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Preformed Gravitational Factor and Electromagnetic Processes and Phenomena in and Around the Human Body in Dr. Kanev's Healing Method: Relevance and Perspectives of Physiotherapy and Space Medicine

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This article reviews the significance and role in medicine of spatially limited influences of gravity, systematized as a group of variant manifestations of a conceptual, preformed, gravitational, physical, physiotherapeutic factor (herein referred to as preformed gravitational factor - PGF). These variant manifestations of PGF are applied to the primary and diverse, naturally activated reactivity of the human body. This application of PGF is carried out in combination with the simultaneous application of a secondary, specific activation of the same reactivity with artificial, external electromagnetic processes and phenomena. The similarities and differences between electromagnetic and gravitational fields have long been known, as well as attempts to unify them [1,2].

The methods of preforming natural gravity determine preformed gravity as variant manifestations of artificial PGF and as a new classification group to the existing classification of preformed, physiotherapeutic factors. Preforming natural gravity is achieved through non-gravitational, controlled induction and maintenance of local and temporal changes of the manifestations of pre-selected parameters of the general, global, natural gravitational influence – e.g. simulated weightlessness and artificial gravity.

The ways (i.e. methods) of preforming are carried out through various technological mechanisms and technical means and equipment. These means and equipment are designed and manufactured with the ability to induce and maintain local and temporary changes in the manifestations of pre-selected parameters of natural gravitational influence in certain confined spaces.

Thus, the confined spaces are internal to the facility, together with the human body within it, and external to their respective close environment. The technological mechanisms and technical means and equipment achieve controlled effects and phenomena in the confined space around the human organism and the body of the organism itself – for example:

- Creating mechanical forces external to the organism and directing their mechanical force vectors in different directions according to the gravitational vector, as to achieve appropriate superposition and impact on the human body;
- Creating intensity, gravitational gradients in the human organism by accelerating the human body while creating centripetal or centrifugal movements of the entire organism;
- Changing the density of the space around the organism – for example, the water environment between this organism and its support on the earth's surface;
- Bringing and maintaining the human body at rest in certain positions;
- Change in the physiological, anti-gravity phenomena in the human body – for example, intermittent occlusion and reperfusion of the peripheral circulation.

The achieved effects and phenomena through the technological mechanisms and technical equipment are sufficient both in terms of expression and quantity, as well as in terms of species specificity, to shape the various variant manifestations of PGF and be arranged in a group.

The general clarification follows from the statement above: the change of the gravitational influence through the variant manifestations of PGF and the change of the anti-gravitational phenomena in the body through non-gravitational methods have similar biological effects in the human organism. Therefore, non-gravitational changes of anti-gravity phenomena in the body can be classified to the group of variant manifestations of PGF.

The variant manifestations of PGF are diverse and numerous. This is because the technology used to create each variant manifestation is specifically chosen for it. Furthermore, the characteristic, specific engineering designs of the facilities that generate the different variant manifestations can be SUCCESSFULLY applied only to a limited number of anatomical areas of the human body. Some of the variant manifestations are more universal, i.e. with a larger scope. Thus, each variant manifestation of the group of PGF manifestations considered here is created according to its specific technology and engineering design. See the Classification below.

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In order to be classified as PHYSIOTHERAPEUTIC, the variant manifestations of PGF described above must achieve a significant therapeutic result in their interaction with the primary, naturally activated reactivity of an anatomically-physiologically aggravated human body.

The anatomically and physiologically aggravated human organism is the organism damaged by disease or trauma or functionally overloaded and the organism out of condition (for example – deconditioning in space from gravitational deprivation) [3,4,5].

Achieving a healing result is possible due to the interaction of the variant manifestations of PGF with the electromagnetic processes and phenomena specific to the reactivity of the problematic organism. However, the therapeutic efficacy is often low and there is even a lack of efficacy of practical, medical significance. For example, the authors Eugenia Isasi, Maria E. Isasi and Jack J.W.A. van Loon report significant therapeutic efficacy due exclusively or independently to PGF in their article "The Application of Artificial Gravity in Medicine and Space". Also, these authors demonstrate that the use of the human short-arm centrifuge alone is not effective, or in some cases not effective enough in common ground pathologies and especially in microgravity countermeasure [6].

This interaction is much more visible and clinically much more significant with simultaneous, secondary, specific activation of the same reactivity of the problematic organism with artificial, external electromagnetic processes and phenomena (which essentially represent an electromagnetic, physical, physiotherapeutic factor). There are authors who observed a negative effect of stand-alone impacts with ground microgravity models on tissue cultures. The same authors reported a corrective, rescue effect in cases of observed tissue cultures in which they additionally applied simultaneously with the microgravity impact, parallel, simultaneous influence with a low-frequency electromagnetic field [6].

The treatment according to Dr. Kanev's method was developed and implemented as to ensure and guarantee high positive results and practical, medical significance in ground pathologies and gravity countermeasure through combined application of the above-described modern group of variant manifestations of PGF and electromagnetic processes and phenomena in the body.

This treatment method is briefly defined by Dr. Kanev as body-educational, homeostatogenic healing. The method is based on managing, directing and changing the homeostasis of the anatomically and physiologically burdened organism by using its educational and self- educational capabilities. The need of training the aggravated organism as a component of its treatment through the ground module for short-arm human centrifugation is also recommended by other well-known authors - Eugenia Isasi, Maria E. Isasi and Jack J.W.A. van Loon for example.

See Dr. Kanev's articles [7,8,9]:

Dr. Kanev's classification of the variant manifestations of the conceptual, preformed, gravitational, physical, physiotherapeutic factor according to the method of their creation – i.e. according to the choice and use of the characteristic technologies for preforming each individual variant manifestation and according to the use of the specific engineering, technical, and design solutions for this variant manifestation. The classification consists of main sections that correspond to the range of the different variant manifestations of PGF in relation to the body of the treated human organism:

A/ Variant manifestations of the preformed, gravitational factor on the entire human body, and which are created through:

1. Physiotherapy, electromagnetic weightlessness and gravity simulators – analogous to the ground microgravity model – "Head-down bed rest (HDBR)":

1.1. Figure 1 from Dr. Kanev's photo archive: Medium-size physiotherapy electromagnetic weightlessness and gravity simulator 03, developed and manufactured by "Synergetic Intellectual Systems – SIS – Kanevi and Co" Company:

Figure 1: From Dr. Kanev's photo archive: Medium-size electromagnetic physiotherapy simulator 03.

1.2. Figure 2 from Dr. Kanev's photo archive: Large physiotherapy electromagnetic weightlessness and gravity simulator 08, developed and manufactured by "Synergetic Intellectual Systems – SIS – Kanevi and Co" Company:

1.3. Figure 3 from Dr. Kanev's photo archive: Large physiotherapy electromagnetic weightlessness and gravity simulator 09, developed and manufactured by "Synergetic Intellectual Systems – SIS – Kanevi and Co" Company:

1.4. Figure 4 from Dr. Kanev's photo archive: Physiotherapy magnetic weightlessness and gravity stimulator 10 with permanent spirally rotating magnetic disks around the patient and simultaneous central axial rotation of these magnetic disks, mechanical and mechanized bed module available in the form of a capsule, with an

option of automated movement along the transverse and longitudinal axis of the patient's body, developed and manufactured by "Synergetic Intellectual Systems – SIS – Kanevi and Co" Company.

Figure 2: From Dr. Kanev's photo archive: Large electromagnetic physiotherapy simulator 08.

Figure 3: From Dr. Kanev's photo archive: Large electromagnetic physiotherapy simulator 09

Figure 4: From Dr. Kanev's photo archive: Large electromagnetic physiotherapy simulator 10.

2. Upcoming use of physiotherapy, electromagnetic microgravity simulators, consistent with Dr. Kanev's method, including devices and facilities analogous to the ground microgravity model – "Dry Immersion (DI)". The currently existing devices and facilities for the dry immersion model can only serve as prototypes of mechanical modules of the entire physiotherapy simulators. As a first step, the portable device in s. C below or its electromagnetic inductors can be added to the available existing devices [10].

3. Upcoming use of physiotherapy, electromagnetic artificial gravity simulators, consistent with Dr. Kanev's method, including devices and facilities analogous to the ground artificial gravity models, as human centrifuges – "Short Arm Human Centrifuge (SAHC)" for example. The currently existing devices and facilities for human centrifugation can only serve as prototypes of mechanical modules of the entire physiotherapy simulators. As a first step, the portable device in s. C below or its electromagnetic inductors can be added to the available existing devices [11,12].

B/ Variant manifestations of the preformed, gravitational factor directly on a limited area of the human body, and which are created through:

4. Physiotherapeutic, electromagnetic devices for intermittent occlusion and reperfusion of the peripheral circulation (which is a physiological anti-gravity phenomenon) – for example, on the upper and lower limbs of the human body:

Figure 5 from Dr. Kanev's photo archive: A model of the above-described physiotherapy device and technology of using anti-gravity phenomena in the organism according to Dr. Kanev's method of treatment in knee joint algodistrophy.

5. Upcoming use of a physiotherapy device, consistent with Dr. Kanev's method, including the lower body negative pressure device. The article "Lower Body Negative Pressure for Artificial Gravity in Space" by the authors Kristine T. Khieu and Lonnie G. Petersen & Alan R. Hargens describes their lower body negative pressure device (LBNP), which can only serve as a prototype of a mechanical module of the entire physiotherapy device. As a first step, the portable device in s. C below or its electromagnetic inductors can be added to the available existing devices (LBNP) [13].

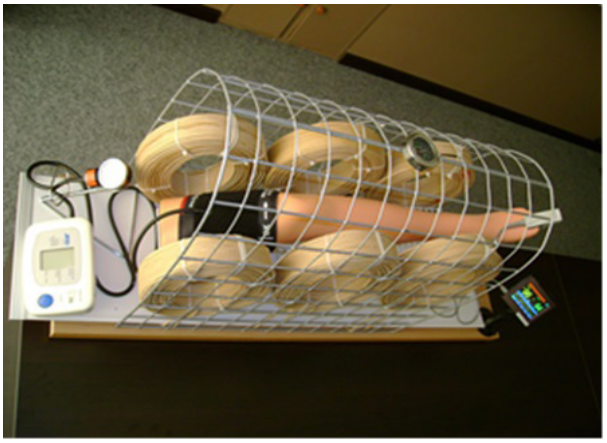

Figure 5: From Dr. Kanev's photo archive: Model of multi-component (in this case - two-component) physical training, impact according to Dr. Kanev's method in knee joint algodistrophy.

Figure 6: From Dr. Kanev's photo archive: Portable electromagnetic device for body-educational treatment and healing– complete battery-powered kit.

6. Upcoming use of a physiotherapy device, consistent with Dr. Kanev's method, including the lower body positive pressure device. The article "Reduced Gravity by Lower Body Positive Pressure" by the authors Lonnie G. Petersen, Kiyotaka Kamibayashi и Yoshinobu Ohira & Alan R. Hargens describes their lower body positive pressure device (LBPP), which can only serve as a prototype of a mechanical module of the entire physiotherapy device. As a first step, the portable device in s. C below or its electromagnetic inductors can be added to the available existing devices (LBPP) [14,15].

7. Upcoming use of a physiotherapy device, consistent with Dr. Kanev's method, including the "Vacuum Suit" device. For example Chinese Space Agency's version of a vacuum suit - by doing squats, the astronaut pumps the device up and down, creating his own vacuum. The vacuum suit can only serve as a prototype of the mechanical module of the entire physiotherapy device. As a first step, the portable device in s. C below or its electromagnetic inductors can be added to the available, existing "Vacuum Suit" devices.

C/ Variant manifestations of the preformed, gravitational factor, which are created by combining the devices and the technologies from the sections above.

Figure 6 from Dr. Kanev's photo archive: A portable physiotherapy electromagnetic device for body-educational treatment and healing, developed and manufactured by "Synergetic Intellectual Systems – SIS – Kanevi and Co" Company – a complete battery-powered kit. This device has the possibilities to be combined with the devices for simulated weightlessness and artificial gravity, already described in this classification.

D/ Other variant manifestations of the preformed, gravitational factor.

The classification specifically outlines the RELEVANCE AND PERSPECTIVES of the joint, interdisciplinary, professional fields of physiotherapy and space medicine:

The laboratory and clinical research of Dr. Kanev has definitely found out that the states of simulated weightlessness or microgravity (carried out by the technology of Bed Rest studies), as well as the ground artificial gravity modules can be used very successfully and clinically significantly as a newly qualified, original reshaped physical factor in physiotherapy and space medicine. This application of simulated weightlessness and artificial gravity is possible and therapeutically effective, provided that an electromagnetic field is also applied according to the methodology of Dr. Kanev for body-educational, homeostatogenic healing, simultaneously and complexly with weightlessness and artificial gravity [16,17,18,19]. Moreover, this application is used both in the treatment of diseases of the human organism and in the recovery of a healthy human organism from physical motor and sensory overloads and overstrains. In addition, this application is also effective in prolonged motor and sensory states of discomfort, or in insufficient activity of these states.

Simulated weightlessness and artificial gravity are used as a controllable modulator of the limit values of the body's homeostasis parameters at the site of injury and in the organism as a whole. When the limits of homeostasis are extended or when their critical values are reached, the organism switches to other working modes of its vital activities, and then the healing or restoration of the organism is different from that of the usual homeostasis of the organism, preceding the current physical impact.

Physiotherapy weightlessness and artificial gravity simulators made by Dr. Kanev use not only a tilt of the body of the human organism head down, but there is an opportunity to make periodic, controlled transitions from states of simulated weightlessness to normal gravity and vice versa (i.e. the simulator bed mechanically "rocks" relative to its median transverse axis). Therefore, more generally and briefly, if the organism, placed in states of simulated weightlessness or artificial gravity changes its homeostasis, then this organism very actively uses the created artificial, reshaped electromagnetic fields around itself and within itself. Thus, it activates all its vital, potential resource to restore its homeostasis or to change it to a new, more adequate level. And so the organism achieves as a final, structurally memorable result - successful and qualitative, healing and/or restorative phenomena. In order to achieve a lasting, structurally strengthened result, it is necessary to organize the healing process in the form of an educational and training process [20,21].

The briefly explained treatment by the physiotherapy weightlessness and artificial gravity simulators are clinically highly effective (proved by completed medical research) in: Treatment and recovery of injuries and diseases of the musculoskeletal system: algodystrophy of the knee joint and the elbow, including tennis elbow – conditions after bone fractures, ruptures of ligaments of the knee, meniscal lesions, contractures post immobilization and other injuries or diseases (for example radiculopathies), muscle hypothrophy of three instances: postimmobilization, neurogenetic and miscellaneous; benign hypertrophy of the prostate gland.

For some diseases and conditions, only partial observations have been made and full studies are pending, for example orthostatic intolerance and spatial disorientation; vertigo syndrome in cerebrovascular insufficiency; ovarian, hormonal dysmenorrhea and others.

Using the results of the research, listed so far, the deconditioning states in the neurovestibular, cardiovascular, ocular, musculoskeletal, bone metabolic, hematological and immunological, and central nervous systems, as well as early adaptation to microgravity and early readaptation to the ground 1 G state in space and aeronautical medicine can be influenced favourably.

Competing Interests

The authors declare that they have no competing interests.

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