

❖ SPORT AND HEALTH

BODYBUILDING-FITNESS INFORMATISATION HALLS WITH eFit APPLICATION**HERLO JULIEN NARCIS¹****Abstract**

Purpose. To develop a monitoring computer software programs bodybuilding and fitness. The eFit software, also monitors somatic-functional indicators.

Methods: bibliographic method, experimental method, statistical and mathematical observation, history method.

Results. Currently software is being tested.

Key words: digitization, workouts, fitness, bodybuilders, eFit

Introduction

This paper proposes the development of computer software in order to monitor specific training programs for fitness and bodybuilding.

eFit software will also monitor, morphological and functional indices such as body mass index, the elasticity of the chest, chest area, abdominal area, perimeter arm, leg area, blood pressure, heart rate, pre-exercise, intra- and post exercise-effort, body weight.

Doing a comparative study between an existing software worldwide and eFit I noticed that there are many similarities, but none of the software does not contain all particulars of eFit. There are a variety of computer programs worldwide such as: Bodyfitdb, Crosstrainer, Weightmania, Freetrainers, Fitness Assistant Bodytrans, which monitors the training program, the necessary calorie per day diet plan etc.

In Romania, we identified two particular

- implement software, hardware and testing equipment optimal configuration of the computer system

- connecting to the system of monitoring devices morphological and functional indices and testing their interfaces

- making an initial training, with Panoramic Gym staff and with potential subjects

- conduct preliminary measurements and determination of morpho-functional indices to test equipment used.

The main project objective is development information software eFit. This objective is an inventory of activities related to specific software available on the national and international research literature in computer science, methodology of fitness and bodybuilding training, ergophysiology, somatometers etc., purchase of equipment, measuring instruments and monitoring.

The secondary objective of the research

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software, BrilSports ID and Wellness Gate. Even if the software applicable to the sport, their basic feature is the orientation of the sports complex manage, manage stocks of existing products, controlling the flow of people within a sports center, counting the number of persons in various areas of the sports center, customers on the photo identification, development of statistics, etc.

In this context, Romania, the only solution eFit system computerization programs of fitness / bodybuilding, and monitoring of morphological and functional indicators of the subjects involved in research.

For optimal performance of the project we considered as binding as some preliminary activities:

- theoretical documentation to develop training programs and adjusting them to the optimal time;

consists of developing and implementing strategy in the program eFit bodybuilding fitness room Panoramic Gym in Arad. In this respect we need the following related activities:

- selecting a representative sample for the project

- initial testing of the subjects involved in research

- developing individualized training programs, the level of physical training which is at the initial, intermediate, advanced)

- adaptation of the training process to the individual needs of the moment

- permanent feedback to the athlete's / student by providing it, in automated, at fixed intervals of time, its individual sheet e-mail)

- ongoing monitoring of morphological indices body mass index, elasticity, chest perimeter

segmentation) and functional blood pressure and heart rate

There are many areas of software application solutions in the field of physical education and sport.

From information gathered in the documentation, note that internationally there are many software solutions applicable in the bodybuilding, fitness area, among which:

- **BODYFITdb**

This software analyzes:

- diet;
 - caloric needs;
 - weight and body composition (lean body mass and adipose tissue);
 - blood pressure, heart rate and cholesterol levels;
 - aerobic capacity.
- <http://www.bodyfitdb.com/>

- **CROSSTRAINER**

Crosstrainer Software helps create food diaries, journals, training and management's wellness. Crosstrainer is designed to help fitness instructors to constantly monitor customers. It can also create customer profiles and nutrition plans based on client objectives.

Monitors client progress and adjusts the training program as required.

Develops nutrition programs, detailed workouts days, weeks or even months. Provides customers the reports and charts via e-mail, the journal of training and nutrition plan.

[http://www.crosstrainer.ca/product.php?Product=Crosstrainer% 20Online% 20Trainer](http://www.crosstrainer.ca/product.php?Product=Crosstrainer%20Online%20Trainer)

- **WEIGHTMANIA**

This program manages the diet plan, workout, cardio workout and weight changes. Monitor the caloric needs and carbohydrates. It can monitor more than one person simultaneously. Register fluctuations in body weight, and 24 indicators such as BP, FC, cholesterol and blood sugar, etc. adipose tissue.

<http://www.weightmania.com/lpfitness.htm>

- **FREETRAINERS**

Personalized fitness plan, this program is included in the package allows a choice FREETRAINERS level of preparedness, the number of days of training per week, the user receives a

report as a chart of progress, not least by sharing personal report reports of other users.

<http://www.freetrainers.com/>

- **FITNESS ASSISTANT 3.0**

This software monitors both individual diet and personal fitness program. Register fluctuations in body weight, flexible diet based on individual needs and goal: increase or decrease in body weight. Can store a log of fitness training, diet, exercise and activities cardio post-exercise recovery.

<http://www.x3msoftware.com/>

- **Bodybuilding CYBERGENICS 60 DAY TOTAL PROGRAM**

Cybergenics 60 day total bodybuilding program is based on extensive research generally called AMA (Anabolic Matrix Alteration). This system uses seven isolated chemical formulas, which have a higher bioavailability than regular supplements. These substances are called Isolates used in combination with a specific bodybuilding training, with a maximum duration of 60 minutes. This system can be used by athletes at any level of ability, allowing a significant increase in muscle mass, strength and force of the explosion, while decreasing body fat.

<http://www.trulyhuge.com/cybergenicstotalbodybuildingsystem.htm>

- **BODYTRANS**

BodyTrans is organized into three modules: training, nutrition and mental state. This program recommends training six days a week and calls for proper nutrition that is provided through six balanced meals a day.

Training module is separated into two parts: the training of strength and cardio workout that the module allows you to search for food nutrition in a database.

<http://fitness-software-review.toptenreviews.com/bodytrans-review.html>

- **BRILSPORTS ID**

Nationally, it was noted BrillSports ID software. This allows control of the entire flow of people within a sports center, through identification cards or bracelets.

The main features of this program are:

- limiting customer access to the center, the RFID identification systems, turnstile or door type systems with electromagnetic locks

- to provide identification bracelets with different access rights to facilities within the sports center, according to the subscription type

- replace the standard key to the locker room with wristband
 - identifying the customer in the sale and the possibility to start cashing consumptions
 - counting the number of persons in various areas of the sports center to avoid congestion, the calculation of time spent in various areas and the possibility of differential taxation.
- http://www.brilsports.ro/ro/products_id.asp

- WELLNESS GATE

Also, the software Wellness Gate, originally from Hungary, was implemented in our country in Oradea (Ars Nova). This software provides complete control of operation of club sports, fitness gyms given customer, to speed up servicing.

Other features of the software:

- management of settlements, checks inventory, receipts, disbursements) administrative, business members list, regular monitoring
- facilitating the work manager, statistics, schedules, forms, instructors salary calculation
- Support for marketing and e-mail campaign

In its basic form the system contains the following modules: member identification by bar code card, magnetic and proximity, product identification by bar code, text, digital signature, billing, invoice printing, printing ticket, access ticket zone, magnetic card, barcode, picture identification, user setting arbitrary levels, with turnstile access control, electronic gates and magnetic closures, parking management.

<http://www.wellnessgate.hu/>

Method

Thus, the literature, we see that there are wealth of useful software in the bodybuilding and fitness programs on proper training, nutrition, post-exercise recovery, etc.

However, in Romania, the "eFit" form and content is developed, the first place. Analyzing its components and comparing them with different software from other countries, we see many similarities, but nevertheless observed eFit degree of originality of the product.

Regarding software eFit contributions relative to existing software world, there is some technical elements which do not contain the latter. Thus, the application allows eFit permanent feedback between the user and system via a touchscreen.

Also, adjustments can be made dynamic factors through user interaction with the training and not least, the system provides real time information to the user.

Doing a comparative study between an existing software worldwide and eFit note that there are many similarities, but none of the software does not contain all particulars of eFit it with an original character.

The results of this research project can be realized through:

- building a database of essential elements in preparing athletes / practitioners for subsequent realization in specialized publications
- use information obtained to improve the preparation of plans / projects Practical training;
- design and planning of training, based on data collected in order to optimize the preparation of athletes;
- objective monitoring of each sport;
 - preparation of papers / publications / articles in professional journals;
 - writing articles and posting them on the research results on the website eFit presentation.

Documentation on the methodology of theoretical fitness and bodybuilding by:

- literature study documentation necessary to achieve a custom workout plan
- analyze the concepts of fitness, bodybuilding, exercise capacity, specific power
- identify the limiting factors of the specific force (force under the resistance) to determine the somatic type, typology of skeletal muscle fibers
- presentation of the so-called "Weider Principles" training specific to each level of training

Methodical training on fitness and bodybuilding

As in any sport and bodybuilding is a priority as specific training to be conducted carefully, taking into account certain methodological issues.

In this context, one can see, the great importance they have training norms.

In what follows, we will refer to both the number of repetitions, number of sets, the number of recommended exercises, and the load used, the pace of implementation, rest breaks, maximum load, etc.

The number of repetitions performed in a series will be closely interlinked with the objective pursued. Thus, if we are to develop muscle strength, number of repetitions can vary between 10-15, to develop muscle strength is recommended approximate 6 to 10 repetitions, for muscle growth (hypertrophy) will perform 6-8 repetitions, and for developing explosive strength (power) 1-3 repetitions. These values are given, each player adjusting the number of repetitions, sets and exercises specific to its individual needs.

A basic rule of the bodybuilding workout that is always on the large muscle groups such as

deltoid, pectoralis, Ridge, quadriceps muscle group before it will work as well as smaller brachial biceps, triceps brachial, femoral biceps, calf, forearm, etc. The only atypical in that particular case and this rule is repealed, on the principle of priority Weider. If that will work at the beginning of training, weak muscles, whatever they may be.

Recommended number of sets for small muscle groups such as the brachial biceps, triceps brachial, femoral biceps, calf, forearm is 8-10, and for medium and large muscles as the deltoid, pectoralis, dorsal, quadriceps is recommended to 12 -14 sets.

Number of exercises for a particular muscle group may vary for major muscle groups between 3-4 and 2-3 for smaller muscle groups.

Load used in bodybuilding training can be:

- over maximal it has values of 101-175% of IM (full load), in this case using exclusively the principle of negative movements Weider (retro gravity)
- representing 90-100% of maximal IM
- high ranging between 60-90% of IM
- having average values between 30-60% of IM (C. Bogdan, 1998)

Regarding the pace of implementation, the vast majority of exercises within a workout should be performed in a deliberately slow. Throughout the movement of cargo must be kept under control, without any tendency of jerky, throwing, balance, etc..

Rest break between sets will range between 1 and 3 minutes, depending on the type exercises basic exercises performed with high loads require a larger rest period in relation to years of isolation), and not least according to The training principle applied normal rest break is to be reduced if the principle of quality training).

It is particularly important for training effectiveness is the appropriate choice of intensity of work, which involves determining the maximum load (IM), because on that basis to be able to choose the optimal training load.

To determine IM use the formula to calculate the maximum load from O'Connor:

$$1 \text{ IM} = W \times 1 + 0.025 \times R$$

where:
 IM = maximum load
 W = weight lifted
 R = number of repetitions
http://en.wikipedia.org/wiki/One-repetition_maximum

In bodybuilding, unlike other areas, "more " does not necessarily mean "better. " In this respect, which is interested in a workout intensity of his effort and less volume, volume to be kept within reasonable limits.

To increase the intensity of effort, bodybuilder is traversing several ways. One would

be to increase the load used (several pounds load), but it is known that no load can be increased every day because it is physiologically impossible. However, to increase the intensity of effort, even if working with the same load can speed up execution of the exercise. This method is recommended only if you work with loads of 65-85% IM also, increasing exercise intensity can be achieved by reducing the break and rest between two sets. This method is recommended if you want to build muscle mass mainly because the decrease in rest breaks is counterproductive if heavy exercises aimed at muscle hypertrophy.

In conclusion, for a training to have maximum effectiveness, it is recommended that the duration should not exceed 60 minutes, to be sufficiently intense to produce adaptive changes in the muscle fibers and basic exercises to be performed in strict form. (J.N. Herlo, 2005)

Regarding post-exercise recovery period, expressed in hours, it is dependent on training load as follows:

- extreme load = 72 hours recovery time
- high load = 48 - 72 hours recovery time
- substantial load = 24 - 48 hours recovery time
- average load = 12 to 24 hours recovery time
- low load = <12 hours for recovery (V. Zatsiorsky, W. Kraemer, 2006)

Discussion and conclusion

Developing software solution eFit by:

- making an inventory of existing specific software on a national and international
- the study of computer science literature, methodology fitness and bodybuilding training, ergo physiology, somato meters etc.
- purchase of equipment, measuring instruments and monitoring

eFit software testing by:

- the connections between the devices at both hardware and logic to detect and correct any problems on communication protocols, such as software conflicts, etc.
- conducting a pilot study

eFit software implementation by:

- implementation strategy eFit in bodybuilding fitness room Panoramic Gym in Arad
- selecting a representative sample for the project
- initial testing of the subjects involved in research
- developing individualized training programs, the level of physical training which is at the initial, intermediate, advanced)
- adaptation of the training process to the individual needs of the moment
- feedback to the athlete's permanent / student by providing it, in automated, at fixed intervals of time, its individual sheet (e-mail)

- ongoing monitoring of morphological indices (body mass index, the elasticity of the chest) and functional (blood pressure and heart rate)

eFit and user interface of the images can be viewed below:



Figure A
a) personal card scanning

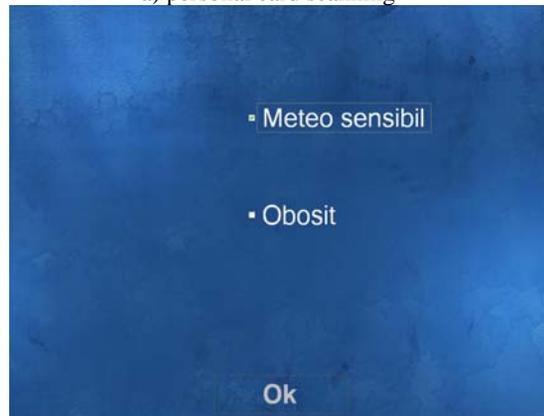


Figure B
b) the choice of a state optional)



Figure C
c) view custom program



Figure D

d) determination of body mass

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<http://www.wellnessgate.hu/http://www.bodyfitdb.com/>

<http://www.trulyhuge.com/cybergenicstotalbodybuildingssystem.htm>

<http://www.crosstrainer.ca/product.php?Product=Crosstrainer%20Online%20Trainer>