

COMPUTER-DRIVEN BIOTECHNICAL SYSTEMS FOR THE STUDY AND SELF-DEVELOPMENT OF MOTION ACTIVITY OF CHILDREN AGED 4-7

Galina P. Ivanova,
Lesgaft Academy of Physical Culture, St. Petersburg, Russia,
Eugeny V. Smirnov, Electrotechnical University, St. Petersburg, Russia

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INTRODUCTION: Due to the increasing involvement of children in sports at earlier ages, it is necessary to scientifically study children's motion activity and to assist in its coordinated aimed development. The failure of children to perceive and formulate aims and motion tasks contributes to the complexity of the problem [1,2]. It is proposed that the application of the suggested method of "playing-mode reflection" will speed up the mental and motion self-development of children.

METHOD: A set of computer-driven sports training equipment is created, allowing us to investigate the physical, mental and intellectual abilities of trainees in the playing mode and differentially assign parameters of the above mentioned characteristics to the system, appropriate to children's ages, conditions and development levels. Bio-technical training systems possess measurement, computational and control functions and include: IBM-compatible multimedia computer; five specially designed loading devices (training set) with sensors and I/O data exchange units; unique computer software programs for testing and teaching children during play; methods of bio-reflective control of children's behavior, allowing us to plan, individualize and differentiate the training load in magnitude and duration depending on the trainee's situation.

Sets of bio-technical training equipment were installed in 50 pre-school institutions in Russia. Systematic tests of the motion activities of children were continuously performed on 210 children from 4 to 7 years of age using the following parameters: frequencies of arm and leg motions during pedaling; speed of rotation motion in joints; reaction time to signals by arms and the whole body; degree of stability and posture correction frequency during balance retention on a movable support.

RESULTS AND DISCUSSION: An educational program for children's self-development using bio-technical training systems has been successfully created. The system contributes to correct carriage, actions and motion activities on the part of children. It has been demonstrated that children's development according to the suggested program with the help of bio-technical systems provides more effective results In comparison with the case where no bio-technical systems are used.

REFERENCES:

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