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THE NEGATIVE EFFECT OF HYPOKINESIA INVOLVING INJURY AND PREVENTIVE MEASURES

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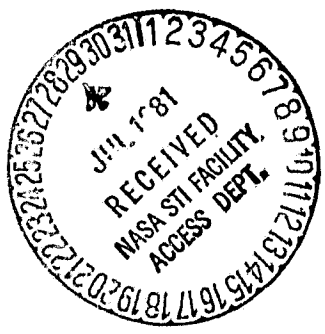
Translation of "Otritsatel'noye vliyaniye gipokinezii v svyazi s travmoy i mery profilaktiki," Tallin, Voprosy Kurotolgii, Fizioterapii I Lechebnoy Fizicheskoy Kultury, No. 4, 1978, page 81.



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16. Abstract

Determination of the optimum length of bedrest for patients suffering from broken bones is extremely important. The author concludes that as brief a period of bedrest as possible is the best. The negative effects of hypokinesia induced by bedrest include general weakness and deconditioning of the muscles as well as sleeplessness, headaches, muscle pain, constipation, etc. The use of physical therapy plus early activation of the muscles produces the best results.

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Kh.A. Izakson

Determination of the optimum time periods for bedrest for injuries and severe illnesses, the use of LFK [lechevnaya fizkultura, therapeutic physical culture] in the early time periods are particularly important for the rehabilitation of patients. We became convinced of this by our observations of 80 athletes in the hospital over the last 10 years who suffered from breaks in the leg bones and vertebrae. /81*

The forced stay of the patient in bed caused a syndrome of hypokinesia and due to this, deconditioning of the organism as a result of inadequate motor activity. A general weakness, poor sleeping habits (in 60%), headaches (in 36%), pain in the muscles (in 52%), constipation (in 44%) etc. were apparent in most of the patients. During examination of the patients, we also discovered the following: an increased tendency to perspire, instability of the pulse and arterial pressure, tremor in the fingers when the hand is extended, high tendon reflexes, a decrease in abdominal and plantaris reflexes. Apparently this was due to a sharp decrease in the flow of nerve impulses from the peripheral section of the motor analyzer in the brain and a decrease in the interoceptive and exteroceptive signals (from the internal organs, the tactile, auditory, visual analyzers, etc.). As a result, the tone of the brain cortex and the higher vegetative centers decreased; a vegetative dysfunction developed.

Muscle strength decreased in the patients; this was confirmed by the results of special studies. The measurement of strength of the right fist with a dynamometer and respiratory musculature by a pneumotonometer after a 2 week bedrest showed that the first index in the patients decreased on the average by 25% from its initial value recorded during the month before bedrest in the hospital, and the second by an average of 60% in relation to the necessary value.

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* Numbers in the margin indicate pagination in the foreign text.

Activation of the motor regime and LFK to a significant degree facilitated an improvement in these indices. The broad use of physical exercise including sports resulted in reestablishing health and strength of the patients who have been in the traumatology department of the hospital. Positive dynamics of the indices of external breathing were also noted in them. For example, the vital capacity of the lungs was reestablished; during the stay in the hospital in bedrest on the average it was 20% lower than that required (measurements were made every 10 days). The indices of the vegetative functions, the tendon and skin reflexes were all normalized.

Patient Sh., a football player, who has a sports rank of I, entered the hospital for treatment of an inner fracter of the femur and intra-articular fracture of the left ulnar joint. In the acute period of injury, phenomena were noted of asthenization, the indices of pneumotonometry and the vital capacity of the lungs were 25% below the required values. When the patient was feeling better, the pain was decreased particularly after being transferred to semibedrest and a large quantity of LFK was prescribed, gradually the index of pneumotonometry and the vital capacity of the lungs increased and reached the required values after 1 month of free motor activity. At the same time, irritability, rapid fatigue, headaches, increased tendency to perspire, all observed in the initial period of illness disappeared completely and sleep became deep.

The data obtained attest to the fact that the use of LFK and as early activation of the motor regime as possible facilitates the disappearance of signs of vegetative instability and other manifestations of hypokinesia.