

METHODS

A TABLE FOR DETERMINATION OF THE PRINCIPAL ELECTROCARDIOGRAPHIC INDICES DURING ANALYSIS OF THE ECG OF THE RABBIT

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In clinical practice tables are usually used for calculating the various electrocardiographic indices [1, 4]. Because of the absence of such tables intended for the analysis of the ECG of experimental animals, as a rule this process is limited to elementary measurements. Bearing in mind that in laboratory practice rabbits are often used, the author has compiled a table of certain electrocardiographic indices for this species of animal.

By means of this table, measurements of the lengths of the R-R and Q-T intervals on the ECG can be used to determine the frequency of the cardiac contractions per minute, the systolic indices (actual and normal), and the normal duration of electrical systole of the ventricles for a given heart rate.

For this purpose, in the first column of the table figures are given corresponding to the measured duration of the cardiac cycle on the ECG (R-R) in seconds. The second column of the table shows the frequency of the cardiac contractions per minute corresponding to this particular R-R interval. In the third and subsequent columns of the table are given the values of the systolic index as determined by L. I. Fogel'son and I. A. Chernogorov [2].

The actual systolic index is found in the column corresponding to the duration of electrical systole of the ventricles measured on the ECG (shown on the top line). The actual value of the systolic index thus obtained is compared with the normal (given in bold figures in the table, and enclosed by a frame).

The table can also be used to determine the value of the normal duration of electrical systole of the ventricles in seconds, which is found at the top of the column denoting the normal systolic index corresponding to the particular heart rate.

The normal duration of electrical systole of the ventricles was calculated by Bazett's formula:

$$S = k\sqrt{P},$$

in which S is the duration of electrical ventricular systole (Q-T) in seconds, k is an empirical constant equal to 2.8 for rabbits [3], and P is the duration of the cardiac cycle (R-R) in seconds.

We have compared the values of electrical ventricular systole and of the systolic index obtained in experiments on 27 healthy rabbits (83 determinations) * with the tabular values of ventricular systole and the systolic index for corresponding rhythms (in normal animals) and obtained satisfactory agreement between the calculated and experimental values.

*These figures were obtained from an investigation conducted jointly with A. V. Kolesnikova and I. F. Lakeeva.

Determination of Heart Rate, Systolic Index (in %), and Normal Value of Q-T Interval during Analysis of the ECG of the Rabbit

R-R (in sec)	f (in beats per min)	Length of Q-T interval (in sec)																	
		0,03	0,07	0,08	0,09	0,10	0,11	0,12	0,13	0,14	0,15	0,16	0,17	0,18	0,19	0,20	0,21	0,22	0,23
0,12	500	50	58	67	75	83	92	100											
0,13	460	46	54	62	69	77	85	92	100										
0,14	430	43	50	57	64	71	79	86	93	100									
0,15	400	40	47	53	60	67	73	80	87	93	100								
0,16	375	38	44	50	56	63	69	75	81	88	94	100							
0,17	350	35	41	47	53	59	65	71	76	82	88	94	100						
0,18	330	33	39	44	50	56	61	67	72	78	83	89	94	100					
0,19	315	32	37	42	47	53	58	63	68	74	79	84	89	95	100				
0,20	300	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100			
0,21	285	29	33	38	43	48	52	57	62	67	71	76	81	86	91	95	100		
0,22	270	27	32	36	41	45	50	55	59	64	68	73	77	82	86	91	96	100	
0,23	260	26	30	35	39	43	48	52	56	61	65	70	74	78	83	87	91	96	100
0,24	250	25	29	33	37	42	46	50	54	58	62	67	71	75	79	83	87	92	96
0,25	240	24	28	32	36	40	44	48	52	56	60	64	68	72	76	80	84	88	92
0,26	230	23	27	31	35	38	42	46	50	54	58	62	66	69	73	77	81	85	89
0,27	220	22	26	30	33	37	41	44	48	52	56	59	63	67	70	74	78	82	85
0,28	215	21	25	29	32	36	39	43	46	50	54	57	61	64	68	72	75	79	82
0,29	205	21	24	28	31	35	38	42	45	48	52	55	59	62	66	69	72	76	79
0,30	200	20	23	27	30	33	37	40	43	47	50	53	57	60	63	67	70	73	77
0,31	195	19	23	26	29	32	36	39	42	45	48	52	55	58	61	65	68	71	74
0,32	187	19	22	25	28	31	34	38	41	44	47	50	53	56	59	63	66	69	72
0,33	180	18	21	24	27	30	33	36	39	42	45	48	51	54	57	61	64	67	70
0,34	175	18	21	24	26	29	32	35	38	41	44	47	50	53	56	59	62	65	68
0,35	170	17	20	23	26	29	31	34	37	40	43	46	49	51	54	57	60	63	66

Continuation

R-R (in sec)	f (in beats per min)	Length of Q-T interval (in sec)																0,23
		0,06	0,07	0,08	0,09	0,10	0,11	0,12	0,13	0,14	0,15	0,16	0,17	0,18	0,19	0,20	0,21	
0,36	165	17	19	22	25	28	31	33	36	39	42	44	47	50	53	56	58	64
0,37	160	16	19	22	24	27	30	32	35	38	41	43	46	49	51	54	57	62
0,38	157	16	18	21	24	26	29	32	34	37	40	42	45	47	50	53	55	60
0,39	154	15	18	21	23	26	28	31	33	36	38	41	44	46	49	51	54	59
0,40	150	15	17	20	23	25	28	30	33	35	38	40	43	45	48	50	53	57
0,41	146	15	17	20	22	24	27	29	32	34	37	39	41	44	46	49	51	56
0,42	143	14	17	19	21	24	26	29	31	33	36	38	40	43	45	48	50	55
0,43	140	14	16	19	21	23	26	28	30	33	35	37	39	42	44	47	49	54
0,44	136	14	16	18	20	23	25	27	30	32	34	36	39	41	43	45	48	52
0,45	133	13	16	18	20	22	24	27	29	31	33	36	38	40	42	44	47	51
0,46	130	13	15	17	20	22	24	26	28	30	33	35	37	39	41	43	46	50
0,47	127	13	15	17	19	21	23	26	28	30	32	34	36	38	40	43	45	49
0,48	125	12	15	17	19	21	23	25	27	29	31	33	35	37	39	41	43	48
0,49	122	12	14	16	18	20	22	24	27	29	31	33	35	37	40	42	44	47
0,50	120	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	46
0,51	117	12	14	16	18	20	22	24	26	27	29	31	33	35	37	39	41	45
0,52	115	12	13	15	17	19	21	23	25	27	29	31	33	35	37	38	40	44
0,53	113	11	13	15	17	19	21	23	25	26	28	30	32	34	36	38	40	43
0,54	111	11	13	15	17	19	20	22	24	26	28	30	31	33	35	37	39	43
0,55	109	11	13	15	16	18	20	22	24	25	27	29	31	33	35	36	38	42
0,56	107	11	12	14	16	18	20	21	23	25	27	29	30	32	34	36	37	41
0,57	105	11	12	14	16	18	19	21	23	25	26	28	30	32	33	35	37	40
0,58	103	10	12	14	15	17	19	21	22	24	26	28	29	31	33	35	36	39
0,59	102	10	12	14	15	17	19	20	22	24	25	27	29	31	32	34	36	39
0,60	100	10	12	13	15	17	18	20	22	23	25	27	28	30	32	33	35	38

LITERATURE CITED

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3. E. Lepeschkin, Das Elektrokardiogramm. Dresden, (1947).
4. R. Zuckermann, Grundriss und Atlas der Elektrokardiographie. Leipzig, (1959).

All abbreviations of periodicals in the above bibliography are letter-by-letter transliterations of the abbreviations as given in the original Russian journal. *Some or all of this periodical literature may well be available in English translation.* A complete list of the cover-to-cover English translations appears at the back of this issue.
