



РОССИЙСКИЙ ГОСУДАРСТВЕННЫЙ УНИВЕРСИТЕТ  
ФИЗИЧЕСКОЙ КУЛЬТУРЫ, СПОРТА И ТУРИЗМА



## Complex control as a management basis for tennis players

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### Directions and varieties of complex control (c.c)



(1-9 – varieties of complex control (c.c))

Variety c.c. Directions c.c.	Operative *	Current**	Stage***
	(* in this math, training, moment)	(** day by day, every day)	(*** after long time)
Competition activity	1	2	3
Training activity	4	5	6
Condition (result of preparation)	7	8	9

## Variety of strokes



Duration of match (min): : 149

date: 17.07.2009

score: 4 / 6 4 / 6

Pure time, min: 10

tempo: 24 str/min

Movement density: 7 %

		Total strokes	
		strokes	%
Strokes	Total strokes	371	
	player	187	100,0
	opponent	184	100,0
service	Total	121	32,61
	1-я	64	17,25
	2-я	54	14,56
	double fault	3	0,81
Return I service	Total	22	7,55
	Forehand cross	4	1,08
	Forehand line	3	0,81
	Forehand inside out line	2	0,54
	Forehand inside out cross	3	0,81
	Backhand cross	5	1,35
	Backhand line		
	Backhand inside out line	4	1,08
	Backhand inside out cross	1	0,27

## Variety of strokes



(continuation)

Тип удара		Total strokes	
		strokes	%
Return II service	Total	19	6,47
	Forehand cross	1	0,27
	Forehand line	3	0,81
	Forehand inside out line		
	Forehand inside out cross	1	0,27
	Backhand cross	5	1,35
	Backhand line	1	0,27
	Backhand inside out line	7	1,89
Ground strokes	Backhand inside out cross	1	0,27
	Total	173	46,63
	Forehand cross	44	11,86
	Forehand line	18	4,85
volley	etc	...	
	Forehand cross	5	
	Forehand line	8	
	etc	...	

## Characteristic of player's strokes



data: 17.07.2009

Duration of match (min): 149

Score : 4 / 6 4 / 6

Type of stroke		Total strokes	Stability, %	Stability in defence, %	Stability in attack, %	Effective ness, %	Effective ness of defence, %	Effective ness of attack %
Service	Total (double fault - 2)	63	96,83			4,76		
	first	31	49,21			9,68		
	second	30	93,75					
Return 1 service	Total	42	73,81	85,71	87,50	16,67		46,67
	Forehand cross	4	75,00			25,00		100,00
	Forehand line	10	70,00		60,00	20,00		22,22
	Forehand inside out line	2	100,00			50,00		100,00
	Forehand inside out cross	3	66,67		100,00			
	Backhand cross	7	57,14					
	Backhand line	2	50,00			50,00		100,00
	Backhand inside out line	5	80,00					
	Backhand inside out cross	9	88,89	66,67				



## Characteristic of player's strokes



(continuation)

Type of stroke		Total strokes	Stability, %	Stability in defence, %	Stability in attack, %	Effective ness, %	Effective ness of defence, %	Effective ness of attack %
Return 2 service	Total	36	88,89	100,00	100,00	2,78		14,29
	Forehand cross	1	100,00					
	Forehand line	9	88,89		66,67	11,11		14,29
	Forehand inside out line							
	Forehand inside out cross	1	100,00					
	Backhand cross	8	100,00					
	Backhand line	1						
	Backhand inside out line	7	71,43					
	Backhand inside out cross	9	100,00	66,67				
Ground stroke	Total	173	78,03	66,67	83,33	5,20		42,86
	Forehand cross	44	88,64	66,67	100,00	6,82	25,00	42,86
	Forehand line	18	72,22			5,56	33,33	50,00
	Forehand inside out line	7	71,43		100,00	14,29		33,33
	Forehand inside out cross	12	75,00		100,00			
	Backhand cross	63	74,60			1,59		100,00
	Backhand line	15	73,33			20,00		75,00
	Backhand inside out line	11	72,73					
	Backhand inside out cross	3	100,00					



## Distribution services among zones



(continuation)

Services of opponent				zones									
				«a»		«b»		«c»		«d»		«?»	
		Total	%	Total	%	Total	%	Total	%	Total	%	Total	%
1 square													
	1 service	17	100,00	7	41,1	1	5,8	9	52,94				
	In play	14	82,35	6	35,2	1	5,8	9	41,18				
	aces	3	17,65	1	5,8			2	11,76				
	2 service	14	100,00	6	42,8	5	35,7	3	21,43				
	In play	14	100,00	6	42,8	5	35,7	3	21,43				
	aces												
2 square													
	1 service	16	100,00	6	37,5	3	18,7	7	43,75				
	In play	14	87,50	4	25,0	3	18,7	7	43,75				
	aces	2	12,50	2	12,5								
	2 service	10	100,00	1	10,0	8	80,0	1	10,0				
	In play	10	100,00	1	10,0	8	80,0	1	10,0				
	aces												

## Distribution points and its characteristic in dependence of tempo and time of points



Duration, min: 149      score: 4 / 6      4 / 6  
aces: 3      double faults: 2      total points: 120      points won: 56  
Movement density, %: 7,0

Time(sec)		total	<=3	<=5	<=10	<=15	<=20	>20
Tempo (str/min)								
total	total	110,00	28	30	41	6	4	1
	%	100,00	25	27	37	5	4	1
	effect.	15,45	11	10	22		50	
	stab.	47,27	54	37	46	67	75	
<=15	total	3,00			3			
	%	2,73			3			
	effect.							
	stab.							
16-20	total	4,00	1	1	2			
	%	3,64	1	1	2			
	effect.							
	stab.	75,00	100		100			
21-24	total	23,00	2	2	12	4	2	1
	%	21,91	2	2	11	4	2	1
	effect.	13,04			8		100	
	stab.	60,87	100		50	100	100	
25-26	total	10,00		3	4	2	1	
	%	9,09		3	4	2	1	
	effect.	10,00			25			

## Operative control of competition activity



Fig. 1. duration of set, min

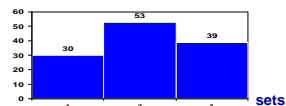


Fig. 2. «pure» time of set, min

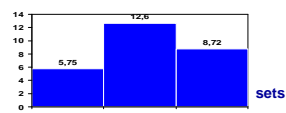


Fig. 3. Sum of points

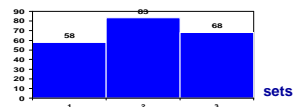


Fig. 4. Sum of strokes

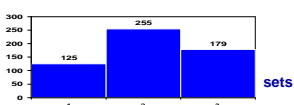
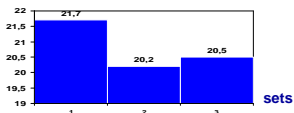


Fig.5. tempo of strokes average date, str/min.



## Operative control of competition activity (continuation)



Fig.1. Stability of strokes,%

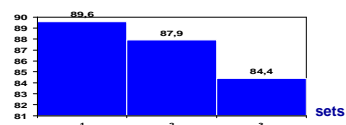


Fig.2. Effectiveness of strokes, %

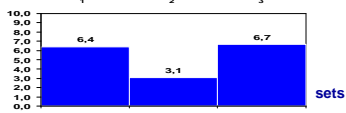


Fig.3 Heart beats average date, str/min.

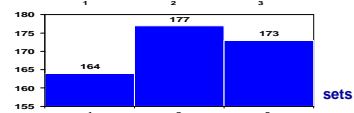
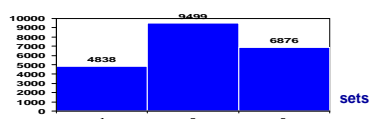
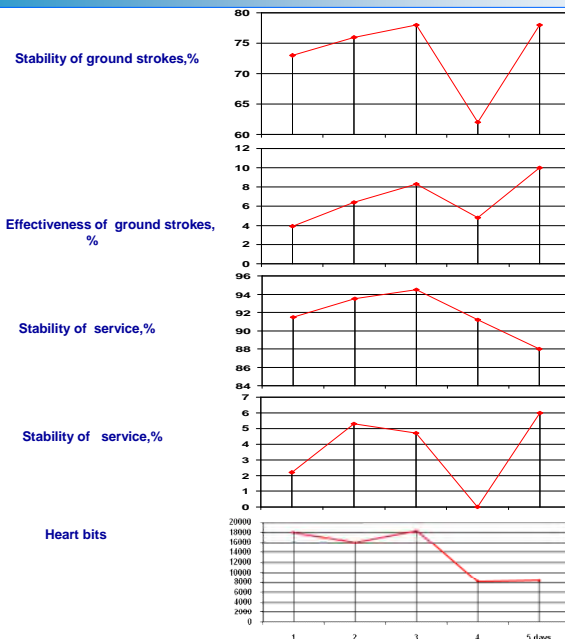


Fig.4. Sum of heart bits, str.



## Current control of competition activity



## Current control of service's stability of Australia Open 2009 finalists



Fig.1. Service's stability of R. Nadal and R. Federer

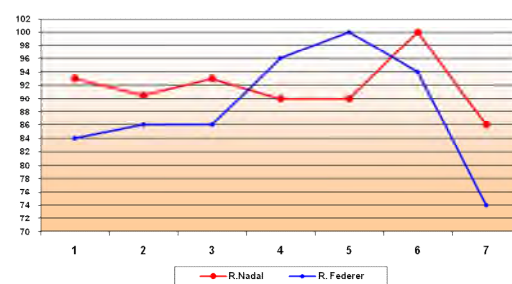
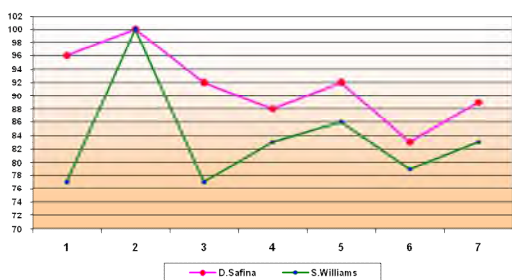
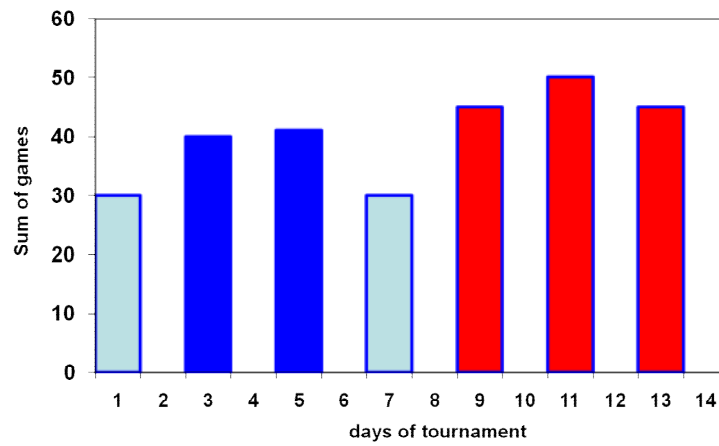


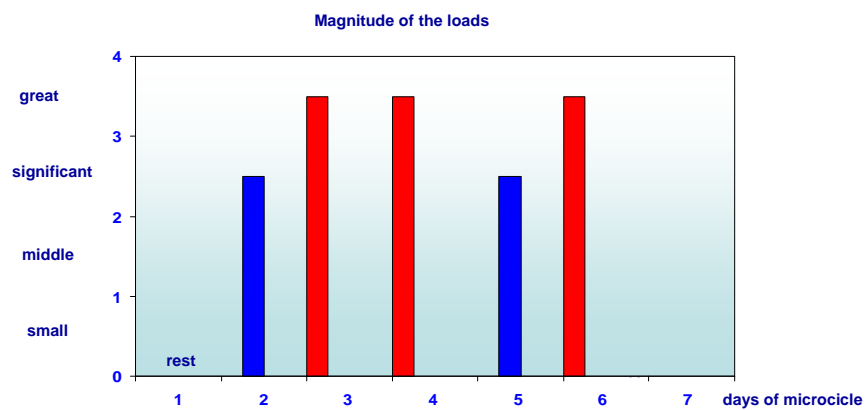
Fig.2. Service's stability of D. Safina and S. Williams



## Current control of the loads in competition microcycle

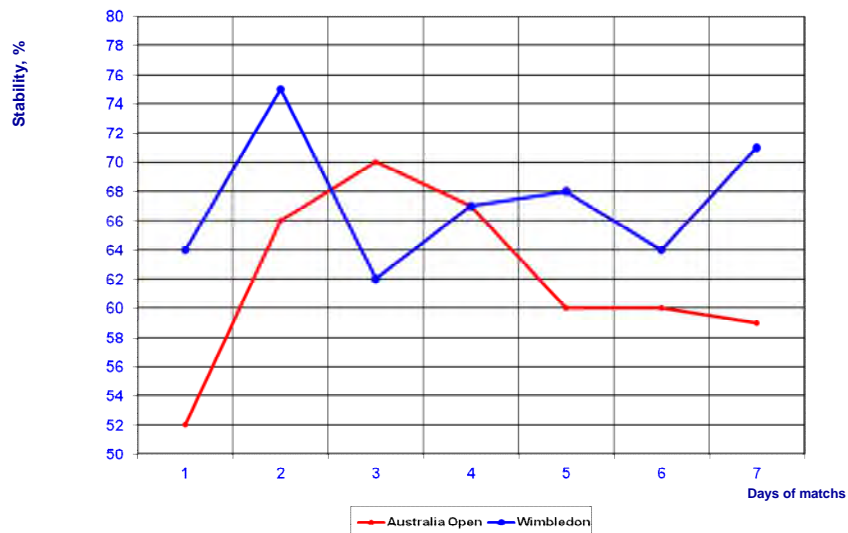


## Current control of the loads in competition microcycle





### Stability of R. Federer's service in the Grand Slam's tournaments



### Operative control of the main part of training



The tasks	Time of work, min	Time of rest, min	Tempo, str/min	Heart rate, str/min	Methodical notice
Service in I square	10	1	4	140-160	20 serve to zone A,C to each square
Service in II square	10	1	4	140-160	Another notice
Ground strokes:					
- elements	10	1	24-26	150-160	Another notice
- combinations and situations:					
4-5 strokes in the movement, the lob, advances to the net, play volley	10	1,5	22-26	168-180	Another notice
variant of combination	10	1,5		168-180	Another notice
Play with the score	30	1,5	22-26	142-184	Try to win the point forcing

## Current control of the practice work volume in the main part of the training in microcycle



	Volume of the work each day													
	1		2		3		4		5		6		total	
The tasks	min	%	min	%	min	%	min	%	min	%	min	%	min	%
Service in I square	3		3		2		2		0		2		12	
Service in II square	2	5,5	3	6,4	2	4,7	2	4,9	0	0	1	3,6	10	2,3
return	0		6	6,4	0	0	0	0	0	0	2	2,4	8	1,5
Ground strokes:	81	90	64	68,8	61	71,7	57	70,3	51	62,9	42	51,2	356	69,5
elements	20	22,2	18	19,3	12	14,1	12	14,8	10	12,3	12	14,6	84	16,4
combinations	26	28,8	35	37,6	22	25,9	20	27,7	16	19,7	14	17,1	133	26
situations	35	38,8	11	11,8	27	31,7	25	30,8	25	30,8	16	19,5	139	27,1
Volley:	4	4,4	17	18,2	10	11,7	5	6,1	10	12,3	15	18,2	61	11,9
elements	4	4,4	8	8,6	0	0	5	6,1	0	0	0	0	17	3,3
combinations	0	0	9	9,7	0	0	0	0	5	7,6	7	8,5	21	4,1
situations	0	0	0	0	10	11,7	0	0	5	7,6	8	9,7	23	4,5
competitive situations	0	0	0	0	10	11,7	15	18,5	20	24,6	0	0	45	8,8
Play with the score	0	0	0	0	0	0	0	0	0	0	20	24,3	20	3,9
Duration, min	90	100	93	100	85	100	81	100	81	100	82	100	512	100
Sum of heart bits	13528		14156		11032		14052		13306		16317			
magnitude	middle		significant		middle		significant		middle		great			

## Current control of improvement ground strokes



	Work volume each day (min)							
	1	2	3	4	5	6	Σ	
	min	min	min	min	min	min	min	%
Elements*	20	18	12	12	10	12	84	100
forehand line	3,0	2,5	2,0	2,0	2,0	2,0	13,5	16,4
backhand line	3,0	2,5	2,0	2,0	2,0	2,0	13,5	16,4
forehand long cross	2,0	2,5	2,0	2,0	1,5	2,0	12,0	14,2
backhand long cross	2,0	2,5	2,0	2,0	1,5	2,0	12,0	14,2
forehand short cross	2,0	2,0	2,0	0,0	1,5	2,0	9,5	11,3
backhand short cross	2,0	2,0	2,0	0,0	1,5	2,0	9,5	11,3
forehand inside out	3,0	2,0	0,0	2,0	0,0	0,0	7,0	8,3
backhand inside out	3,0	2,0	0,0	2,0	0,0	0,0	7,0	8,3

\* All strokes are fulfilled in tempo 24-26 str/min

## Current control of the practice work volume different intensity



Heart bits, bits/min	Days of microcycle													
	1		2		3		4		5		6		$\Sigma$	
	min	%	min	%	min	%	min	%	min	%	min	%	min	%
< 150	18	20	28	30,1	39	45,9	30	37	20	24,6	30	36,5	165	32,2
150-180	47	52,2	51	54,8	46	54,6	33	40,7	42	51,8	37	45,1	293	57,2
> 180	25	27,7	14	15,1	0	0	18	22,2	0	0	0	0	91	17,7
Total time	90		93		85		81		81		82		512	100
Sum of heart bits	13528		14156		11032		14052		13306		16317		82391	
Magnitude of the load	middle		significant		middle		significant		middle		great			

## Stage control of the work in macrocycle

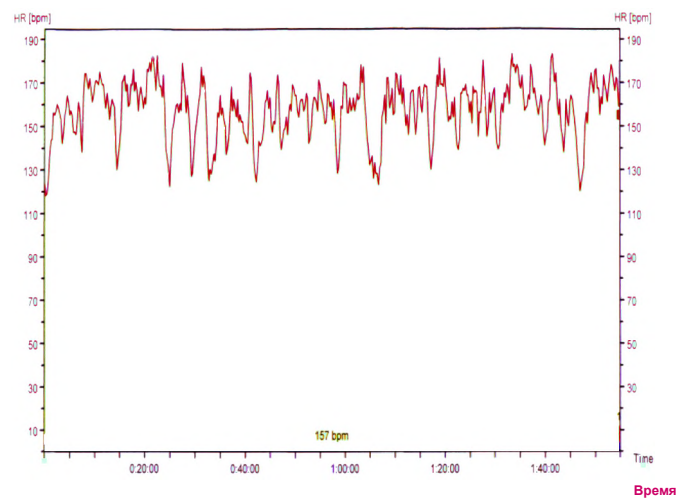


Parameters of the load	Player "A"	Player "C"
Total volume in macrocycle	1100	1090
Sum of MC in macrocycle	51	50
Sum of MC in preparatory period	26	15
Sum of MC in competitive period	23	33
Sum of competitive MC in preparatory periods, %	23-27	33-40
Sum of competitive matches	70-96	100-120
Volume of special load, min	877	912
Volume of special load from total volume	79,7	83,6

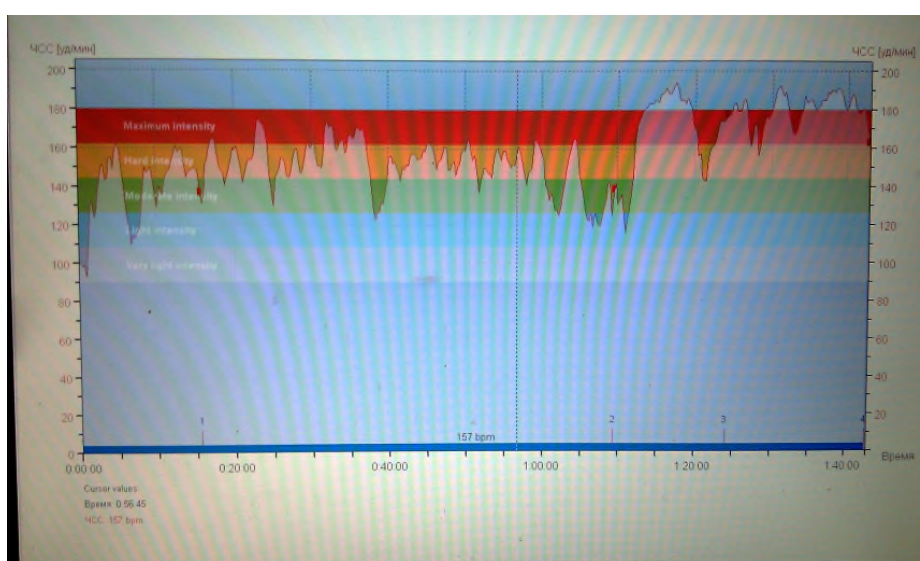
A – player beginning to take part in professional tours

C - player included in the 20 of the world

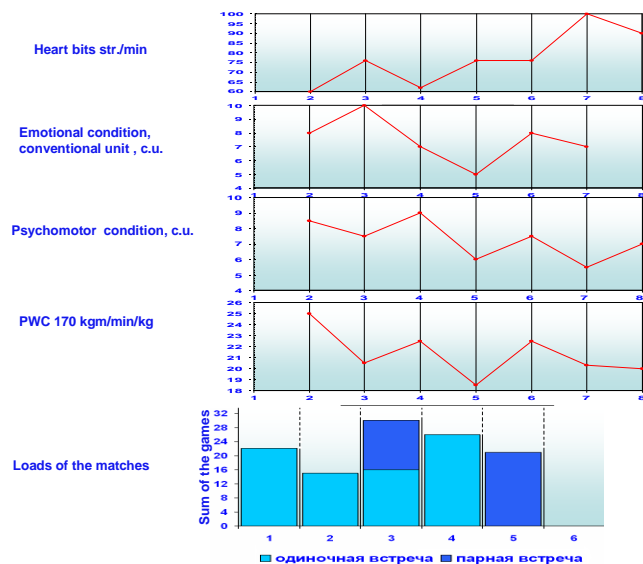
## Operative control player's condition in the match



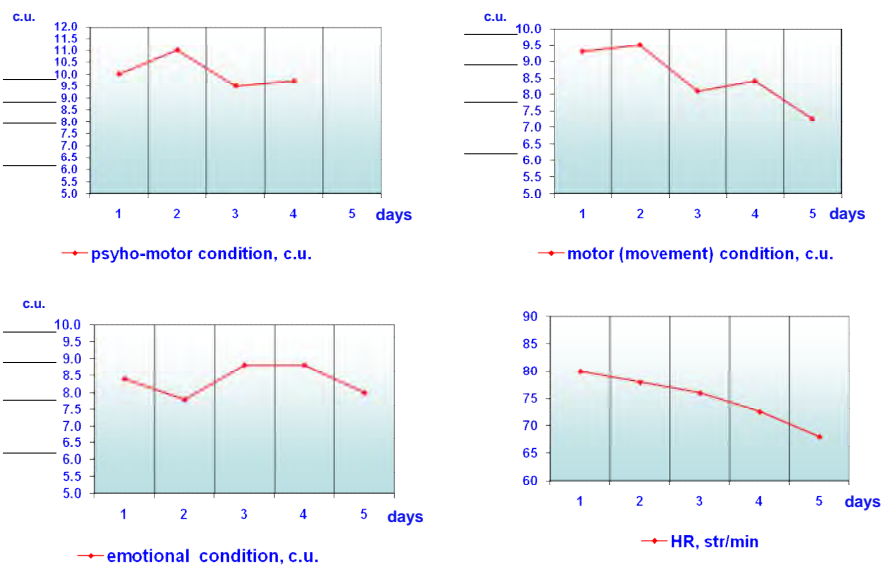
## Operative control player's condition in training



## Current control player's condition in microcycle

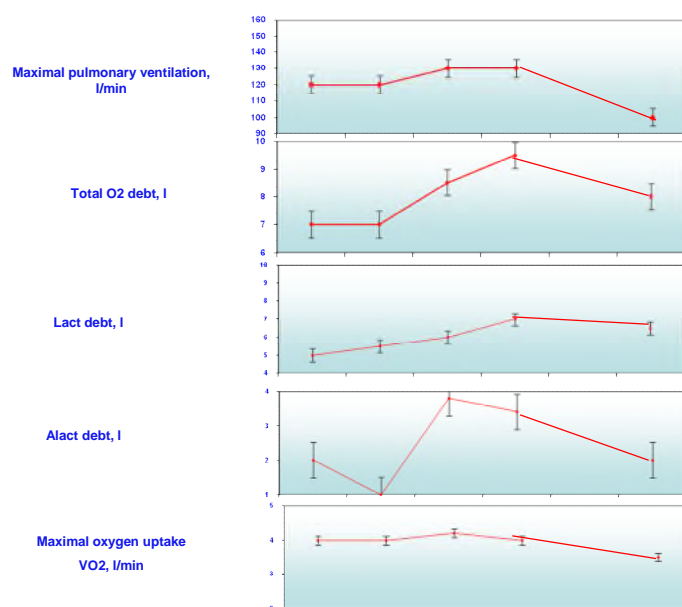


## Current control player's condition in training microcycle





## Stage control player's functional condition (performance) in macrocycle



# Stage control of change PWC 170 in different stages of macrocycle

