



Date: December 11, 2020

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Certified copy of the document that is entitled "Влияние магнитной стимуляции на силовые возможности скелетных мышц" in Russian and "EFFECT OF MAGNETIC STIMULATION ON THE STRENGTH CAPACITY OF SKELETAL MUSCLES" in English.

Taylor Liff, Project Manager in this company, attests to the following:

"To the best of my knowledge, the aforementioned documents are a true, full and accurate translation of the specified documents."

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As manuscript

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ANDREY GENNADIEVICH BELYAEV

**EFFECT OF MAGNETIC STIMULATION ON THE STRENGTH CAPACITY OF
SKELETAL MUSCLES**

03/03/01 - physiology

Thesis for

PhD in Biological Sciences

The copy is authentic to the
original.

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ABBREVIATIONS

ATP - adenosine triphosphate;

IMR - induced motor response;

MU - motor unit;

MT - maximum torque;

MP - motor pool;

MVS - maximum voluntary strength;

MS - magnetic stimulation;

RNA - ribonucleic acid;

STH - somatotrophic hormone;

T - teslas;

CNS - central nervous system;

EMG - electromyogram;

EMS - electromyostimulation;

ES - electrical stimulation;

GM - gastrocnemius muscle;

SOL - soleus muscle;

TA - tibialis anterior muscle.

INTRODUCTION

Research relevance. Strength capacity of the human allows for targeted manipulation of the environment and adaptation of the human body to various living conditions at all stages of postnatal ontogenesis (A.N. Vorob'yev, 1989; M.L. Foss, S.J. Keteyian, 2008; A.V. Samsonova, 2011; A.A. Chelnokov, 2014). Strength capacity is of particular importance in sports, since the results in a number of sports are largely determined by the strength capacity of the athlete (V.M. Zatsiorskiy, 2009; A.I. Netreba et al., 2011).

To date, extensive experimental material has been accumulated on the effectiveness of various methods and approaches to the development of strength capacity in humans (B.S. Shenkman et al., 2006; M.N. Stone et al., 2007; V.E. Chursinov, 2011; O.L. Vinogradova et al., 2014). There is information about the physiological mechanisms underlying the development of skeletal muscle strength (R.M. Enoka, 1988; Yu.V. Koryagina, 2003; R.M. Gorodnichev, 2005; B.R. Macintosh et al., 2006; J. Gondin et al., 2014).

A number of studies are devoted to the development of unconventional methods to increase strength capacity (I.P. Ratov, 1979; V.G. Fedorov, 2010; G. Attene et al., 2014), among which the most comprehensively described are methodological approaches to the development of skeletal muscle strength by electrostimulation at rest and during activities requiring muscle activation (Ya.M. Kots, 1971; G.F. Kolesnikov, 1977; A.A. Nikolaev, 1999; J. Gondin et al., 2005; U. Doermann et al., 2011).

Electrostimulation muscle strength training has some limitations associated with pain and discomfort,

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