and congruent with achieving the result under existing conditions. In this way, training is effectively and optimally used and there are no useless loads during training. Creating situations during the training process tries to bring the training closer to the actual situations of the match. It can be done by incorporating more movement into the training process, the use of the ball, the presence and the confrontation with the opponent, periodical changes of the phases of attack and defence, the cooperation with the team-mates, the creativity when choosing motorical solutions, the evaluation of the results and the maximal approach.

The planning and programming of training is certainly the most creative and demanding part of the coach's work. That is specially so during the competition period which is long, the results are needed and because of that the ability of the players can oscillate. In that case it is necessary to use the loads variably according to the state of the physical, technical and

tactical potentials of the players in the following competition demand. So, the capacity to handle the process of training is clearly shown in good modelling and controlling of the training during the competition period which is the basis for achieving the desired results. By recognizing the need for exact information from this area, the intention of this text is to model the training loads and elements of the weekly microcycle during the competition period. This will be done by starting from the objective indicators of the commitment of the players in certain situations and, at the same time, taking into consideration the basic postulates of the programming of the training process.

2. WORKING OUT

The modelling of the training process will be presented on the general level, which means that the individual loads according to the initial potential of the player will not be discussed. The programmes of training will primarily be based on the following objective indicators:

periodical

The general structure of the match

TIME STRUCTURE OF THE MATCH					
TOTAL DURATION OF THE ACTIVITY (min)					
WARMING UP	PAUSE	1ST HALF	PAUSE	2ND HALF	TOTAL
35	5	35	10	35	120
EFFECTIVE DURATION OF THE ACTIVITY (min)					
20	-	25	-	25	70
MODEL DURATION OF THE ACTIVITY (min)					
30	-	30	-	30	90
GENERAL STRUCTURE OF THE INTENSITY OF MATCH (%)					
0-50	-	100	-	100	

The general quantitative model of the activity

The activity of the handball players is based on a continuous movement mostly of a high intensity with repeated changes to the speed of the movement and the length of the lap. This movement is interrupted by explosive cyclic structures of the changes of the movement direction, take-offs, throws and the overcoming of the resistance of the opponent player.

In order to establish the type and the quantitative characteristics of the physical and technical activity of the players in top male handball, the average activity was analyzed over six matches chosen at random during the World Championship in Iceland in 1995 and the European Championship in Croatia in 2000. The following average indicators were gained:

ACTIVITY	FREQ.	VOLUME
Maximum speed and sub maximum basic straight-line movement (counterattack, half counterattack, preventing the counter attack - half counter)	51x25m	1275m
Medium speed basic straight-line movement (passing from defence phase into attack phase - the positional attack)	20x25m	510m
Slow basic straight-line moving from defence phase into attack phase - goal received	28x25m	700m
Maximum and sub-maximum situational movement during the attack and defense in the positional attack	160x3-4m	560m
Slow situational movement during the attack and defence in the positional attack	92x3-4m	322m
Throwing in order to pass		107
Throwing in order to make a shoot		9
Take-offs		13
Overcoming the opponent's resistance		20
The change of direction of the movement during maximum and sub-maximum speed		211
The change of direction during the medium and slow movement		140

It is also important to establish characteristic changes of cyclic and non-cyclic activities in relation to time component. When talking about cyclic activities it is possible to notice the characteristic rhythm of the change of the quantity of movement. It is usually done in this way: long lap (20-25 m), short laps (3-5 m), long lap - short laps - long lap.

MODELLING

On the basis of the objective indicators of the situational activity of the top handball player during the match and the basic postulates of the theory of training, it is possible to model the training process for a weekly microcycle during the competition period. It is about the usual microcycle for the senior team in top male handball with the average result wanted, so it will be realized through eight training units, five in the afternoon and three in the morning.

Basic elements of the microcycle

TYPE OF MICROCYCLE	standard
NUMBER OF TRAINING DAYS	5
NUMBER OF MATCHES	1
NUMBER OF RESTING DAYS	1
NUMBER OF TRAINING UNITS	8
NUMBER OF TRAINING HOURS	12,3
THE RATIO OF THE PHYSICAL, TECHNICAL AND TACTICAL PREPARATION	60:40

The schedule of the training units by days

MO		TU		WE		THU		FR	
m	a	m	a	m	a	m	a	m	a
+	+	+	+		+	+	+		+

BASIC PARAMETERS OF MODELLING

PONDERS OF PRECOVERING OF THE LOADS

In order to achieve successful results, the training process must be richer and more intensive than the activity at the match itself, what means that it is necessary to determine the basics of the recovering of

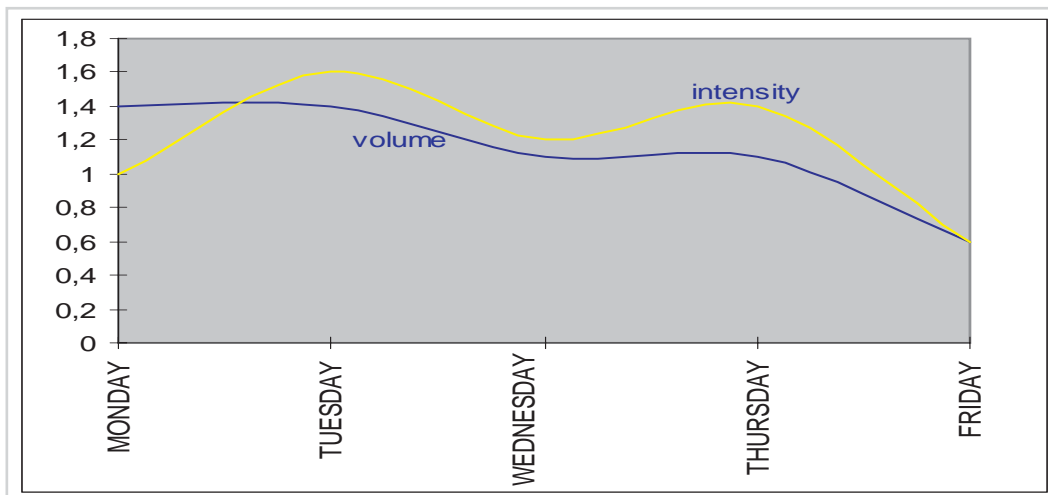
the volume and intensity of the activity at a match that is represented as basic (1), and taking care of the compensating effect, different types of loads and time needed for recuperating effects together with the fact that the planned trainings are mainly of the situational character. The weekly cycle during the competition period is mainly based on situational training (simulating the match or its fragments), so the previously stated thoughts are believed to be enough to achieve the desired training effects. Non-cyclic structures which in situational conditions are performed with the maximal intensity and do not contribute to the total quantity of the activity are just used to achieve the aim of the training. The basic intensity of the activity at the match is shown as a total volume of the activity (quantity) presented through the model duration of the match of 90 minutes. In that way it is possible to create a simple modelling of the volume, and intensity of the activity for each training by thinking about the basic volume, that is the intensity of the activity. The duration of the training is determined as the product of the ratio of quantity of the activity (pQA) and the intensity of activity (pIA) with the duration of the match ($tT = pQA/pIA * 90$). Intensity will be done only for the situational activity of the formal duration of each half (2x30 minutes), while the activity during the warming-up period will be applied into a training unit that lasts 20 or 30 minutes. It will be part of the pre-initial and initial phase of the training, and also as rest between halftimes and it will last for 10 minutes.

periodical

The thoughts on the volume and intensity precovering and the duration of the particular parts of the training units: pre-initial/initial part (PI-I), main A part (A), active pause (P), main B part (B), final part (F) and total duration of the training unit (T).

no	TRAINING UNIT	VOLUME	INTENSITY	DURATION					
				PI- I	A	P	B	F	T
1	MONDAY MORNING	0,7	0,7	20	60	-		10	90
2	MONDAY AFTERNOON	1,4	1	20	45	10	45	5	125
3	TUESDAY MORNING	0,5	0,7	20	35	-	-	10	65
4	TUESDAY AFTERNOON	1,4	1,6	20	25	5	25	5	80
5	WEDNESDAY AFTERNOON	1,1	1,2	20	25	5	25	10	85
6	THURSDAY MORNING	0,5	0,7	20	20	-	20	5	65
7	THURSDAY AFTERN	1,1	1,4	20	20	10	20	10	80
8	FRIDAY AFTERNOON	0,6	0,6	20	30	10	25	5	90

It is easy to notice that in the first days of the week the bigger volume is planned, in the middle the intensity, and in the last days there is less intensity and volume. The hardest training units are planned for the afternoon with the falling trend of one peak for the volume (Monday) and two rising and falling waves and two peaks for the intensity of the training (Tuesday and Thursday).



The curve of the volume and intensity in the afternoons' trainings

The training process will structurally try to be closer to the match itself, in a way that the introductory part will be congruent with the warming-up before the match, while the pause of the active rest between two main parts of the training is similar to the rest between two

halves of the match. When programming the training it is necessary to take care of the elements and loads used to provoke energy and functional effects, neuromuscular effects and informational-motorical effects in order to avoid the diminishing effects of the training

that can be caused by fatigue or by the opposite effects of the practices that help to develop various abilities. Therefore, the afternoon training sessions are aimed towards different physical dimensions.

MONDAY	aerobic endurance
TUESDAY	explosive and speed power
WEDNESDAY	anaerobic endurance
THURSDAY	agility
FRIDAY	accuracy

In the morning the training sessions are mainly directed to tactical and technical components because of the better possibility of recovering.

BASIC ELEMENTS OF MODELLING OF MICROCYCLE BY TRAINING UNITS

(Volume, intensity, the percentage of physical, technical and tactical component of the training and the aims of the training)

	VOL	INTENSITY	TECHNICAL %	TACTICAL %	PHYSICAL %	min
Monday morning	0,7	0,7	60	20	20	90
Improvement of specific technical elements in relation to particular position of the players						
Monday afternoon	1,4	1	30	10	60	125
Development of the aerobic endurance by simulating the moving at the match (attack-defense)						
Tuesday morning	0,5	0,7	40	30	30	65
Group positional, technical and tactical cooperation						
Tuesday afternoon	1,4	1,6	30	10	60	80
Development of the explosive strength of the take off, throw and overcoming of the opponent's resistance by situational practices and speed strength						
Wednesday afternoon	1,1	1,2	25	25	50	85
Development of speed endurance by group situational practices of the counter attack						
Thursday morning	0,5	0,7	20	60	20	65
Positional and situational practices of the group tactic and attack						
Thursday afternoon	1,1	1,4	20	40	40	80
Practices of the situational cooperation with the emphasis on the defence, agility and group tactical practices at two goals						
Friday morning	0,6	0,6	35	35	30	90
Positional tactic and shooting accuracy and positional realization						

MODELLING OF PARTICULAR TRAINING UNITS

The modeling of each training unit is done by applying and combining mostly situational training elements together with the aims of the training and the precise usage of the loads. The example of one training unit programme in this specific microcycle has been presented in the text below.

periodical

The programme of individual training:

TRAINING:	5	VOLUME:	1,1
DURATION:	85	INTENSITY:	1,2
LOCATION:	Sports hall	METHOD:	Situational
GOAL:	Speed endurance	TOOLS:	Balls
Part	Min	CONTENTS AND LOAD	
PI	10	<p>Stretching large muscular groups (two sets, 4 exercises of stretching with the ball)</p> <ul style="list-style-type: none"> - trunk circling with the ball - rolling the ball around the feet in shape of number eight in touch-toe - rolling the ball around the stretched legs while sitting in touch-toe - stopping the ball that is rolling between the feet by leaning the body backwards 	
I	10	<p>Continued movement in pairs on the lateral side of the court and shooting (5 circles)</p> <ul style="list-style-type: none"> - passing with two hands, shot with two hands - passing with weaker hand, shot with better hand - jump passing, jump shooting - alternative passes ("under the hand", "behind the back" and similar), shooting after 1:1 fainting the semi- active defence player - passing and shooting the ball from the jump ("American") 	
A	25	<p>Threesome counter- attack exercises without defence player on the lateral side of the court taking turns from one side to another (25 m maximum speed, 10-15 seconds break in slow movement and 25 m maximum speed, all together 12 cycles)</p> <ul style="list-style-type: none"> - sprint passing in threesome diagonal formation (4 cycles) - sprint passing in threesome diagonal formation and final crossing between back and central back (4 cycles) - sprint passing in threesome diagonal formation and final central back's positioning as a pivot in order to shoot (4 cycles) <p>Three attackers' versus three defenders' game exercise (12 attacks+ defence)</p> <ul style="list-style-type: none"> • players are divided into four groups of three: two groups on one side of the field and two groups on the other, two groups on one side simultaneously playing against each other just as the other two on the other side, all trying to emerge the counter-attack. When the defence group commits a legal foul it becomes the attack group <p>Counter-attack and counter-attack preventing exercises in three groups of four (12 attacks+ defence)</p> <ul style="list-style-type: none"> • players are divided into three groups of four. The central group attacks the group of one of the sides and stays in the defence position. The defence group makes a counter- attack on the other side against the third group. A group of four that finishes the attack obstructs the four former defence players up to the centre line ,who are now in the attack 	
P	5	<p>Verbal information- pause, relaxation exercises</p>	
B	25	<p>Formation 6:6 with the use of counter- attack, min 30x25 m by maximal speed</p> <ul style="list-style-type: none"> - use of individual defence - after receiving a goal the ball is back in a game immediately - all attack players have to cross the centre line or a goal is annulled - 10 passes at the most - committing a foul - taken ball 	
F	5	<p>7-metre throws</p>	

3. CONCLUSION

Starting with the objective indicators of the activities in the big-league handball, as well as using the knowledge of theory and methodology of training process, training in the standard weekly competitive cycle was formed for the top senior team. Objective indicators of the handballer's activity registered in different circumstances during the big-league games were used as the starting points. Situational activity was shown in measurement units for work and power and therefore it was possible to achieve the precise volume and intensity of the load. Knowing the basic loads, expressed in exact measure units, enables the coach to manage the sport's form during the competitive season. A weekly cycle has been elaborated through eight training units in five training days. In the afternoons, training is based on physical loads while the training process in the mornings is based on informational components. Operators and training programmes of situational character and precise load were elaborated for the specific training unit. Forming of the training process based on objective indicators is useful and rational. It ensures conditions for the achievement of competitive efficiency.

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