



Published by DiscoverSys

Physical rehabilitation of middle-aged women with vegeto-vascular dystonia in Russia



CrossMark

Svetlana Vasilyevna Shmeleva^{1*}, Elena Nikolaevna Latushkina²,
Alexandra Stanislavovna Scheglova², Ekaterina Igorevna Dubrovinskaya²,
Angela Valerievna Romanova², George Ramazovich Dushevin¹,
Yanina Vasilevna Shimanovskaya²

ABSTRACT

Introduction: Vegeto-vascular dystonia (VSD) resembles a common condition in women nowadays. Its manifestations exert a weakening effects constellation on the central nervous system (CNS) and the bodily process. With insufficient effect from medical efforts in VSD, the level of viability of the organism inevitably decreases. The purpose of the study was to assess the possibilities of the author's version of physiological rehabilitation of women with VSD.

Materials and methods: The study involved 2 groups of women aged 27-35 years (mean age 30.8 ± 2.1 years). Each group consisted of 25 women with a diagnosis confirmed at least 3 years ago by the VSD. In the first group of women, rehabilitation was carried out according to the author's method, whereas the traditional scheme of rehabilitation is applied in second group. Rehabilitation activities lasted for 6 months, evaluated by functional tests using Student's

t-test.

Results: The author's complex of rehabilitation measures proved to be very effective in first group, including a rational diet, therapeutic gymnastics, electrostimulation, massage and hydrotherapy. The complex of rehabilitation measures developed by the authors was able to provide the most complete restoration of the physical condition of women with VSD by achieving a balance between the activator and inhibitory processes in CNS also the optimal tone of their vessels.

Conclusion: The study proved that the author's version of rehabilitation of women with VSD was capable of completely eliminating somatic manifestations accompanying vegetative vascular dystonia and increasing the adaptive capabilities of the body in daily life.

Keywords: central nervous system, rehabilitation, somatic, vegeto-vascular dystonia

Cite this Article: Shmeleva, S.V., Latushkina, E.N., Scheglova, A.S., Dubrovinskaya, E.I., Romanova, A.V., Dushevin, G.R., Shimanovskaya, Y.V. 2019. Physical rehabilitation of middle-aged women with vegeto-vascular dystonia in Russia. *Bali Medical Journal* 8(3): 625-629. DOI: [10.15562/bmj.v8i3.1122](https://doi.org/10.15562/bmj.v8i3.1122)

¹K.G. Razumovsky Moscow State University of technologies and management (the First Cossack University) RAZUMOVSKY MSUTM (FCU), Moscow, Russia

²Russian State Social University, Moscow, Russia

*Corresponding to:
Shmeleva SV; K.G. Razumovsky Moscow State University of technologies and management (the First Cossack University, Moscow, Russia;
ilmedv1@yandex.ru

Received: 2018-03-27
Accepted: 2019-10-22
Published: 2019-12-01

INTRODUCTION

Vegeto-vascular dystonia (VSD) in recent years resembles a common condition in women.¹ Its manifestations weaken the central nervous system and the body as a whole.^{2,3} This is due to the dysregulation of blood flow, a decrease in the effectiveness of respiratory and anabolic processes throughout the body.^{4,5} As a result of the lack of treatment of the VSD, a gradual decrease in the level of viability of the organism develops.^{6,7} This point should be taken into account when improving population-based health aspect, particularly for female.⁸

It has been noted that violations of vascular regulation are associated with changes in nervous processes that are hereditary in nature.⁹⁻¹² At the same time, with a competent rehabilitation process,

it is possible to optimize the physiological state of the human vascular system and the activity of many centers of its central nervous system.^{13,14} It is proved that in the case of competent provision of optimal conditions for the restoration of the organism, it is possible to interrupt the development of dysfunctions beginning in it and restore the normal course of physiological processes.^{15,16}

There are many methods of rehabilitation, but their effectiveness is not always satisfactory.^{17,18} In this regard, there is a continuing need to continue improving the rehabilitation approaches with a view to improving their effectiveness, especially in women with VSD phenomena. Hence, the purpose of the study was to assess the possibilities of the author's version of physiological rehabilitation of women with the phenomena of the VSD.

MATERIALS AND METHODS

The study was approved by the local ethics committee of the Russian State Social University on September 15, 2016 (protocol No. 9). The study was conducted on the basis of the Russian State Social University in Moscow, Russia. The study involved 2 groups of women aged 27-35 years (mean age 30.8 ± 2.1 years). Each group consisted of 25 women with a diagnosis confirmed at least 3 years ago by the VSD.

In the first group of women, rehabilitation was carried out according to the author's method. In the second group the traditional scheme of rehabilitation is applied. In both groups, rehabilitation activities lasted for 6 months.

The author's methodology included the following activities. As an obligatory was the normalization of the regime of the day and a full 8-hour sleep. Taking into account the early awakening (6.00), the departure to sleep should necessarily occur at 22.00 throughout the rehabilitation period. For the first group of women, a dietitian made a diet with a full-fledged diet rich in vitamins and all the necessary substances. Breakfast of women of the first group consisted of cereals with nuts and fruits, eggs and freshly squeezed juices, as well as muesli, cottage cheese and cheese. Lunch included soups, salads, steam cutlets. For dinner, it was served menu with boiled fish or chicken with garnish (cereals or vegetables). All the women of the first group took oxygen cocktails on a course of 15 days 2 times a day at the beginning of the rehabilitation period and after 3 months.

Therapeutic gymnastics was also one of the components of rehabilitation. It was applied in the form of morning hygienic gymnastics. Each woman of the 1st group performed it individually, at home, after awakening in front of the shower and breakfast.

The rehabilitation complex also included a restorative massage, which was used throughout the rehabilitation period. This session were held 2 times a week.

The hydrotherapy used during the rehabilitation included a shower, a bath and a sauna. In the morning, women took a contrast shower (Scottish: first 35-40 °, then 10-20 °); In the evening - a warm shower (25-30°). Once a week, the women took the optimal temperature (36-37° C) before bedtime, followed by a rain shower of 35-36°. Once a month, a trip to the sauna was organized (2 visits for 7 minutes at a temperature of 80° and humidity 10%) followed by gentle massage using techniques such as stroking, rubbing, shaking and shallow kneading for 10 minutes.

Electro-stimulation consisted of 2 seven-day courses for 10 minutes. The first course was conducted one month after the commencement of the rehabilitation period, the second five months after the commencement of rehabilitation.

The scheme of the author's version of rehabilitation carried out in the first group of women is reflected in [Table 1](#).

The following methods are used to assess the functional state of women. The Stange test was performed, which is characterized by the duration of the delay in breathing after the maximum inspiration. The test was conducted while sitting. Evaluation of a sample with a breath delay on inspiration: excellent -> 60 s; well - 45-60 s; satisfactory - 30-45 seconds.¹⁹

The objective indicators were assessed: heart rate, blood pressure before and after the load. According to the obtained data, the Curdo Index was calculated = D/P , where D is the diastolic pressure, P is the pulse, which is normally close to 1. The blood circulation economization coefficient was also calculated, which reflects the blood outflow in 1 minute (BP systolic - AD diastolic), where blood pressure is arterial pressure, P is the pulse). Normally it is about 2600. Its increase indicates the beginning of disturbances in the work of the cardiovascular system.¹⁹

To determine the dynamics of the status of women and the possibility of comparing the results obtained between groups, the measured indicators

Table 1. Schedule of application of rehabilitation measures

Rehabilitation components	Start	1 month	2month	3month	4month	5month	6month
Rational Diet	+	+	+	+	+	+	+
Physiotherapy	+	+	+	+	+	+	+
Electrostimulation		+				+	
Reconstructive massage		+	+	+	+	+	+
Hydrotherapy	+	+	+	+	+	+	+

were determined at the end, after 3 and 6 months of rehabilitation.

The results were processed by Student's criterion (t). Statistical processing of received information was made with the help of a program package "Statistics for Windows v. 6.0" and "Microsoft Excel". Differences in data were considered reliable in case of $p < 0.05$.

RESULTS

The results obtained in the course of the study are shown in [Table 2](#). In assessing the baseline in both groups, no statistically significant observations were found for all the indicators considered. In both groups there was a decrease in women's resistance to hypoxia, the threshold of anaerobic metabolism, and the functional readiness of the cardiovascular system. During the rehabilitation activities in both groups, the positive dynamics of the parameters considered were more pronounced in the first group.

Women of the 1st group after 6 months of rehabilitation activities noted improvement in overall well-being and increased mood. Sleep normalized, a feeling of fatigue and the phenomenon of VSD did not arise; sore throat, muscle aches and pains in the knee joints also did not disturb them. In women of the second group, the lability of pulse and arterial pressure retained irritability, fatigue and headaches. They also had insomnia at night and

drowsiness during the day. In addition, they noted frequent pains in the throat, diffuse muscular pain, which intermittently interfered with them.

DISCUSSION

When assessing the indicators of resistance to hypoxia in women of groups 1 and 2 as a result of rehabilitation, one can note an increase in these indicators during the entire observation. At the same time, the results achieved in the first group were more preferable. This proves the higher efficiency of the author's rehabilitation program for the vascular system of women with VSD.²⁰ This was also confirmed when comparing the resistance to hypoxia of women of both groups at different times of the examination.^{21,22} It becomes clear that the complex of rehabilitation measures developed and applied by the authors is able to provide a complete restoration of the physical condition and is able to help women with VSD achieve a balance between the activator and inhibitory processes in the central nervous system also the optimal tone of their vessels, hence, optimize the physical state.²³ This phenomenon was confirmed by the values of hemodynamics and the computed Kerdo index and the coefficient of circulatory economization obtained as a result of rehabilitation.^{24,25}

Based on the data obtained in the course of the study, it can be concluded that against the background of the author's version of rehabilitation

Table 2. Dynamics of the indicators taken into account in the surveyed ($M \pm m$)

Nº number	Rehabilitation Month	Resistance to hypoxia (Stange's test), seconds	Heart rate before the load, count	Heart rate after exercise, count	Systolic blood pressure, mm Hg	Diastolic blood pressure, mm Hg	Kerdoindex, points	Coefficient of economic circulation, points
1 n=25	0	48.5±0.39	84.1±0.51	190.3±0.73	102.1±1.22	61.3±0.71	0.73±0.007	3431.3±2.17
	3	56.3±0.42 p<0.05	75.2±0.62 p<0.05	172.3±0.68 p<0.05	109.3±1.03 p<0.05	68.5±0.69 p<0.05	0.91±0.012 p<0.01	3068.1±2.07 p<0.05
	6	63.9±0.37 p<0.01 p ₁ <0.05	63.6±0.66 p<0.01 p ₁ <0.01	152.3±0.85 p<0.01 p ₁ <0.01	122.3±1.21 p<0.01 p ₁ <0.01	75.4±0.63 p<0.01 p ₁ <0.05	1.18±0.014 p<0.01 p ₁ <0.01	2682.3±1.99 p<0.01 p ₁ <0.05
2 n=25	0	49.2±0.47	83.6±0.58	196.8±0.65	102.4±1.36	62.4±0.82	0.75±0.017	3318.9±2.29
	3	52.4±0.35	78.6±0.71	187.3±0.75	103.8±1.28	65.4±0.73	0.83±0.013 p<0.05	3018.2±1.95
	6	57.8±0.40 p<0.05	73.4±0.62 p<0.05	175.2±0.71 p<0.05	110.6±1.37 p<0.05	70.2±0.86 p<0.05	0.95±0.019 p<0.01	2965.3±1.71 p<0.05

Legend: p - reliability of the dynamics of the indicators considered, p₁ - reliability of differences between groups in terms of observation. Reliability of differences in baseline indicators was not detected.

measures in women with VSD, there is a pronounced improvement in the hemodynamics process with an increase in their resistance to hypoxia.²⁶ Women of the second group showed a modest improvement in hemodynamic parameters with achievement of sub-physiological indicators.^{27,28} This proves the incomplete recovery in subjects and the preservation of the possibility of the transition of functional pathology into organic pathology. These data also stated a positive influence of the technique of rehabilitation used in the first group for liquidation of functional infringements in female and increase of its adaptable possibilities to daily loadings.

CONCLUSIONS

The use of the author's complex of rehabilitation measures, including a rational diet, therapeutic gymnastics, electrostimulation, massage and hydrotherapy, ensured the pronounced recovery of middle-aged women with VSD. High efficiency of the applied complex was shown when comparing the results of its application with the results of using the traditional rehabilitation complex for this pathology. The obtained data indicate the advantage of using the author's rehabilitation technique in women's VSD. The woman was able to completely eliminate the somatic manifestations that accompany the VSD, and improve the adaptive capabilities of the body for everyday life.

CONFLICT OF INTEREST

All authors declare there is no conflict of interest regarding publication of this manuscript

SOURCES OF FINANCING

The study was conducted at the expense of the authors.

REFERENCES

1. Strelkov VI, Zavarzina OO, Shmeleva SV, Kartashev VP, Savchenko DV. Psychological barriers in college teachers career «Helping professions». *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 2016;7(1):1938–1945.
2. Mikhaylova IV, Shmeleva SV, Makhov AS. Adaptive chess educational technology for disabled children. *Teoriya i praktika fiz. Kultury*. 2015;7:38–41.
3. Bonkalo TI, Shmeleva SV, Zavarzina OO, Dubrovinskaya YeI, Orlova YuL. Peculiarities of interactions within sibling subsystem of a family raising a child with disabilities. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 2016;7(1):1929–1937.
4. Makarova EV, Shmeleva SV, Kartashev VP, Karpova NV, Golcov AV. Dynamics of changes performance indicators of application of physical rehabilitation students with flaccid paresis. *Biology and Medicine*. 2015;7(3):107–115.
5. Medvedev IN, Lapshina EV, Zavalishina SYu. Activity of platelet hemostasis in children with spinal deformities. *Bulletin of Experimental Biology and Medicine*. 2010; 149(5):645–646.
6. Medvedev IN, Zavalishina SYu. Platelet Activity in Patients With Third Degree Arterial Hypertension and Metabolic Syndrome. *Kardiologiya*. 2016;56(1):48.
7. Medvedev IN, Savchenko AP, Zavalishina SYu, Krasnova EG, Kumova TA. Methodology of blood rheology assessment in various clinical situations. *Russian Journal of Cardiology*. 2009; 5:42–45.
8. Medvedev IN. A comparative analysis of normodipin and spirapril effects on intravascular activity of platelets in patients with metabolic syndrome. *Terapevticheskii Arkhiv*. 2007; 79(10):25–27.
9. Amelina IV, Medvedev IN. Evaluation of the dependence of mutagenesis intensity on activity of nucleolus organizer regions of chromosomes in aboriginal population of Kursk region. *Bulletin of Experimental Biology and Medicine*. 2008;145(1):68–71.
10. Amelina IV, Medvedev IN. Transcriptional activity of chromosome nucleolar organizing regions in population of Kursk region. *Bulletin of Experimental Biology and Medicine*. 2009; 147(6):730–732.
11. Amelina IV, Medvedev IN. Relationship between the chromosome nucleoli-forming regions and somatometric parameters in humans. *Bulletin of Experimental Biology and Medicine*. 2009;147(1):77–80.
12. Medvedev IN, Amelina IV. Evaluation of the relationship between chromosome aberrations and transcription activity of nucleolus organizer regions in indigenous Population of the Kursk Region. *Bulletin of Experimental Biology and Medicine*. 2010;149(3):332–336.
13. Medvedev IN, Gamolina OV. Lisinopril effects on platelet activity in patients with arterial hypertension and impaired glucose tolerance. *Russian Journal of Cardiology*. 2008;3:45–48.
14. Medvedev IN. Weakening Of Disaggregation Control Of Blood Vessels Over Platelets In Patients With Hyperuricemia. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 2018;9(4):711–717.
15. Medvedev IN, Kumova TA. Reduced platelet aggregation in losartan-treated patients with arterial hypertension and metabolic syndrome. *Russian Journal of Cardiology*. 2008;5:53–55.
16. Medvedev IN, Plotnikov AV, Kumova TA. Rapid normalization of platelet hemostasis in patients with arterial hypertension and metabolic syndrome. *Russian Journal of Cardiology*. 2008;2:43–46.
17. Medvedev IN. Features Of Disaggregation Effects Of Blood Vessels On Neutrophils In Patients With Hyperuricemia. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 2018;9(4):740–745.
18. Zavalishina SYu. Physiological Dynamics Of The Blood Coagulation System Activity In Calves During The Phase Of Dairy Nutrition. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 2018;9(5):680–685.
19. Rimmel JH. A conceptual Model for Identifying, Preventing, and Managing Secondary Conditions in People With Disabilities. *Physical Therapy*. 2011;91:1728–1739.
20. Zavalishina SYu. Anti-Coagulant And Fibrinolytic Activity Of Blood Plasma In Healthy Calves Of Dairy-Vegetative Nutrition. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 2018;9(5):753–758.
21. Medvedev IN. The Level Of Disaggregation Control Of Blood Vessels Over Erythrocytes In Patients With Type 2 Diabetes Mellitus. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 2018;9(4):760–765.

22. Zavalishina SYu. Physiological Mechanisms Of Hemostasis In Living Organisms. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 2018;9(5):629–634.
23. Zavalishina SYu. Functional Properties Of Anticoagulant And Fibrinolytic Activity Of Blood Plasma In Calves In The Phase Of Milk Nutrition. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 2018;9(5):659–664.
24. Makhov AS., Medvedev IN. The Physiological Role Of Mediators In The Central Nervous System. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 2018;9(5):579–583.
25. Medvedev IN. Severity Of Depression Of Vascular Disaggregation Effects On Neutrophils In Patients With Type 2 Diabetes Mellitus. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 2018;9(4):837–842.
26. Zavalishina SYu. Functional Activity Of The Blood Clotting System In Calves During The Phase Of Milk And Vegetable Nutrition. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 2018;9(5):720–725.
27. Medvedev IN. Disaggregation Control Of Blood Vessels Over The Activity Of Platelets In Patients With Type 2 Diabetes Mellitus. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 2018;9(4):792–797.
28. Medvedev IN. Influence Of Disaggregation Effects Of Blood Vessels On Erythrocytes In Patients With Impaired Glucose Tolerance And Abdominal Obesity. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 2018;9(4):906–911.



This work is licensed under a Creative Commons Attribution