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Designing a Software to Count the Body Composition and Somatotype and Its Role in Pursing the Morphological State of Spotsmen

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Abstract

Designing a software to count the body composition and somatotype and its role in pursing the morphological state of sportsmen

The objective from this study is to design a software which relies on the Heat-Carter method for onthropometrie somatotype and matiegka équation in counting the body mass (the fat, the muscle, the bones)and among the characteristics of the software :

1. Facilitating the countable operations for matiegka équations and Heat-carter method for antropometric somatotype .
2. Counting the results of the body mass and somatotype for big number of sportsmen in short period of time ,less effort and more accuracy.
3. Designing basic data rich of the body mass 'and the somatotype 's results of many sportsmen ,So that ,it helps in pursing their morphological state and the way to select and guid them to the best sport activity.
4. Designing the somatochart and diagram for body composition .

As a future study we are loaking for luiking the software with the electronie side in order to design an outomatic machine which works on taking the anthropometric measurments in human body with high accurary and to transmit the data to the countable machine in which they will be treated and stored in basic data otomatically.

Peer-review under responsibility of Scientific Committee of American Applied Science Research Institute

Keywords: Baseball Fielding Concept Training; Animation Platform; Tactical Cases Simulation; Temporal Spatial Relationship;

1. Introduction

The world of computer sciences has witnessed a lot of success as one of the technological advances in sparing a lot of time and effort ,it also increased the credibility and confidence of the results to almost a perfect level .

Computer and software scientists succeeded in making many computers for the use in all fields, among which sports activities are covered.

In fact all scientific fields use computers to store, to retrieve and to analyse data that is why computer sciences were introduced in sport activities to match the scientific progress known to other scientific fields .

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Sports morphology is a science that is specialised in studying the changes of human body structure which occur under physical exercises ,The high performance of tained by athlets makes it necessary to evaluate the body capacity and the individual characteristics of each athlet .

This evaluation considers a number of parametrs such as weight ,height, body surface ,fat mass, muscle mass and bones mass .

From this logic stems the idea to design a software capable to treat in put data (Anthropometric measurements) where the the out put data will be in form of Somatotype and body mass .

By using Matiegka equation and carter-heat method of anthropometric somatotype, as a consequence the objectives of this research are :

1) To simplify the computing operations of Matiegka equation and the carter-heat method.
2) To increase the precision of computing the results of body mass and somatotypes of several athlets in faster time and less efforts.
3) To design baseline data of body mass and somatotype for a big number of athlets to follow up their morpholic state,thier selection and thier guidance to the most appropriate sport ‘s activity.
4) To design a somatochart and body composition chart .

2. Research terms

Software: he’s a direction give to the computer to excute precise task in the time from .(Ghistaine and Patrick 2000).

Body composition (body mass) : is a term refers to the human body from three ingredients are (muscles, fats, bones) . (Battinelli,2007)

Somatotype : is an expression refers to the morphology , and is expressed in three points , the first refers to the endomorphy(right), segond (midale)to mesomorphy , third (left) ectomorphy (carter,2002)

3. Equations adopted in software

We used the formulas of Mateigka (1921) :

3.1. Fat mass

MA = d. s.k.
MG : absolute fat mass in kg
d:½∑skinfold(subscapular, (biceps+triceps)/2chest,forearm,abdominal,thigh)/6
s : body surface calculated by the formula Izakson(1958) :
s = (100 + wieht + (stature – 160)) / 100
k : constant = 1, 3
- calculating the percentage of fat mass (relative) :
MG% = (MA/ body mass).100

3.2. Bones mass :

MO = l.o².k
MO: absolute bones mass in kg
l : stature in cm
o = (diameters distal arm, forearm, thigh and leg)/4 in cm
k: constant = 1,2
- calculating the percentage of bones mass (relative) :
MO% = (MO/masse corporelle).100

3.3. muscle mass :

MM = l.r².k
MO : absolute muscle mass in kg

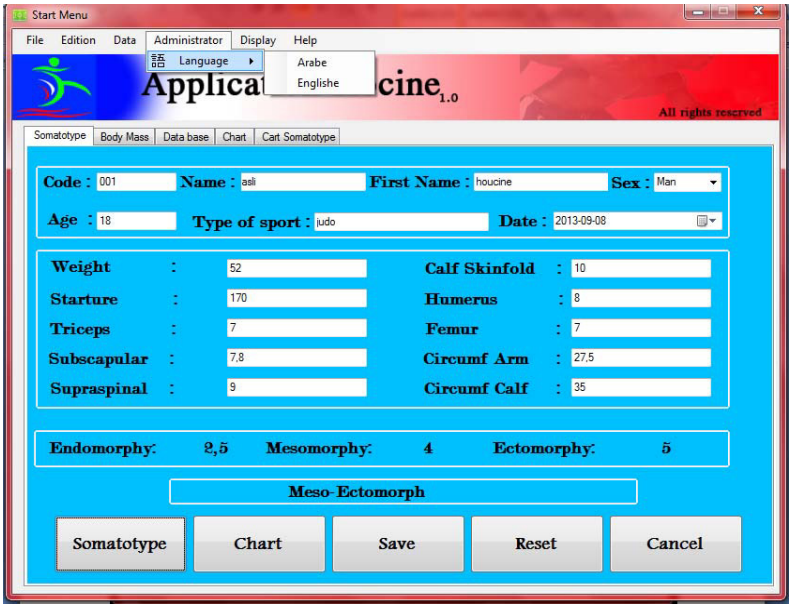
l : stature in cm
r =(∑ circumference arm, forearm, thigh and leg) / 25.12 - (∑skinfold arm, forearm, thigh and leg) / 80
k : constant = 6,5
- calculating the percentage of muscle mass (relative) :
MM% = (MM/body mass).100 (Matiegka, 1921).

4. Somatotype

We used the Heath-carter Antropometric Somatotype (Duqaet and carter ,2001),(Heat and carter,1977),(Philipaerts,2002)

4.1. How the software works:

programming language :
visual C sharp(C#)→Microsoft visual studio 2008
Data base →MySQL (Wamp Server) (Mickey,2002),(Donis,2005),(Loca and John,2010)
Software platform :
32 bit ,64 bit Windows (XP , Windows 7)
Size of program : 2 ,45 MB



First step :
After fixing the program (setup software) you'll see the next interface and it's « somatotype interface » if you want to change the language from english to arab click on « administrator box ».

fill the information about somatotype then click on the « somatotype box » to show the results , if you want to represent data in the somatochart clik on « chart » , if you want to delete data click on « reset » , After making sure to fill the correct to data click « save » and you'll see the message if you want to Continue calculate body mass click « OK » , and if want to save the results somatotype just click « NO » if you want to close program click on « cancel »

Observation : to fill the high side of the program (code ,Name , Age ….) are necessary to save the results in database.

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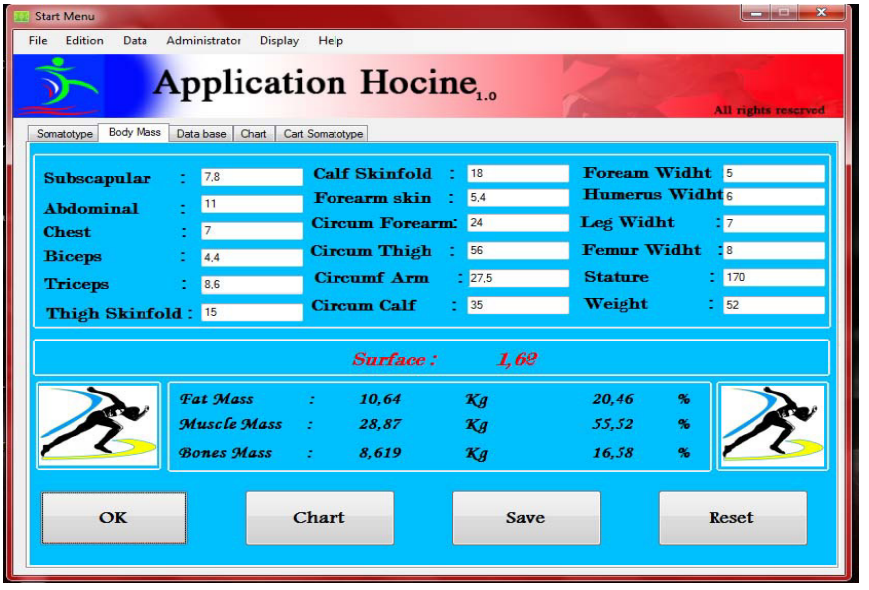
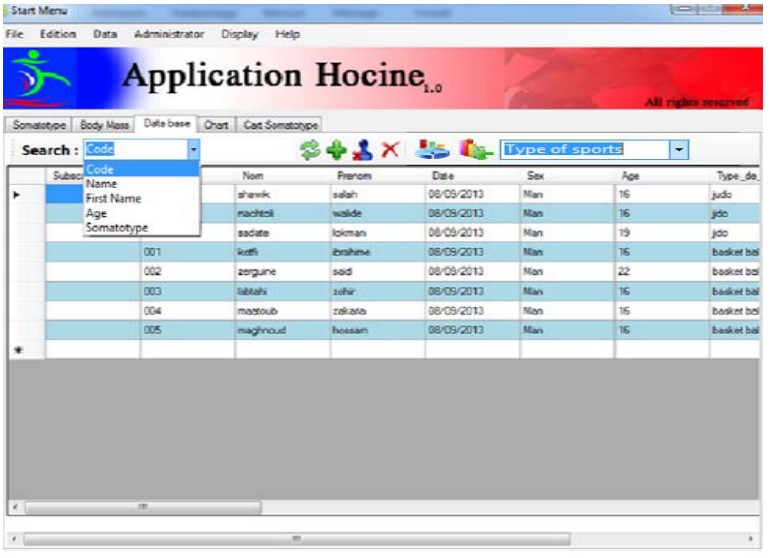


The second step:

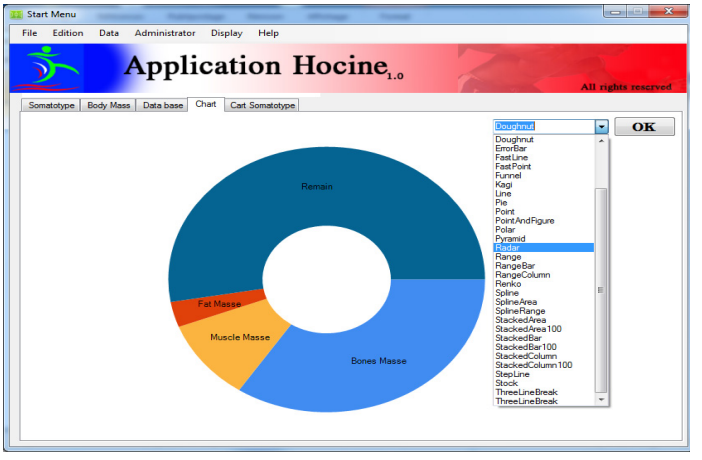
Fill the data for body mass then click on « OK » to show results ,same previous steps if you want change the language or graphical representation or delete afer confirming data click « save » then click on « data base» box , to confirming data save in data base you will see the next interface .



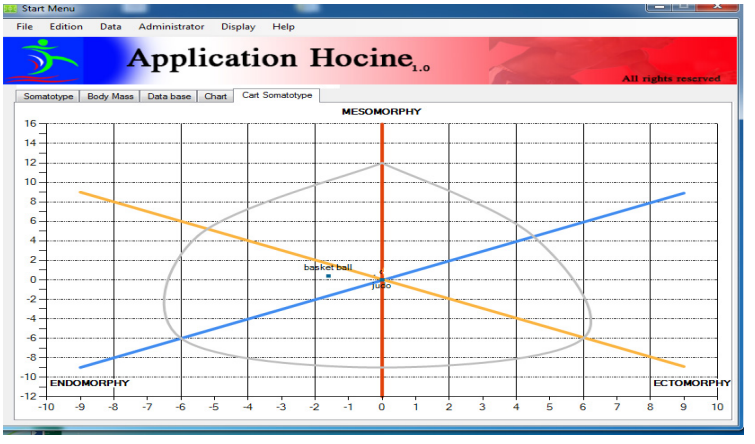
After clicking on « data base » you'll see black page , click on execution for appearence of stored information , if you want to research about (Name or code or …..) entre Name …, in research box you will see the spacial information in blue color .

If you want to delete the stored information for this code click on « delete » , and if you want to delete all the information from data base click on « delet all » ; if you want to change in some data click on then click on Name or code …., that you wanted to change then click on « somatotype » or « body mass » box ,

You'll find that the data was automatically filled then make a change process then click on « Save » , if you want data representation Somatotype or body mass choose the serie name then click on the box  and will apear to you the interface .



When the next interface apear choose graphical represetation chart type then click on « OK » then click on « somatochart ».



To apear somatochart as you see in the picture .

5. Search Results

1) Facilitating the countable operations for matiegka equations and Heat-carter method for antropometric somatotype .

2) Counting the results of the body mass and somatotype for big number of sportsmen in short period of time ,less effort and more accuracy.

3) Designing basic data rich of the body mass ‘and the somatotype ‘s results of many sportsmen ,So that ,it helps in pursing their morphological state and the way to select and guid them to the best sport activity.

4) Designing the somatochart and diagram for body composition .

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6. Recommendations

1) Link this software to the hardware to the process to make measurs anthropometry .
2) Take care to the morphology side to estimate training program
3) It's necesory to take care of somatotype in selection process and to direct athlets to the right physical activity .
4) Make more of meetings and conferences about the importance link to the sport domain with ather sciences especially electronic engineering science .

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