

AN EXPERT SYSTEM FOR TALENT SEARCHING IN LONG DISTANCE RUNNING

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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:

1. Economy and efficiency in running,
2. The factors influencing the physical results,
3. Maximal aerobic capacity,
4. Submaximal endurance,
5. Anaerobic power,
6. Mental aspects,
7. Results in competitions,
8. Training and
9. Environmental factors.

The validation process of prototype has been started.