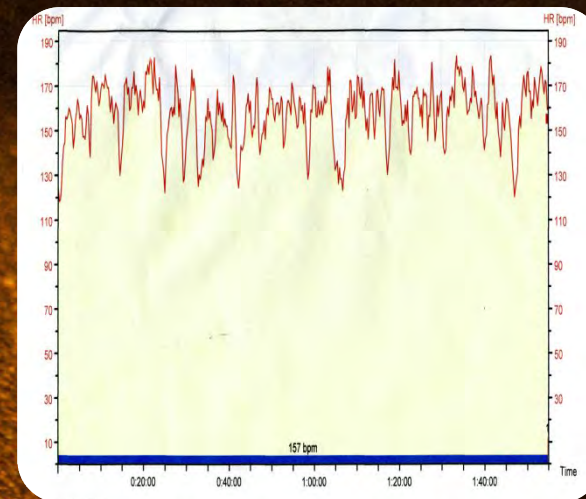


Structure of tournament micro-cycles of juniors of 15 -16 years old.

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Actuality.

Leading specialists in the sphere of sport preparation Ozolin, Matveev, Platonov, have proved that the process of training management is based on tournament activity. Specifically it accounts for work-out planning, the choice of means and methods for training, magnitudes of executed physical exertion. In order to plan and carry out a training process most effectively it is necessary to know the magnitude of tournament exertion, as well as the distribution of exertions of different intensity among days of tournament micro cycles. Nowadays professional tennis players are younger than in the past, in the world ranking there are players of 17-18 years old. In the light of this the problem of earlier sport specialization arises. In order to gain high goals in the sport of greatest achievements, juniors of 15 – 16 years have to play at the level close to professional. It may be possible only if scientifically based system of planning and control of tournament and training exertions are carried out.

Aim of work.

Calculate the structure of tournament micro-cycles of juniors of 15 -16 years old.

Research tasks:

Measure out the duration of tournament micro-cycles, quantity of play days in them.

Find out parameters of tournament exertion:

a)Parameters of external and internal aspects of exertion, exactly the scale and intensity

b) Magnitude of physical exertion

3) Find out the distribution of different magnitude exertions among days of tournament micro cycles.

Research methods.

Analysis of literary sources, pedagogical observation and survey of tournament activity of youths of 15 -16 years old with the help of stenograph for taking down tournament actions of the player and хронометрирования, pulse rate, субтест метода «миокинетическая psychodiagnostics» - offered by Mire –i- Lopes. The results were analyzed with the help of methods of mathematical statistics.

Research results.

1. Tournament micro-cycles of youths of given age may be of 5 -7 days, depending on the quantity of participants and tournament conditions. The most common micro-cycles are that of 5 play days, as the quantity of participants does not exceed 32. In present research work only micro-cycles of 5 play days are analyzed.

2. a) Parameters of external and internal aspects of exertion were also worked out, their indices are displayed in table 1.

In some sports , for example in football, basketball and so on, the exertion of competitive games is thought to be considerable. The deference in data referring tennis tournaments reveals the fact that in this sport magnitudes of tournament exertion differ.

<u>Table 1</u>	<u>Indices of exertion</u>	<u>Minimal magnitudes</u>	<u>Maximal magnitudes</u>
<u>External aspect of exertion</u>	General duration of the match (min.)	50	110
	Pure time of play (min.)	6,7	16
	Sum of played points	90	186
	Sum fulfilled shots	134	301
	movement density (%)	12,7	14,8
	Game speed (shots/min.)	23	26
<u>Internal aspect of exertion</u>	Sum of hart beats contractions during the match	8917	18238
	Maximum heart rate(shots/min.)	182	232
	Average heart rate(shots/min.)	151	158

b) Owing to the fact that characteristics(figures) of exertion magnitudes vary greatly we kept to the classification offered in works of Matveev, Platonov, Suslov. On the basis of this classification in sport practice they distinguish exertions of four magnitudes: little, average, considerable and great.

The analysis of the research results showed that tournament exertion of youth of 15-16 years may be of all four magnitudes.

In the theory and methodology of physical education while defining training and tournament exertion they distinguish their external and internal aspects. So, external and internal aspect are characterized by scale and intensity of the carried out work. For each magnitude of exertion we measured :

Indices of external aspect of exertion of competitive matches .

From the indices of scale we recorded such as match duration, pure “time” of the game during a match, the sum of played points and sum of fulfilled blows.

From the indices of intensity we analyzed the rate/tempo of played points, motor density of the matches.

We also took into consideration

Indices of internal aspect of exertion of competitive matches.

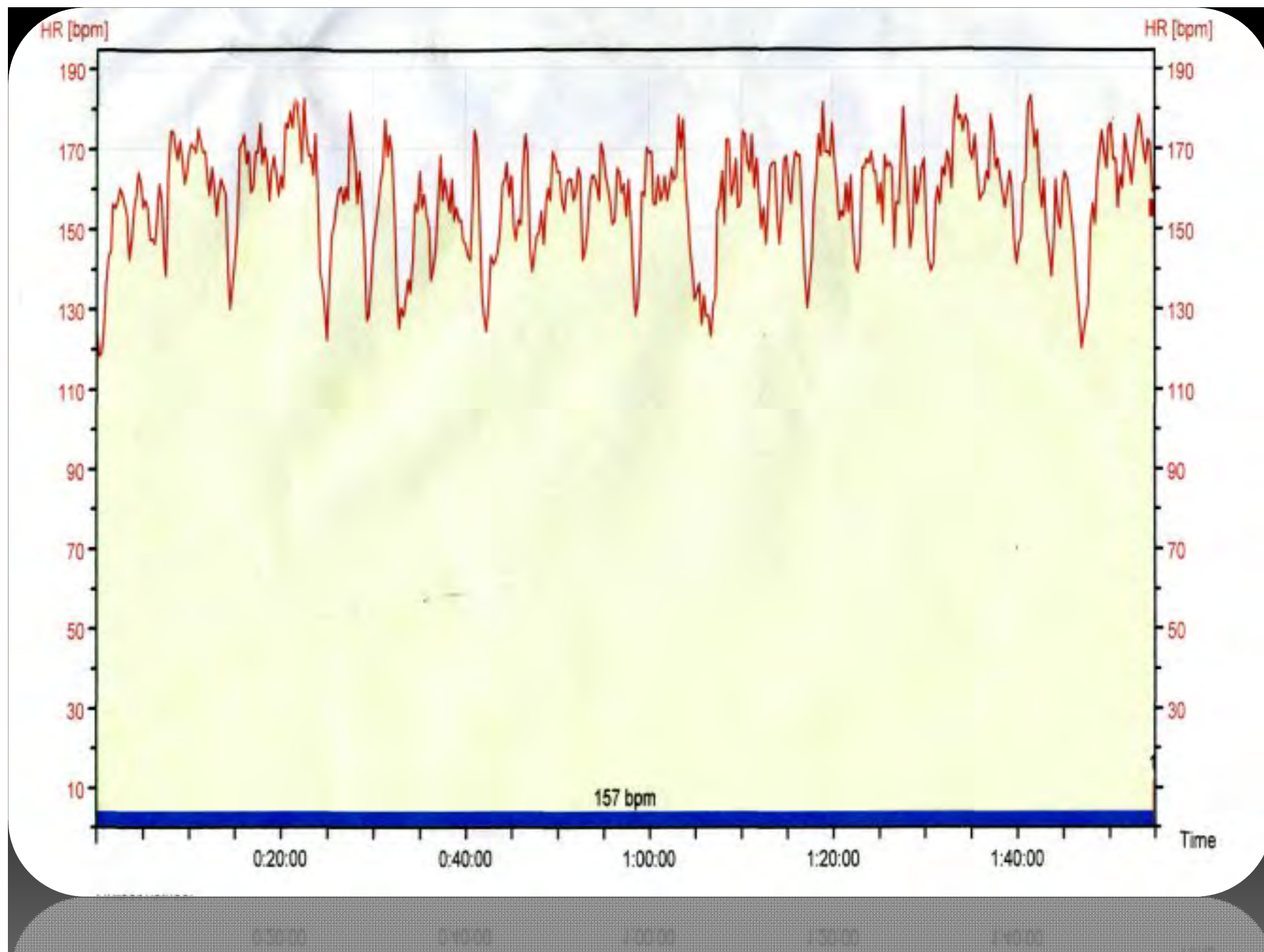
From the indices of scale we measured the sum of heartbeats during the match .

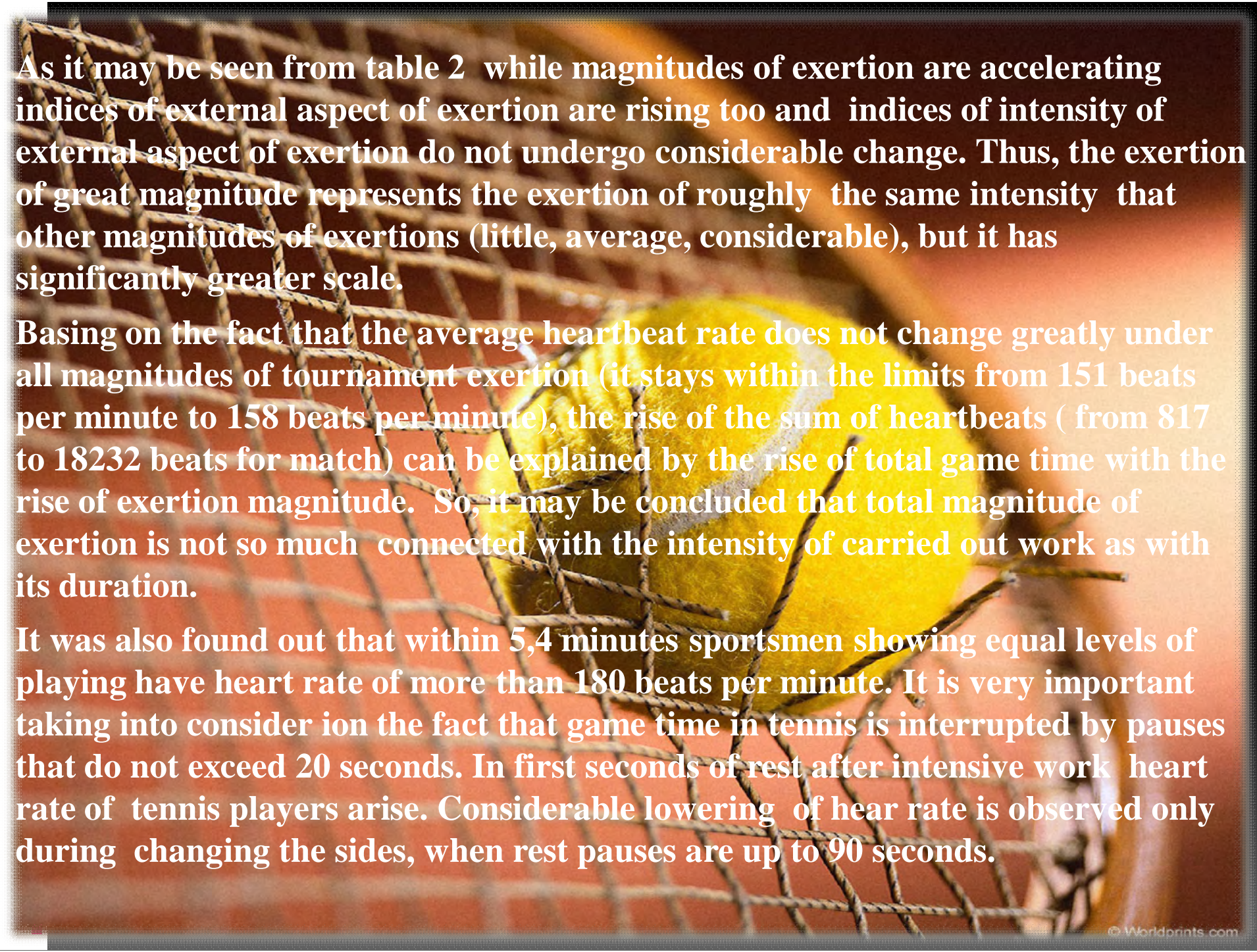
From the indices of intensity we measured the minimum, maximum frequencies of heartbeats, that can be observed in the course of match. Also we registered average indices of heartbeats during matches and performance with different rate of intensity. (Table 2. Characteristics of tournament exertion.)

Table 2. Characteristics of tournament duration.

			<i>External aspect of exertion</i>							<i>Internal aspect of exertion</i>											
			<i>Scale</i>				<i>Intensity</i>			<i>Scale</i>	<i>Intensity</i>										
			<i>Magnitudes of exertions</i>	<i>General stability. % X_{av.}</i>	<i>General efficacy. % X_{av.}</i>	<i>t general. Min. X_{av.}</i>	<i>t X_{av.}</i>	<i>Σ очков X_{av.}</i>	<i>Σ pure min. yda ров X_{av.}</i>	<i>Movement density. (%) X_{av.}</i>	<i>Game speed (shots/min) X_{av.}</i>	<i>Σ heart beats contractions (shots) X_{av.}</i>	<i>Mux. Heart rate X_{av.} (shots /min.)</i>	<i>Average heart rate X_{av.} (shots /min)</i>	<i>Time of performance with different intensity</i>						
Max 180 и >		MHI 165-179													LMI 150-164		LI 130-149		L 60-129		
<i>t,min. X_{av.}</i>	<i>% X_{av.}</i>	<i>t, min. X_{av.}</i>													<i>% X_{av.}</i>	<i>t, min. X_{av.}</i>	<i>% X_{av.}</i>	<i>t, min. X_{av.}</i>	<i>% X_{av.}</i>	<i>t, min. X_{av.}</i>	<i>% X_{av.}</i>
Great	86, 27	5,7 3	110 ± 6	16 ± 5	186 ± 9	301 ± 65	14,6	24 ± 3	18238 ± 1926	187 ± 4	157 ± 2	3,6 ± 4	3	33 ± 8	28	48 ± 2,8	41,5	27,4 ± 7,5	23, 5	4,5 ± 2	3,7 5
Considerable	86, 2	10, 3	95 ± 29	12, 5 ± 7	157 ± 50	221 ± 107	12,7 5	24 ± 2	13857 ± 1675	232 ± 5	155 ± 5	3,6 ± 0,5	4	20,4 ± 12	22,5	38,4 ± 12	40,5	23,2 ± 5,4	24	10,2 ± 9	9
Average	86, 45	11, 54	65 ± 13	9,7 ± 2,4	115 ± 15	179 ± 14	14,8	23 ± 4	11141 ± 471	186 ± 5	158 ± 5	5,4 ± 5,6	7,7	22,3 ± 4,6	31,7	25 ± 5,3	35,7	13,4 ± 5	18, 3	4,5 ± 1,8	6
Little	84, 6	7,9	50 ± 7	6,7 5 ± 1,5	90 ± 14	134 ± 21	13,3	26 ± 1	8917 ± 577	182 ± 3	151 ± 9	1,8 ± 3	3	11,6 ± 9	19,2	20 ± 1,5	33,7 5	20 ± 9	33, 75	7 ± 4	11, 75

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As it may be seen from table 2 while magnitudes of exertion are accelerating indices of external aspect of exertion are rising too and indices of intensity of external aspect of exertion do not undergo considerable change. Thus, the exertion of great magnitude represents the exertion of roughly the same intensity that other magnitudes of exertions (little, average, considerable), but it has significantly greater scale.

Basing on the fact that the average heartbeat rate does not change greatly under all magnitudes of tournament exertion (it stays within the limits from 151 beats per minute to 158 beats per minute), the rise of the sum of heartbeats (from 817 to 18232 beats for match) can be explained by the rise of total game time with the rise of exertion magnitude. So, it may be concluded that total magnitude of exertion is not so much connected with the intensity of carried out work as with its duration.

It was also found out that within 5,4 minutes sportsmen showing equal levels of playing have heart rate of more than 180 beats per minute. It is very important taking into consideration the fact that game time in tennis is interrupted by pauses that do not exceed 20 seconds. In first seconds of rest after intensive work heart rate of tennis players arise. Considerable lowering of heart rate is observed only during changing the sides, when rest pauses are up to 90 seconds.

Variants of distribution of different magnitude exertions among days of tournament micro cycles.

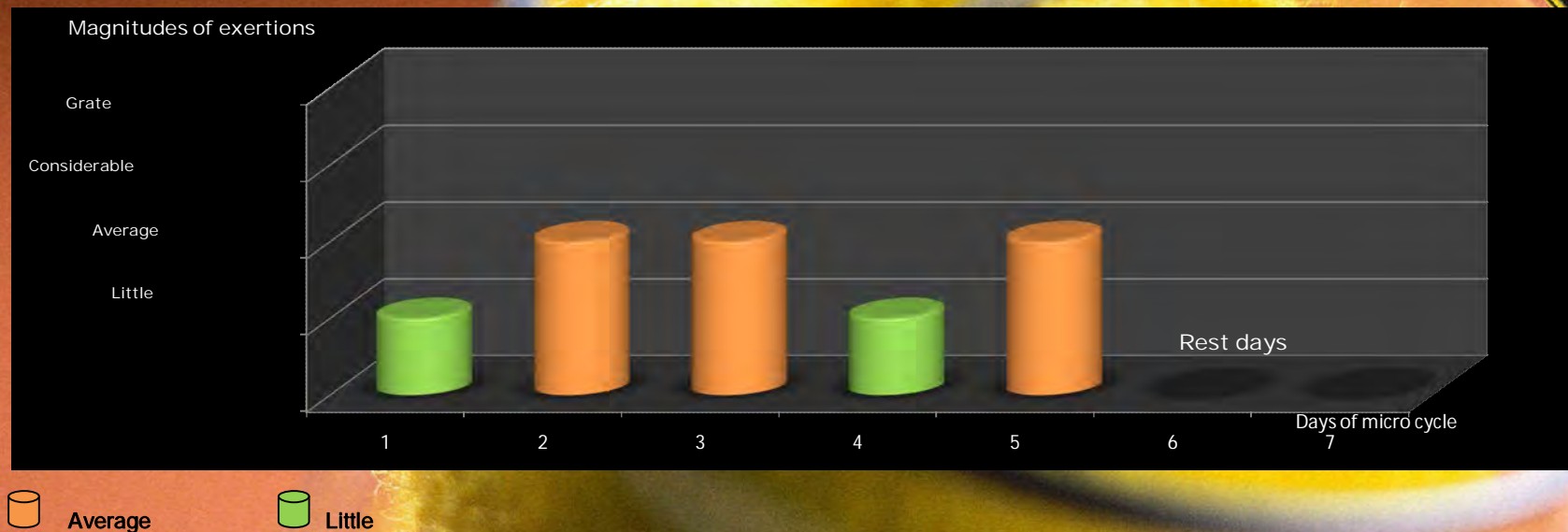
Picture 1. Variant of tournament micro cycle of tennis players of 15-16 years.



In the picture 1 it is seen that first three matches require from players greater exertion.

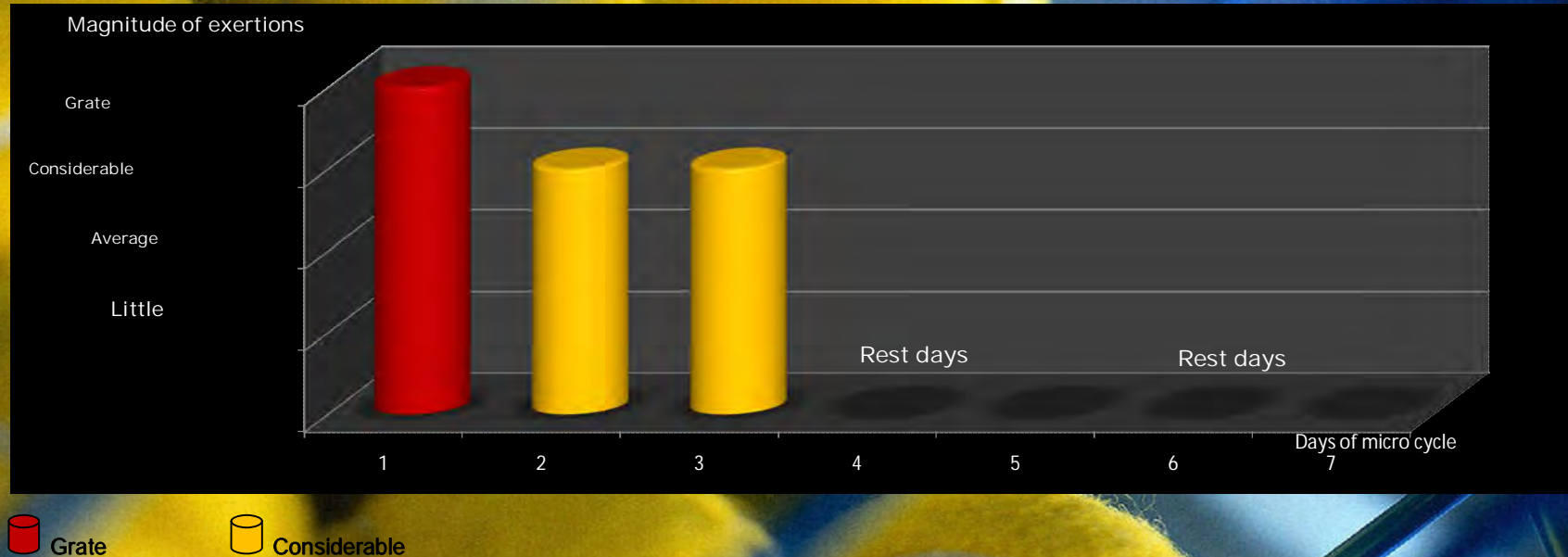
In may be explained that in international tournaments of such level most players have equal level of preparedness and matches turn into intensive battles. In the given case the player was able to stand three exertion of great magnitude, he obviously failed to recover completely after each match. By the last match (the semi-final) lack of recovery (exhaustion, tiredness) was so considerable that the player turned out to be unable to overcome an opponent who was inferior to him in strength/ (who was less stronger) and lose the match whose exertion magnitude had reduced to a little one.

Picture 2. Variant of tournament micro cycle of tennis players of 15-16 years.



The second variant tournament micro cycle (picture 2) as a rule was observed in the performance of players well prepared to all parameters, of tournament winners. In this variant there are not exertion of great and considerable magnitudes.

Picture 3. Variant of tournament micro cycle of tennis players of 15-16 years.



In the picture 3 the third variant is represented. Here, just like in the first case, opponents of equal technical and tactical preparedness meet, but one of them has physical capabilities only for two hard playing days, and in the third match the player of better physical (functional) preparedness wins.

While managing the training process it is necessary to take into consideration all indices of exertion of different magnitudes and variants of their distribution among days of tournament micro cycles.

On basis of the results of given research practical recommendations were made out which in their turn were introduced in the process of preparation of the Russian tennis combined team of 15 -16 years old and particularly of one of the leading juniors of the country. The result was this tennis player victory in Wimbledon among juniors in 2009.

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A photograph of a tennis racket and several tennis balls on a court. The racket is black with a red and yellow border, lying on its side. Several yellow tennis balls are scattered around it. The background is a green tennis court with a white line. The text "Big thank you for your attention." is overlaid in white serif font.

Big thank
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attention.