NEW PRINCIPLE OF EXERCISE TEACHING USING TRAINING DEVICES

KISELEV, V.; NAZAROV, V.
Byelorussian Institute of Physical Education
Minsk
USSR

Exercises on training devices are necessary elements of technical and special physical preparation of sportsmen in modern sport.

That is why it is urgent to develop a biomechanically grounded concept of using training devices in the training process, that provide for realization of programmed learning.

The problem can be solved on the basis of analytical biomechanics (Nazarov V. T., 1972), that has been distinguished in biomechanical structure by elements as "dynamic carriage elements" and "controlling movements".

The training process should include mastering of this biomechanical elements in complicating spacetime conditions with the help of training devices.

Training devices of such kind for different sport events are demonstrated in the report.

AN EXPERT SYSTEM FOR TALENT SEARCHING IN LONG DISTANCE RUNNING

LUHTANEN, P.*; RUSKO, H.*; VIITASALO, J.*; PERAMAKI, P.*;
NEITTAENMAKI, P.**; PUURONEN, S.***; MAKELA, M.**;
SANTANEN, J.P.**
* Department of Biology of Physical Activity
** Department of Mathematics
*** Department of Computer Science
University of Jyvaskyla
SF-40100 Jyvaskyla
Finland

The purpose of this presentation is to introduce a prototype of an expert system with a complex knowledge base to predict talent for long-distance running in male athletes between the ages of 16 - 20 years. The prototype was developed with Xi Plus (Expertech Ltd.) rule based expert system shell and can be used in compatible PC - microcomputers with 512K RAM memory. The knowledge base of Xi Plus consists of rules, questions, queries, facts and demos. The knowledge base of the domain area was described using hierarchical tree structures, which were related to the anthropometrical, physiological, biomechanical and biochemical research results in long-distance running. In this prototype the main level in the hierarchical structure was named the talent in long-distance running. The first sublevel included total results in running, training and environmental factors. The second sublevel included 1. Results: competitions, physical testing and psychological evolution, 2. Training: quantity, quality and intensity and 3. Environmental factors: health, economical situation, family life etc. In the tree structure the maximum amount of sublevel was six. All variables in all levels were evaluated on the average in five categories as follows: excellent, very good, average, poor and very poor. Some of the evaluations were changed into the numeric values. According to the numeric combinations the probability of the talent was evaluated. In the prototype program the order of querying for the different knowledgebases was as follows:


The validation process of prototype has been started.