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CINICALEXPOSITION

Neuroreflex Mechanism of Arterial Pressure Correction

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Narrative: An innovative non-pharmacological method of neuroreflex therapy for arterial hypertension (AH) is presented. It targets the key mechanism of AH pathogenesis the neurogenic mechanism, with the leading executive factor being increased activity of the sympathetic nervous system.

The method is characterised by safety, non-invasiveness, and high efficacy with a procedure duration of 15-30 minutes.

To obtain evidence of efficacy, a randomised clinical trial, which is the 'gold standard' of evidence-based medicine, has been initiated.

Indexing terms: Chiropractic; Arterial hypertension, neurogenic mechanism, treatment with neuroreflex method.

Introduction

Arterial hypertension (AH) remains one of the most significant medical and social problems of our time. This disease is widespread, poorly controlled in many patients, and is a leading risk factor for life-threatening cardiovascular complications such as myocardial infarction and stroke. (1)

According to the World Health Organization (WHO), approximately 1.28 billion adults aged 30-79 worldwide suffer from hypertension. This is about every third adult. (2) Therefore, the development of new methods for treating AH is an urgent problem.

Despite the achievements of recent decades, detailed study of risk factors and pathogenesis, neurohumoral and molecular mechanisms of blood pressure (BP) regulation, and the development of international clinical guidelines, key issues in AH treatment, remain unresolved. A fundamental problem in the treatment of arterial hypertension is that temporary pressure reduction with medications does not restore its natural regulatory mechanisms. (3)

> *... this is the first description of the neurophysiological method for diagnosing and correcting nervous system dysfunctions, demonstrating the potential of this approach ...'*

The article considers the key mechanism of arterial hypertension pathogenesis, the involvement of the central nervous system (CNS), the neurogenic factor, particularly the increased activity of the sympathetic nervous system, in triggering and maintaining high blood pressure levels. Correction of this neurogenic mechanism is carried out by the method of neuroreflex therapy, aimed precisely at this link in pathogenesis.

Gaps in Classical AH Treatment

Symptomatic approach: drugs suppress manifestations but do not affect the cause

Lifelong intake of antihypertensive drugs, the constant need to increase their dosages, side effects with kidneys, liver, and metabolism all suffering from antihypertensive agents.

Resistance is seen in 20-30% of patients, BP remains high even on three or more drugs, and indicators of disability and mortality practically do not decrease.

Modern treatment strategies, based on lifelong antihypertensive therapy, are aimed only at BP control, not at eliminating the cause of the disease.

> Correction of arterial pressure by the neuroreflex method involves searching for and diagnosing dysfunctional receptors that are the cause of increased BP: impaired baro-, chemo-, sympathico-, mechano-, nociceptors, etc., as well as their modalities.

Then, simultaneous stimulation of the primary dysfunctional receptor (the cause of increased BP) and the compensatory receptor, which the nervous system immediately creates for compensation at the moment of exposure to a damaging factor to avoid disrupting its regulatory functions, is performed. Then, a tendon reflex is performed: knee, biceps, triceps, etc. The moment of exposure to the damaging factor on the body is reproduced in a mild form. After this, the CNS returns to optimal regulation of arterial pressure and other functions.

Body manipulations are akin to working with a computer. If erroneous data is entered into a computer, then with normal software, the computer produces incorrect information. The same happens with the CNS, when sensory systems malfunction, regulation is disrupted, and discomfort, pain, impaired movement patterns, increased BP, and other symptoms appear.

For the first time, the historical and scientific foundations for applying the new method of neuroreflex diagnostics and therapy P-DTR (Proprioceptive-Deep Tendon Reflex) in the complex treatment of AH are demonstrated. The method was developed by surgeon-orthopedist, neurologist, neurophysiologist, kinesiologist Jose Palomar (Mexico) [4]. He was the first in the world to identify the relationships between sensory perception and motor reactions, explained them, and proposed a method for treating various diseases (patent No. 2722402, 2019).

Key advantages of Neuroreflex Correction of Arterial Pressure over traditional treatment

- Acts on the cause, not the symptoms

- Restores normal sensory and proprioceptive afferentation, the main mechanism of BP regulation failure
- Corrects dysfunctions of baro-, chemo-, sympathico-, mechano-, nociceptors, etc., associated with BP regulation
- Safety and absence of side effects
- Does not require medication intake or invasive interventions
- The effect after the course of therapy persists for a long time due to neuroplasticity
- Diagnosis of precise neurogenic disorders in each patient and a personalised approach to treatment (rather than 'template' drug prescription according to a scheme)
- Can be used as a complementary method in combination with other methods; suitable for patients with metabolic syndrome, diabetes, and any other comorbid pathologies.

Thus, it is correct to assert that the method of neuroreflex therapy can rightly be considered a promising hypothesis with a theoretical basis. Currently, its application is based on its positive five-year clinical testing, reliable results of efficacy and safety in treating limited groups of patients, in which statistically significant differences in all studied indicators were obtained when processing data before and after treatment using the Wilcoxon method. However, the absence of randomised controlled trials (RCTs), meta-analyses, systematic reviews meeting the criteria of evidence-based medicine does not allow classifying neuroreflex therapy as an intervention with proven efficacy, unlike many pharmacological drugs that have undergone a full cycle of clinical trials. There are no works on the application of the neuroreflex therapy method for AH in the available literature. The reason is that this method was proposed relatively recently. Currently, randomised clinical trials have only been initiated as part of a pilot project by the School of Neuroreflex Therapy. They require significant resources and time.

Neuroreflex therapy

Neuroreflex therapy is a new method in the complex treatment of hypertension, associated with the restoration of neurophysiology.

Considering the complex multi-level and multifactorial pathogenesis of AH, one cannot fail to note the important role of neural mechanisms and, in particular, the sympathetic nervous system (SNS) in triggering AH and its constant reflex involvement.

Hyperactivation of the SNS is a key pathogenetic mechanism in the development and maintenance of arterial hypertension, especially in the early stages. It does not merely accompany AH but is its triggering and sustaining mechanism, the driving force integrating the influence of stress, metabolic disorders, risk factors, and kidney dysfunction.

A promising direction appears to be the use of techniques aimed at correcting sensory afferentation and sensorimotor integration with subsequent reflex reset of the CNS. Neuroreflex therapy restores the possibility of optimal regulation of vascular tone. This opens up opportunities for developing targeted non-drug strategies capable of acting as a neurophysiological counterbalance to SNS hyperactivity. A comprehensive analysis of the neurogenic mechanism of arterial hypertension pathogenesis and determining its place and potential in the complex therapy of AH are key tasks addressed within this article

Historical and Scientific Foundations of Neuroreflex Therapy

The initial increase in BP most often occurs as a result of exposure to a psychogenic factor on a healthy organism, with which depressor mechanisms can cope by activating baroreflex mechanisms. With a sharp rise in BP, baroreceptors of the aorta and carotid sinus are activated (a fast-acting compensation mechanism) and send signals to the vasomotor centre of the medulla oblongata, leading to a decrease in sympathetic tone and an increase in parasympathetic (vagal) tone, returning pressure to normal. But when depressor mechanisms are depleted, SNS tone becomes predominant.

The physiological foundation of the neurogenic factor in hypertension pathogenesis was laid in the 19th century.

Claude Bernard

Claude Bernard (French physiologist, 1813-1878) laid the foundations of the neurogenic theory of circulatory regulation, which remain relevant to this day. (5, 6, 7) His experiments first showed that damage to the floor of the fourth ventricle of the brain causes an increase in arterial pressure, which became direct proof of the CNS role in BP regulation. Bernard discovered the vasomotor function of nerves and established that the nervous system actively controls blood vessel diameter. The existence of vasomotor nerves was established.

Walter Cannon

Walter Cannon (USA) in his book 'The Wisdom of the Body' (1932) developed the concept of homeostasis and described in detail the role of the sympathetic nervous system (SNS) in the 'fight or flight' response, which is directly related to a sharp rise in BP. (8) Cannon was one of the key researchers who radically changed the understanding of the functions of the sympathetic nervous system (SNS). Before him, the SNS was viewed as a system activated only episodically during moments of stress. Cannon proved that its role is more fundamental, it is the main tool for maintaining homeostasis, a key regulator of the constancy of the internal environment. (9) The SNS works constantly, finely modulating organ function, regulating blood vessel diameter to maintain constant arterial pressure. Cannon emphasised that the SNS acts as a single whole; during strong activation it is involved almost entirely and immediately, affecting the entire organism. This is necessary to mobilise all organs and systems to overcome a threat. Cannon made a significant contribution to proving that the effects of the SNS are mediated not only by direct nerve impulses but also by the release of specific chemical substances, catecholamines (adrenaline and noradrenaline). The SNS is functionally closely related to baroreceptors, transmitting impulses to the vasomotor centre of the medulla oblongata, which sends signals to blood vessels via efferent fibres to increase or decrease BP.

Baroreceptors

The classical view is that baroreceptors are 'mechanosensitive' nerve endings in the arterial wall (in the carotid sinus and aortic arch) that stretch when pressure increases and send signals to the medulla oblongata. In hypertensive patients, baroreceptor sensitivity is reduced; they gradually reset to a higher pressure level. In hypertension, the arterial wall thickens and becomes rigid. Because of this, it stretches

less when pressure rises, and baroreceptors simply do not receive an adequate mechanical stimulus to activate.

Sudakov KV (10) cites three researchers; Carl Ludwig, Henry Pickering Bowditch, and Corneille Heymans (Nobel Prize 1938), who discovered the afferent (sensory) and efferent links and the closing of the baroreflex arc. This approach fully corresponds to the theory of functional systems developed by Sudakov, as it requires considering holistic, closed regulatory circuits, not their individual parts.

Thus, by the beginning of the 20th century, it was firmly established that the SNS regulates vascular tone; in the CNS (medulla oblongata) there are centres controlling arterial pressure; sympathetic nerves can quickly and powerfully increase BP.

Development of the Neurogenic Theory of Hypertension in the 20th Century

Contribution of GF Lang and AL.Myasnikov

Lang GF was one of the founders of the neurogenic approach to hypertension. In his classic work 'Hypertensive Disease', he formulated the key idea. (11) Hypertensive disease is a disease of regulation, arising initially as a neurosis of the higher centres of nervous regulation of vascular tone (vasomotor centres), located in the cerebral cortex, hypothalamus, and medulla oblongata. He linked this to prolonged psycho-emotional tension, which was revolutionary for its time.

Myasnikov AL, being a student of Lang, developed and supplemented his theory, creating a more complex and detailed concept. (12)

Both scientists viewed the sympathetic nervous system as the cornerstone in the pathogenesis of hypertensive disease. The role of the SNS: constant psycho-emotional tension, stress, and conflicts (which they considered the main cause of AH) lead to over-excitation of cortical and subcortical centres. This excitation, in turn, is transmitted through the SNS to peripheral vessels, causing their persistent spasm and increased peripheral resistance. The works of these scientists laid the foundation for understanding hypertension as a neurohumoral disorder, which remains relevant in modern cardiology.

The historical aspect clearly demonstrates that the neurogenic concept was not refuted but was deepened and became an integral part of our understanding of arterial hypertension pathogenesis.

The Key Role of the Neuroreflex Mechanism in the Pathogenesis of Arterial Hypertension

Principles of its therapeutic correction

A cornerstone of modern neurophysiology is the concept that the sympathetic nervous system performs its functions not autonomously, but under the control of higher levels of the CNS. This ensures the integration of autonomic reactions into the organism's holistic behavioural and emotional activity. The sympathetic nervous system is not an autonomous but a strictly controlled system. Its activity is an accurate and dynamic reflection of the integrative activity of all higher parts of the CNS. (13, 14, 15)

When factors that increase BP act on the body, the depressor system reduces it using baro- and chemoreceptors. If the stress is strong or chronic, the depressor mechanisms can become depleted and fail to cope with frequent BP increases.

Chronic emotional stress gradually disrupts the function and structure of the prefrontal cortex (PFC) of the brain. Sensory information from the sense organs enters the thalamus, the main subcortical sensory organ, which receives all sensory information (except olfactory). First, the thalamus directs information to the amygdala, as this is a fast, evolutionarily ancient pathway; its task is to provide an instant reaction to a

potential threat, even without a full analysis of the situation. The amygdala instantly evaluates this signal exclusively as potentially dangerous and, without waiting for confirmation from the cortex, activates the hypothalamus and brainstem. The body reflexively performs a protective action without conscious awareness of the situation. Under chronic stress, the PFC weakens, and the amygdala becomes hyperactive; through its connections with the hypothalamus, it further activates the hypothalamic-pituitary-adrenal axis and the sympathetic nervous system, which intensifies hypertension and closes the vicious cycle. (16)

Increased sympathetic tone

Direct measurements of neural activity (micro-neurography) unequivocally show that in patients with essential hypertension, the tonic activity of sympathetic nerves going to muscles, kidneys, and blood vessels is chronically elevated. This is not just a theory but a measurable fact. (17, 18)

Mediated impact

Stimulation of catecholamine (adrenaline, noradrenaline) release from the adrenal medulla enhances and prolongs these effects.

Role of the Kidneys

It has been discovered that increased sympathetic tone is also directed to the kidneys, constricting blood vessels and stimulating renin production, sodium and water retention, thereby increasing BP.

Humoral systems join

The renin-angiotensin-aldosterone system (RAAS), sodium and water retention, cardiac and vascular remodelling, and target organ damage. Now the changes become not just functional but morphological. (19, 20)

Thus, the SNS is the integral driver of hypertension pathogenesis. It is the initiator, a sustaining factor, and the connecting link. The SNS integrates the influence of numerous risk factors into a unified pathogenetic process.

Since the SNS is constantly involved in the leading trigger and sustaining pathogenetic mechanism of hypertension, it is logical to assume that there are methods for neurophysiological correction of these mechanisms, similar to how pharmacological agents influence individual links in the pathogenesis of hypertension. One such method proposed within alternative medicine is the neuroreflex therapy method.

The principles of treatment according to the neuroreflex therapy method are based on a strict scientific concept.

In the late 19th and early 20th centuries, the role of the nervous system in regulating physiological processes was actively studied. Sechenov IM (21) laid the foundations of Russian physiology and scientific psychology. His main discovery was central inhibition, proving that the brain not only excites but also suppresses reflexes.

Academician Pavlov IP developed the theory of nervism, emphasising the leading role of the CNS in controlling the work of internal organs. (22) He showed that the nervous system can form stable

connections between stimulus and response. These studies laid the foundation for understanding the neurogenic nature of functional disorders, which later became a key element of the neuroreflex therapy method.

Sir Charles Sherrington (Nobel Prize 1932) laid the foundations of neurophysiology and introduced the concept of '*integrative action of the nervous system*'. His work on reciprocal innervation (coordinated tension of one muscle group and relaxation of antagonists) and on reflex arcs is a cornerstone of neurophysiology. Sherrington viewed the nervous system as an integrated whole. (23) He introduced and described in detail the term '*proprioception*', the sense of the position and movement of one's own body in space, provided by receptors in muscles, tendons, and joints. It was Sherrington who laid the neurophysiological foundation without which the existence of the neuroreflex therapy method would have been impossible. This method is the practical embodiment of the principles he discovered: the integrative role of the nervous system and the critical importance of proprioceptive afferentation for controlling functions.

Thus, Sherrington's work confirms the scientific validity and logical consistency of the theoretical base of the neuroreflex method from the perspective of classical neurophysiology. Correction of proprioception is the cornerstone of the entire methodology of neuroreflex therapy. The name of the method (P-DTR) directly refers to this.

> The main idea is that the distortion of the proprioceptive signal from a specific receptor is the primary cause of imbalance, pain, increased BP, and other symptoms. All diagnosis and treatment using the neuroreflex therapy method are built on finding and 'zeroing out' dysfunctional receptors and distorted signals.

Prof. Bernstein NA ('On the Construction of Movements', 1947; biomechanics and physiology of movements) showed that movement is not simply a command from the brain to the muscle but a complex process with feedback, where sensory afferentation (signals from the body to the brain) is critically important for movement correction. Neuroreflex therapy is entirely a technique for working with this afferentation. (24) The method works not only with proprioceptors but with the entire sensory system.

The works of Sherrington, Bernstein, and other physiologists showed that proprioceptive afferentation (signals from muscles, tendons, organs, etc.) plays a key role in maintaining postural balance and movement coordination. This became the key foundation of the neuroreflex therapy method, dysfunctions and chronic pain, are considered as a consequence of distorted proprioceptive information, not pain in individual muscles, joints, etc.

Kendall HO' book 'Muscles: Testing and Function' became a cornerstone of modern physical rehabilitation, orthopaedics, and occupational therapy. (25) Any dysfunctional signal affects the myotatic reflex of muscles, and consequently changes the muscular response during manual muscle testing (MMT). Feedback from the CNS can be obtained by determining the myotatic reflex of muscles. Unlike its role in correcting joint biomechanical disorders, MMT in the context of neuroreflex therapy is used for a fundamentally different purpose, to modulate the functional state of the central nervous system. The neuroreflex therapy method is a neurophysiological method for diagnosing and correcting nervous system dysfunctions.

Its key idea: the cause of many pain syndromes and dysfunctions is not tissue damage but erroneous sensory (including proprioceptive - deep) afferentation, transmitting a false signal from dysfunctional receptors to the central nervous system.

> The key role of neuroreflex mechanisms in the pathogenesis of arterial hypertension is the basis for correcting BP and other dysfunctions.

Correction of BP as a counterbalance to the neurogenic nature of hypertension development is based on identifying and diagnosing dysfunctional receptors; impaired baro-, chemo-, sympatheto-, mechano-, nociceptors, etc., as well as their modalities. There is a system of stimuli and anti-stimuli for working with receptors. The modalities of dysfunctional receptors are determined.

BP correction involves simultaneous stimulation of the primary and compensatory receptors followed by reproduction of a tendon reflex, knee, biceps, triceps. After this, dysfunctional sensory afferentation to the central nervous system ceases, and it begins to form optimal regulatory commands. Treatment takes 15-30 minutes per session, is effective, safe, painless, without the use of medications, invasive procedures, or equipment. A small sample showed a significant improvement in studied indicators after correction with reliability $p < 0.0001$ according to the Wilcoxon test.

Conclusion

The neurogenic mechanism of arterial hypertension has received a counterbalance in the form of a correction method, neuroreflex therapy.

It is important to note that, to date, the scientific literature not only completely lacks information on large randomised studies and meta-analyses but also any publications dedicated to the application of the neuroreflex therapy method for treating arterial hypertension. Thus, the present work is the first description of the method, demonstrating the potential of this approach.

The scientific and medical community should be acquainted with this new method in order not to miss potential benefits that may be discovered in the process of independent verification and replication of results; in the course of collective analysis, criticism, and improvement (other experts may see in the idea what the author did not see, propose improvements, or new research directions); in the process of open discussions and scientific debates (to subject it to rigorous testing and either confirm its value or reject it, saving time and resources); in the course of timely implementation into practice (if the idea is truly useful, then the sooner it becomes known, the faster it will begin to be applied to improve people's health and save lives)

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References

1. 2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults. 2018 / P.K. Whelton, R.M. Carey, W.S. Aronow et al. // Journal of the American College of Cardiology. – 2018. – Vol. 71, No. 19. – P. e127–e248. – DOI: 10.1016/j.jacc.2017.11.006.
2. 2021 ESC Guidelines on cardiovascular disease prevention in clinical practice [Electronic resource] / F. L. J. Visseren, F. Mach, Y. M. Smulders, et al. // European Heart Journal. – 2021. – Vol. 42, Issue 34. – P. 3227–3337. – Access mode: https://doi.org/10.1093/eurheartj/ehab484
3. Clinical guidelines. Arterial hypertension in adults [Electronic resource] / Russian Society of Cardiology. – 2020. – 155 p. – Access mode: (URL of the official RSC website).
4. Palomar Lever J. Method for diagnosing and restoring reflex muscular activity: patent No. 2722402 Russian Federation: IPC A61B 5/00, A61H 39/00 / Palomar Lever J., Svet M. S.; applicant Veles Holding AG. – No. 2019123942; filed 29.07.2019; published 29.05.2020. – Access mode https://fips.ru/iiss/document.xhtml?faces-redirect=true&id=ac91f1ee47814b8995f7f537cd0739b3
5. Agadzhanyan, N. A. Normal Physiology: textbook / N. A. Agadzhanyan, V. M. Smirnov. – 4th ed., rev. and add. – Moscow : Meditsinskoye Informatsionnoye Agentstvo, 2020. – 520 p. : ill. – ISBN 978-5-9986-0432-5.
6. Ben-Sasson, Sh. Illustrated Physiology / Sh. Ben-Sasson, R. Ham-Moses, E. Maizels; trans. from English ed. by V. V. Zinchuk. – Moscow : BINOM. Laboratoriya znaniy, 2020. – 224 p. – ISBN 978-5-00101-954-6.
7. Modell, H. et al. (2015) 'A physiologist's view of homeostasis', Advances in Physiology Education, 39(4), pp. 259–266. DOI 10.1152/advan.00107.2015.
8. Cannon W. B. The Wisdom of the Body. – 2nd ed., rev. and enl. – New York : W. W. Norton & Company, 1939. – 333 p.
9. Raytseva, M. L. Grebenevoy; ed. and with preface by V. S. Raytsev. 2e. Moscow : Nauka, 1966. 191 p. : ill. – Subject index: p. 189–190.
10. Sudakov, K. V. Physiology of the Heart / K. V. Sudakov, V. S. Sluginov. Moscow : Meditsinskoye Informatsionnoye Agentstvo, 2015. 408 p. –ISBN 978-5-9986-0214-9.
11. Lang G. F. Hypertensive Disease. L.: Medgiz, 1950. 496 p. [In Russian].
12. Myasnikov, A. L. Hypertensive Disease / A. L. Myasnikov. Moscow : Medgiz, 1954. – 892 p.
13. Braunwald, E. Braunwald's Heart Disease: A Textbook of Cardiovascular Medicine: in 4 vols. / [ed.] E. Braunwald; trans. from English ed. by E. V. Shlyakhto. 11e, rev. and add. Moscow : Reed Elsevier, 2016. Vol. 1. 711 p. : ill. – ISBN 978-5-91713-233-5 (v. 1). – ISBN 978-5-91713-234-1.
14. Wein, A. M. Autonomic Disorders: Clinic, Diagnosis, Treatment / A. M. Wein, T. G. Voznesenskaya. Moscow : OOO "Meditsinskoye Informatsionnoye Agentstvo", 2003. 752 p. ISBN 5-89481-124-7.
15. Schmidt R. Human Physiology: in 3 volumes = Human Physiology / ed. by R. Schmidt, G. Thews; translation from English ed. by V. I. Kobrin, N. N. Alipov, P. G. Kostyuk. 3ed, rev. and add. – Moscow : Mir, 2005. Vol. 1. 323 p. : ill. ISBN 5-03-003575-3.
16. Tawakol, A. Relation between resting amygdalar activity and cardiovascular events: a longitudinal and cohort study / A. Tawakol, A. Ishai, R. A. P. Takx [et al.] // The Lancet. – 2017. Vol. 389, No. 10071. P. 834–845. – DOI: 10.1016/S0140-6736(16)31714-7.

17. Guyton, A. C. Medical Physiology. A. C. Guyton, J. E. Hall; trans. from English; ed. by V. I. Kobrin. Moscow : Logosfera, 2008. 1296 p. ISBN 978-5-98657-013-6.

18. Grassi, G. Sympathetic neural mechanisms in hypertension. G. Grassi. Circulation Research. 2024. Vol. 134, no. 8. P. 965-980. DOI: 10.1161/CIRCRESAHA.124.323515.

19. Apresyan A. G. Pathophysiology of Arterial Hypertension: educational-methodical manual. A. G. Apresyan, T. S. Gorziy, M. D. Denisenko, O. P. Sibilev; NWSU named after I.I. Mechnikov. – Saint Petersburg : NWSU named after I.I. Mechnikov, 2023. – 48 p.

20. Karpov Yu. A., Sorokin E. V. The Role of the Renin-Angiotensin-Aldosterone System in the Cardiovascular Continuum // In: Prevention of Cardiovascular Diseases in Real Clinical Practice / ed. by Yu. A. Karpov, E. V. Sorokin. – Moscow : Media Sfera, 2018. – P. 45-62.

21. Sechenov, I. M. Reflexes of the Brain / I. M. Sechenov. Moscow: AST, 2020. 320 p. (Library of Natural Science). ISBN 978-5-17-118525-7.

22. Pavlov, I. P. (1927). Lectures on the Work of the Cerebral Hemispheres. Leningrad: Publishing House of the USSR Academy of Sciences.

23. Sherrington CS. The Integrative Action of the Nervous System. Charles Scribner's Sons; 1906.

24. Bernstein N.A. O postroenii dvizhenii [On the Construction of Movements]. Moscow: Medgiz; 1947.

25. Kendall H. O. Muscles: Testing and Function / H. O. Kendall, F. P. Kendall, G. E. Wadsworth; ed. [and with preface] K. Frederiks. 2e. – Baltimore : The Williams & Wilkins Company, 1971. – 326 p.

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Dr. José Palomar Lever was born in the capital of the Mexican state of Jalisco – Guadalajare. At the age of 17, he began to study medicine at the Autonomous University Guadalajara, Universidad Autónoma de Guadalajara (UAG) and passed, in addition,Orthopaedic Surgery and Traumatology Course at the University of the Army and Air Force, Universidad del Ejercito y Fuerza Aérea (UDEFA). From 1984 to 1988, José Palomar was an orthopaedic surgeon at the Institute of Reconstructive and Plastic Surgery in Jalisco and later completed specialised training in minimally invasive spine surgery at the Texas Back Institute in Dallas.

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