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Effectiveness of P-DTR treatment for athletes and patients with physical inactivity

José Palomar Lever, Anatoly Alexandrovich, Mikhail Zabrodin, & Lina L Kuznetsova

Narrative: The purpose of the work was to study the effectiveness of treatment and rehabilitation with a new method of therapy, P-DTR (Proprioceptive Deep Tendon Reflex). The P-DTR method is intended for the diagnosis, treatment and rehabilitation of injuries and diseases; it is a reflexive way of working with somatic dysfunctions in the human body.

Materials and methods: 47 people were examined and treated using the P-DTR method: 17 athletes and 30 patients with physical inactivity and not involved in sports. The group of athletes had sports injuries; in the group of patients with physical inactivity, there was chronic pain in the spine and joints associated with a sedentary lifestyle. In all subjects, symptoms were studied, graded on a VAS scale from 0 to 10 in the area of the patient's complaints, muscle strength using dynamometry, joint mobility using goniometry, innervation, emotional state using the HADS questionnaire.

Discussion: After treatment with the P-DTR method, both groups showed significant improvement in all parameters without exception. Pain syndrome decreased most significantly in both groups and muscle strength increased. The index of joint mobility after treatment also increased in both groups.

Conclusion: treatment with the P-DTR method is safe, effective, painless, does not require drugs, injections or surgeries, or complex equipment, takes 15-30 minutes and has no contraindications.

Indexing terms: Chiropractic; Arterial hypertension, neurogenic mechanism, treatment with neuroreflex method' clinical effectiveness; Proprioceptive Deep Tendon Reflex; treatment of athletes and people with physical inactivity.

Aim of this work

The aim of this work was to study the effectiveness of treatment and rehabilitation with a new method, P-DTR (Proprioceptive Deep Tendon Reflex), developed and proposed by José Palomar, a neurophysiologist, kinesiologist, and orthopaedic surgeon; the method is protected by patent No. 2722402, 2019. (5, 6, 7)

The P-DTR method is a neuro-reflex approach based on correcting proprioceptive distortions and sensorimotor integration to restore optimal CNS function and eliminate dysfunctions. This rehabilitation method is particularly relevant for athletes engaged in heavy sports such as boxing, wrestling, or weightlifting, where the risk of injury during training and competitions is high.

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Introduction

The relevance of treating musculoskeletal disorders due to their high prevalence in the population is undeniable. A special place is occupied by injuries in heavy sports, boxing and wrestling. The P-DTR method has been tested for five years in medical institutions in a number of major cities of the Russian Federation and has shown high effectiveness. (3) Therefore, it is important to scientifically prove the safety and effectiveness of the P-DTR method and introduce it into the mainstream of evidence-based medicine.

The P-DTR method:

Key principles and mechanism of action

The P-DTR method is intended for the diagnosis, treatment, and rehabilitation of injuries and diseases; it is a reflexive way of working with somatic dysfunctions in the human body. The P-DTR method relies on neurophysiological principles, including modulation of afferent sensory input, central integration of signals, and their influence on motor control.

The body interacts with the external environment through sensory organs and receptors located in the skin, muscles, all internal organs, and which react to any change in the external and internal environment of the body. Receptors are divided into three classes:

- Nociceptors: receptors that carry information about damage; receptors for dull and sharp pain, itching, and tickling; thermal receptors (heat, cold).
- Mechanoreceptors: receptors for fine touch (touch with an object less than 3 mm), pressure, vibration, stretch, contraction;
- Chemoreceptors: signal chemical changes (oxygen level, pH, acidity) [3].

Receptors convert the energy of a stimulus into impulses, which are transmitted from the receptors along nerve fibres to different levels of the nervous system. They provide the brain with the information necessary for the optimal functioning of the body.

The P-DTR method uses specific stimuli for each type of receptor to correct distorted signals and restore balance in the body.

The brain operates on the basis of reflexes:

- unconditioned or innate (e.g., withdrawing a hand from something hot), and
- conditioned, acquired through experience (e.g., a dog salivating at the sound before feeding).

P-DTR focuses on defensive reflexes. A stimulus that excites a nociceptor and the unconditioned response in the form of a withdrawal pattern are linked into a single defensive reflex, which leaves a trace in the nervous system for a long time. The nervous system compensates for disturbances in the area of a scar, injury, etc., by all available means, but over time, the structures that compensate for the primary dysfunction also lose stability, and discomfort or pain arises in them. If this compensation is insufficient, the nervous system creates the next cascade of compensations, a fractal, so that the body can continue to perform its functions.

The P-DTR method allows one to find the primary and compensatory dysfunctions and their modalities. The neuro-reflexive treatment method of P-DTR involves simultaneous stimulation of the primary dysfunctional receptor, which caused the disruption in the body's function, and the compensatory receptor, and performing a deep tendon reflex, which reprograms the functioning of the nervous system. In this case, the dysfunctional pattern disappears, optimal CNS control is restored, and the resources of the nervous system and the body as a whole increase.

P-DTR as a treatment method fits organically within the conceptual framework of PK Anokhin's Theory of Functional Systems (TFS). (1, 2) The P-DTR treatment method connects when a damaging factor of great force has acted on the body, to which the body could not adapt. A primary dysfunction arises, to which the nervous system immediately creates a compensatory dysfunction. At the moment of the damaging factor's action, the nervous system functions adaptively, creating stable but non-optimal adaptation mechanisms. Dysfunctions exist for many years, involving ever new compensations, increasingly significant systems, and depleting the body's resources. Dysfunctions are a consequence of the nervous system's adaptation to a damaging stimulus (trauma, pain experience, etc.). This pathological pattern, adaptation to a damaging factor, in a frozen form does not allow the nervous system to optimally control the body, and it functions in an emergency mode, depleting resources to maintain it. The pathological pattern confirms its necessity through feedback.

When a P-DTR specialist tests a patient, they analyse the afferent information received from the receptors to understand which stimulus causes the dysfunction. When the primary and compensatory dysfunctions and their modalities are found, they perform a correction; the dysfunctions disappear, and the nervous system returns to an optimal mode of functioning without the pathological pattern and fractal of compensations. Thus, P-DTR restores flexibility to the system, eliminating the emergency mode, restoring the flow of energy and resources for building current functional systems.

P-DTR is a method that corrects maladaptive neural patterns by resetting proprioceptive feedback. Through the lens of the Theory of Functional Systems, this is the restoration of optimal control of functional systems.

Materials and methods

47 people were treated using the P-DTR method: 17 athletes and 30 individuals with physical inactivity, not involved in sports. The age of the subjects ranged from 13 to 52 years. The group of athletes had sports injuries; in the group of individuals with physical inactivity, chronic pains associated with a sedentary lifestyle predominated. In all, symptoms graded on a VAS scale from 0 to 10 were studied: pain in the area of the patient's complaints, muscle strength using dynamometry, joint mobility using goniometry, innervation, and emotional state using the HADS questionnaire. Indicators were studied before treatment, immediately after treatment, and subsequently in dynamics after 1-2-3-4 weeks. The control group consisted of patients from a clinic with complaints of dorsopathy symptoms, neck and joint pain, who consulted a traumatologist and neurologist.

Athletes and individuals with physical inactivity primarily complained of pain in the lower back, neck, and joints, arising against the background of old, often domestic injuries, not accompanied by significant complaints at the time of occurrence. The key role in the development of dysfunctions was played by the superimposition of pathological reflexes and stress factors on areas of greatest load, which manifested as impaired biomechanics, muscle asymmetry, and general destabilisation of movement patterns.

In athletes, complaints mainly concerned pain in the lumbar region, neck, shoulder, and hip joints; however, the cause of these symptoms was often old injuries received at home or at early stages of their career, for example fractures, bruises, surgeries, or even minor cuts. It is important to note that the primary damage zones themselves most often did not cause significant complaints but involved other parts of the body in a compensatory chain. Symptoms were especially pronounced in areas of constant load: the spine, joints of the lower extremities, and the lumbopelvic complex. The emotional background at the time of injury, tension, fear, overwork, excitement during competitions, significantly influenced the clinical picture; it enhanced the consolidation of pathological viscero-somatic reflexes and complicated the body's adaptation.

In individuals with low physical activity, a similar clinical picture was observed: back pain, neck pain, inter-scapular pain, as well as complaints of increased fatigue and limited joint mobility. In such patients, the key trigger mechanism was often chronic stress or an emotionally significant event that occurred alongside an injury or intervention (e.g., appendectomy). In the absence of adequate physical activity, the disorders became fixed and manifested as pronounced asymmetry of paired muscles, stooping, pelvic and cranial tilts. Thus, regardless of the level of physical activity, the decisive role in the development of symptoms was played by the superimposition of a chronic stress background on unrecovered primary disturbances, which ultimately formed stable patterns of dysfunction.

Both groups, the group of athletes and the group of patients with physical inactivity, were treated using the P-DTR method; results were assessed immediately after the session and dynamically.

Research results and their discussion

A statistical analysis of the results of symptom correction using the P-DTR method in the two groups of subjects, athletes and individuals with low physical activity, was performed using the Wilcoxon statistical criterion. (7) In the groups of athletes and individuals with physical inactivity, two independent samples were compared, 'before' and 'after' treatment, based on five quantitative indicators: local pain, local strength, local mobility, innervation, and emotional background.

The calculation results are presented in the tables. In the tables: W = Wilcoxon statistical criterion, Z = normal approximation score, r = effect size, $r = Z/\sqrt{N}$, p value.

Table 1: Results of the Wilcoxon criterion for the group of athletes

Symptom	Z	r	p - value
Local Pain	-3.30	-0.88	9.42e-04
Local Strength	3.62	0.88	1.53e-05
Local Mobility	3.41	0.88	6.31e-04
Innervation	3.41	0.88	5.94e-04
Emotional State	3.52	0.88	4.16e-04

Table 2: Results of the Wilcoxon criterion for the group of people with hypodynamia.			
Symptom	Z	r	p - value
Local Pain	-4.46	-0.87	7.76e-06
Local Strength	4.70	0.87	2.05e-06
Local Mobility	4.54	0.87	5.02e-06
Innervation	4.54	0.87	4.32e-06
Emotional State	4.62	0.87	3.51e-06

In the tables, the p-values are significantly less than 0.001.

The obtained results show that the differences in all five symptoms in both groups before and after treatment with the P-DTR method are statistically significant (p-value is much less than 0.001), which indicates a reliable difference in indicator values. It can be concluded that the method of correcting dysfunctions led to a significant improvement in the symptoms of patients and athletes across all studied parameters.

Following the correction of dysfunctions using the P-DTR method, both groups exhibited a significant improvement in subjective state, emotional sphere, and all studied indicators without exception. The pain syndrome decreased most substantially in both groups, and indicators of muscle strength and joint mobility increased. The emotional background improved, and innervation disorders subsided. No differences were found between the groups of athletes and sedentary individuals in terms of effect size.

Thus, the research established a significant reduction in pain in the area of complaint in both groups. A significant restoration of local strength of muscle contractions and the myotatic reflex was noted, along with an improved response to eccentric load. Joint mobility increased significantly, reducing excessive compensatory load on adjacent areas. Patients noted improved innervation, namely: better muscle sensation and greater accuracy in performing isolated movements, absence of numbness and paræsthesia. The patients' emotional background changed for the better immediately after the session, with reports of clearer situational awareness and a good mood.

> If the treatment of injuries and joints in patients does not differ from that in athletes, what is the distinctive feature of the P-DTR method's approach to athlete rehabilitation?
>
> Answer: In most cases, the therapy will be similar to the treatment of ordinary patients. However, the main value of P-DTR in sports lies in its ability to eliminate complex, treatment-resistant disorders that hinder athlete recovery and performance.

Key advantages

- Unique solutions: working with dysfunctions that do not respond to standard treatment methods.

- Personalised approach: adaptation to the specifics of an athlete's anatomical and physiological characteristics, sports injuries, and high loads.
- P-DTR doesn't just treat an athlete: it identifies and eliminates obstacles to full recovery of athletic form that are undiagnosable by other methods.

Many athletes never reach their full potential, not due to a lack of talent or diligence, but due to imperfections in the medical support system. As a result, injuries remain inadequately addressed, and coordination and motor skills do not receive the necessary correction. Furthermore, the imperfections in athlete preparation are significant. Rigid schedules, outdated methodologies, and a lack of individual approach stifle potential from the outset. An athlete's natural flexibility and strength remain untapped because coaches rely on ‘proven’ methods, ignoring the athlete’s individual characteristics. And there are no methods for rapid and effective recovery after training and injuries. The P-DTR method compensates for these shortcomings.

Athletes often face repeatedly recurring, similar-type injuries under minor load, for example, a figure skater consistently falls when landing on her right leg after performing a ‘toe loop’. This indicates a reduced myotatic reflex in a specific muscle group, which fails to handle that load during the execution of a professional movement pattern. Attempts to ‘strengthen’ these muscles yield little result. Examination and attempts to visualise the existing problem show no outcome. A P-DTR specialist can test the myotatic reflex both at rest and during the execution of a sports movement pattern, identify and eliminate the cause of its reduction. Subsequently, the athlete experiences a significant reduction in recurring similar-type injuries, ensuring the safety of physical loads. By restoring the reflex component, athletic performance improves.

> The P-DTR method is essential for preventing injuries in athletes, improving their athletic performance, and ensuring the fastest recovery after sports injuries. We recommend that every sports team must have a P-DTR specialist.

The practice of correcting dysfunctions using the P-DTR method has shown that the method is completely safe, as it involves the reproduction of normal myotatic and tendon reflexes. It can be applied to most dysfunctions in the human body and takes 15-30 minutes per session. Other treatment methods, therapeutic exercise, massage, kinesiotherapy, osteopathic treatment, manual and physiotherapy, require much time and do not always eliminate troubling symptoms. These methods are usually prescribed in courses of 10 or more procedures. Moreover, treatment with these methods is often directed at the area of pain syndrome, a compensatory dysfunction, therefore, in such cases, there is either no effect or it is short-lived. The advantage of the P-DTR method is that the impact is made on the root cause of disorders, leading to a complete cure. (3)

This work marks the beginning of scientific research by the P-DTR Neuroreflex Therapy School in the field of evidence and treatment effectiveness. Upon completion of the research, data from laboratory and instrumental verification methods will be published.

The initial sample will be expanded and a large-scale randomised study initiated by the P-DTR Neuroreflex Therapy School is forthcoming.

Conclusion

Treatment with the P-DTR method is safe, effective, painless, does not require medication, injections, surgery, or complex equipment, and takes 15-30 minutes. There is no doubt that this method of treatment and rehabilitation has a great future. (4)

Authors' notes

Consent from the subjects and the ethics committee for treatment with the P-DTR method has been obtained. There is no conflict of interest.

The paper was composed using human intelligence only, there is no AI.

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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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Doctor Jose Palomar Lever is a native of Guadalajara, the capital city of the state of Jalisco in Mexico. He began his medical school education at the age of 17 at the Universidad Autónoma de Guadalajara (UAG) and received his training in Orthopaedic Surgery and Traumatology at the Universidad del Ejercito y Fuerza Aérea (UDEFA). He performed his first orthopaedic surgery at the age of 24 and between 1984 and 1988 he was an orthopaedic surgeon on the staff of the Reconstructive and Plastic Surgery Institute of Jalisco, S.S.A. He went on to receive specialised training in minimally invasive spine surgery at the Texas Back Institute in Dallas, Texas. Pursuing his interest in what he now refers to as the "software" of the human body, a study, which began in earnest for him in 2000, Dr. Palomar became a Diplomate in Applied Kinesiology from the International College of Applied Kinesiology (ICAK). He received the organisation's Alan Beardall Memorial Award for Research for 2004-2005 and over the years has had eighteen papers accepted for inclusion in ICAK-USA Proceedings. He also completed the Carrick Institute for Graduate Studies program in Clinical Neurology. Today, in addition to pursuing an ongoing research program, Dr. Palomar conducts regular trainings in Proprioceptive – Deep Tendon Reflex (P-DTR) for medical practitioners in the United States, Russia, Mexico, Latvia and Ukraine, and continues to practice medicine from his home base in Guadalajara, Mexico.

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Anatoly graduated with honours from a technical college with a degree in Computer Operator. He received higher education in Management, but his true calling is working with the human body. In 2016, he began his career as a personal trainer. He specializsd in physical conditioning, kinesiology, manual techniques, and P-DTR.

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