

**THE EFFECTS OF LONG-TERM "DRY"
IMMERSION ON THE CONTRACTILE
AND ELECTRICAL PROPERTIES OF THE
HUMAN TRICEPS SURAE**

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Various Earth-based models have been used in an effort to simulate unweighting of the neuromuscular system. "Dry" immersion (DI) has been used on occasion to simulate the unweighting effects of spaceflight on human (Shulzhenko et al. (1976) *Kosm Biol Aviakosm Med* **10**, 82). The results of such studied support the use of Earth-based models. It is known that inactivity results in deconditioning and physiological deconditioning induced by inactivity affects important system of the body including musculoskeletal. Skeletal muscle deconditioning is associated with adaptation to a microgravity environment. These physiological changes may result in altered muscle function and motor control (Koryak (1996) *Eur J Appl Physiol* **74**, 133, 496). The interesting finding that the reduction of the mechanical tension is not proportional to the reduction of muscle weight, fiber diameter, and concentration of contractile proteins (St.-Pierre et al. (1985) *Exp Neurol* **90**, 635), suggested that electrical activity might contribute to the reduction of the contraction force in disused muscle (Booth (1982) *J Appl Physiol* **52**, 1113). Up to now, owing to methodological difficulties, the free contractile properties of human skeletal muscles in a true weightless environment or during its simulation were beyond the field of vision of the scientists who in the main have concentrated on examining the mechanical features of the voluntary muscular contractions. This is the first study to make quantitative measurement of the functional properties of a single muscle in a man exposed to the long-term DI. The investigation was concerned with the parameters of mechanical responses of the triceps surae muscle, a postural antigravity muscle (Campbell et al. (1973) *Am J Phys Med* **52**, 30). The purpose of study were to analyze the effects of 7-day of DI on the mechanical and electrical changes of the triceps surae. The methods for measuring electrically evoked and voluntary forces have been described

in detail elsewhere (Koryak (1995) *Eur J Appl Physiol* **70**, 344). Maximal voluntary contraction (MVC), maximal twitch (P_t), tetanic forces (P_o), time-to-peak tension (TPT), half-relaxation ($1/2RT$) were measured. The difference between P_o and MVC expressed as a percentage of P_o and referred to as force deficiency has also been calculated. The surface action potential (SAP) was recorded by bipolar surface electrodes applied over the belly of the soleus. After DI, the MVC was reduced by 34% ($p < 0.01$), and the P_o was reduced by 8% ($p > 0.05$). The force deficiency increased by a mean of 44.1% ($p < 0.01$). The decrease in P_o was associated with increased maximal rates of tension development (7%) and of tension relaxation. The TPT was not significantly changed, and $1/2RT$ and TCT were decreased by 5% and 3%, respectively, but the P_t was not significantly changed and the P_t/P_o ratio was decreased by 9% after DI. The muscle SAP showed an increase in duration (19%) and decreases in amplitude and total area (15% and 3%; $p < 0.05-0.01$, respectively). Comparison of the electrical and mechanical alterations recorded during voluntary contractions, and in contractions evoked by electrical stimulation of the motor nerve, suggests that DI not only modifies the peripheral processes associated with contraction, but also changes central and/or neural command of the contraction. At peripheral sites, it is proposed that the intracellular processes of contraction play a role in the contractile impairment recorded during DI.

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**NARCODEMOGRAPHICAL PROBLEMS
OF PRIAMURYE**

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Problem health of submelting generation of representatives aborigenos an Priamurye can not be a speech by only power of organs of public

health. Necessary whole system of state and interstate measures: political, economic, social - for optimization a physician-social help to the child population and conservation of wake Russian society, its strategic power, qualitative reproducing a population. So as a whole, in spite of the general negative trends, narcological situation in Priamurye possible consider controlled. However at the evaluation of general demographic situations in the region were reveal following main factors of shortening reproduction of population: falls birth rate beside women in the most favorable reproductive ages (25-29 years); negative demographic future is mortgaged in modern age-sexual to the structure a population; increases an average mother age; change reproductive behavior; falls an age threshold of bad habits, including consumption of drugs (from 7-8 years); worsened condition of surround ambience. In contrast with population census of 1989 year number of population of edge is reduce on 162,3 th.p. (on 10,2%). Specific weight of population of senior able-bodied age in the Priamurye an edge for a period 1989-2002 years is enlarge on 30,2%. Worry causes a correlation of rates of shortening a number of persons of younger age group in the comparison with growth rates of persons of senior able-bodied age. The number first is reduce on 39,3% (on Russian Far East on 40,9%), but increase on 23,5% (in region on 24,8%). Consequences of such demographic development will negative tell on reproduction functions of population and ensuring an economy of region by the labour in the necessary volume. One of the most important problems of demographic welfare of Russian Priamurye is a preventive maintenance, early diagnostics and analysis of reasons of spreading is social significant diseases. Our interdisciplinary studies be indicative of presence of close-fitting intercoupling between different ethnics and socio-cultural features, clinical structure, track record variety of psychic frustrations, is criminal-addiction behavior and drug crimes amongst populations of edge on the medical-ecological areas. With such positions is justified all-round consideration of problems of modern population epidemiological analysis, right choice of research priorities, well-marked a realizing an occur change of vectors and directions in the social, medical science and demographic practice.

Development of ethnocultural aspects human population epidemiology carries in itself not only important theoretical stimulus, connected with the crystallization of biosocial paradigm, as well as powerful demographic and sociotherapeutic preventive charge. Supported by The Russian Humanitarian Scientific Fund, grant №06-06-00410a.

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PROGNOSTIC METHODS OF ULCEROUS GASTRODUODENAL HEMORRHAGE RELAPSE

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There is a sufficient set of variants of early ulcer hemorrhage relapse (further bleeding) prognostication which is one of the major factors in treatment of UGHR patients. In general, all of them are based on clinical experience, the surgeon's intuition, or on the use of objective endoscopic findings with the application of new complex technologies: endosonography, measuring of mucous coat impedance, redox-potential, etc., which are inconvenient for wide application. There is the authors' opinion, that the recurrent hemorrhage prognostication accuracy based only on endoscopic picture and the blood loss severity has reached the maximum and cannot exceed 70 % (1).

The purpose of our work was to create an analytical system, capable to assist an attending physician in solving tactical questions of UGHR disease management, and based on the bleeding relapse prognostication.

Materials and methods

A retrospective randomized analysis of 411 UGHR case records was carried out by us, the patients having been treated in clinical hospitals of regional centers from 2000 to 2005. A formalized case record (questionnaire of findings) with the unified set of elements, consisting of 125 items was composed. The elements' list (signs, symptoms, laboratory and instrumental data) was being made empirically on the basis of clinical practice. According to the