INFLUENCE OF MASSAGE USING PLASTIC CONTAINERS ON VARIABILITY OF CARDIAC RHYTHM

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Currently, express-massage is widely used and carried out at work-places, offices etc. The time of the massage ranges from 5 to 15 minutes. Thanks to this, increased efficiency, increased mental activity, decreased fatigue and emotional stress, increased flexibility and mobility of joints, improved circulation of blood and lymph and normalization of blood pressure are achieved.

At the Department of regenerative medicine and balneology of Ryazan State Medical university, this method of express-massage was carried out in the neck and collar region for 10 minutes. One group of students (97 persons) received 10-minute massage session by the use of vaccum plastic cups and other group of students (257 people) during this period simply rested by sitting down with their eyes closed. As a method of control, cardiac rhythm was used as an indicator, which with great accuracy reflects

the state of the regulatory processes in our body. With the help of hardware-software complex «Varikard 1.41» an electrocardiogram recorded at rest in the sitting position for 5 minutes analysed the following indicators: HR – heart rate; SDNN – the mean square deviation; SI – stress index (the index of regulatory systems); IC – the index of centralization; PARS – an index of activity of theregulatory system.

The results of the study (Table 1) showed that the regulatory processes of the body of persons receiving massage, switched to more cost-effective activity, ie, a greater degree of sympathetic influence was diminished as compared with those who passively rested. Difference HR before and after the massage – 3.0 beats / min (whilst the students 2-nd group – -0.47 beats/ min), SDNN increased to 2.23 (Group 2 – 0.13), Stress index decreased by 27.23 units. (Group 2 – 5.01 units.) Centralization index decreased by 0.80 units. (in group 2 increased by 0.07 units.). Index of activity of regulatory systems in the 1 st group shows that after the massage, parasympathetic is more dominant component as compared to sympathetic, whilst in group 2 it is the other way around.

Table 1 **Indices of variability of cardiac rhythm before and after massage and in passive resting**

INDEX	Massage (n=97)				Passive Resting (n=257)			
	before	after	diff.	t	before	after	diff.	t
HR	76.54±1.85	73.54±1.64	-3.00	1.21	74.79±1,17	74.32±1,08	-0.47	0.30
SDNN	59.77±3.21	62.00±3.26	2.23	0.49	61.28±2.82	61.40±2.79	0.13	0.03
SI	139.6±32.9	112.4±26.9	-27.2	0.64	110.3±10.4	105.3±8.8	-5.0	0.37
IC	3.09±0.50	2.29±0.32	-0.80	1.34	2.32±0.30	2.39±0.28	0.07	0.17
PARS gen.	4.10±0.25	3.75±0.25	-0.35	1.00	3.86±0.20	3.71±0.18	-0.15	0.56
PARS symp.	1.77±0.26	1.23±0.21	-0.54	1.61	1.43±0.16	1.48±0.15	0.06	0.26
PARS p/symp.	2.33±0.24	2.54±0.26	0.21	0.58	2.46±0.19	2.22±0.17	-0.24	0.9

During the study, we investigated effects of massage on the human body depending on the prevalence of sympathetic or parasympathetic autonomic regulation. The results showed that a more soothing influence of massage dominates in those people who have a dominant sympathetic component of the autonomic nervous system. (Table 2 and 3).

Table 2

Indices of variability of cardiac rhythm before and after massage in subjects with different stress indices

INDEX	SI 1-50 (n=24)				SI 50-150 (n=50)				SI > 150 (n=23)			
	before	after	diff.	t	before	after	diff.	t	before	after	diff.	t
HR	66.8±2.3	64.4±2.2	-2.40	0.7	76.0±2.1	73.5±1.7	-2.55	0.9	90.9±2.9	86.2±2.6	-4.73	1.2
SDNN	84.8±3.3	85.1±5.4	0.33	0.1	56.5±2.2	56.4±2.4	-0.14	0.1	32.2±2.5	41.7±4.4	9.55	1.9
SI	31.7±2.5	34.7±4.4	2.93	0.6	86.5±6.6	88.0±11.9	1.50	0.1	392.8±116	267.0±104	-125.8	0.8
IC	1.5±0.3	1.1±0.2	-0.39	0.9	3.0±0.5	2.2±0.3	-0.76	1.4	5.4±1.8	4.0±1.1	-1.44	0.7
PARS gen.	4.3±0.4	4.3±0.4	0.00	0.0	3.6±0.4	3.6±0.4	-0.09	0.2	4.8±0.5	3.5±0.6	-1.36	1.7
PARS symp.	0.3±0.1	0.1±0.1	-0.20	1.3	1.6±0.3	2.7±0.2	-0.32	1.0	4.2±0.5	2.7±0.6	-1.45	2.0

PARS p/symp.	3.9±0.4	4.1±0.4	0.20	0.4	2.1±0.3	2.4±0.3	0.27	0.7	0.6±0.2	0.7±0.2	0.09	0.3

Table 3 **Indices of variability of cardiac rhythm before and after massage in subjects with different vegetative status by PARS**

Index	PARS parasympathetic (n=46)				PARS equal (n=12)				PARS sympathetic (n=39)			
	before	after	diff.	t	Before	after	diff.	t	before	after	diff.	t
HR	69.3±1.8	67.1±1.7	-2.15	0.9	81.8±4.5	79.8±3.0	-2.0	0.9	87.5±2.6	82.6±2.4	-4.93	1.4
SDNN	73.6±3.3	73.5±4.0	-0.15	0.0	49.8±3.2	50.5±6.3	0.67	0.1	38.8±3.6	45.9±3.9	7.13	1.3
SI	50.9±5.4	50.8±5.2	-0.07	0.0	115±17.6	129.3±37.8	14.0	0.3	308.9±91.7	216.3±78.7	-92.6	0.8
IC	1.9±0.4	1.6±0.2	-0.35	0.8	3.4±0.6	2.2±0.4	-1.18	1.7	5.1±3.6	1.3±0.9	-1.46	0.9
PARS gen.	3.9±0.3	3.9±0.3	-0.04	0.1	3.5±0.3	4.0±0.5	0.5	0.8	4.7±0.5	3.4±0.5	-1.27	1.9
PARS symp.	0.6±0.2	0.5±0.1	-0.07	0.4	2.2±0.3	2.0±0.5	-0.17	0.3	3.8±0.4	2.3±0.5	-1.53	2.5
PARS p/symp.	3.4±0.3	3.4±0.3	0.04	0.1	1.3±0.3	2.0±0.4	0.67	1.4	0.9±0.2	1.2±0.3	0.33	0.9

Thus, the results suggest that massage by plastic vaccum cups to a greater extent restore the organism after mental and physical exertions, as compared to passive recreation, mainly in patients with sympathicotony.

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