RD PowerPro™ User Guide

RD PowerPro™: Transforming Science into Action
Power at Play, LLC

CONTACT INFORMATION

Power at Play, LLC
Email: sales@rdpowerpro.com
Web: www.rdpowerpro.com

TABLE OF CONTENTS

I. Introduction

Welcome to the RD PowerPro™ Software User Guide. This manual will provide you basic instructions on how to use the SOFTWARE.

II. Reference Documents

- **RD PowerPro™ Installation Guide,** Power at Play, LLC
- **End Users License Agreement for RD PowerPro™** is available on our website at www.rdpowerpro.com

III. Running the Program

After the SOFTWARE is installed, the User may double click the SOFTWARE Program Icon to execute it. A splash screen similar to the one shown appears when the program is executed. The SOFTWARE will only run under Windows 7, Windows 8, and Windows 10. Previous versions of the Windows Operating System are NOT supported.

The SOFTWARE login screen indicates what version of the Windows operating system you are utilizing as well as the MySQL ODBC driver that is loaded on your computer.

Your company has been provided a ten to sixteen character length passcode for logging into the SOFTWARE system.

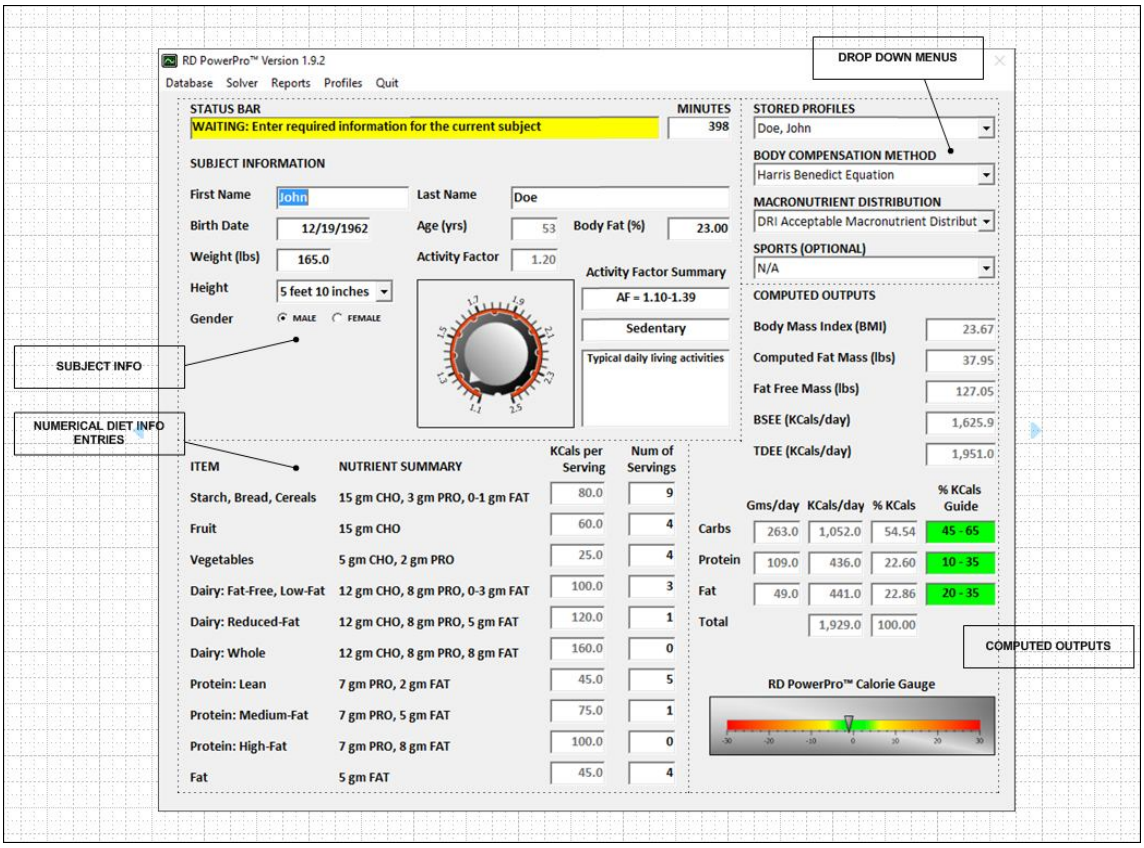
You may submit a request to sales@rdpowerpro.com to change your passcode character string. This character string identifies your company within the SOFTWARE. The EULA prohibits you from sharing this character string to any unauthorized users. If you happen to lose control of your passcode, contact sales@cathcad.com and we will change your login passcode.

IV. Using the RD PowerPro™ Software

The SOFTWARE was developed and compiled to run under the Microsoft Windows Operating System. It's use and execution should be easily understood by a Registered Dietician who is familiar with the development of human nutrition and regulation of diets for individuals. This section provides basic instructions on how to use the SOFTWARE.

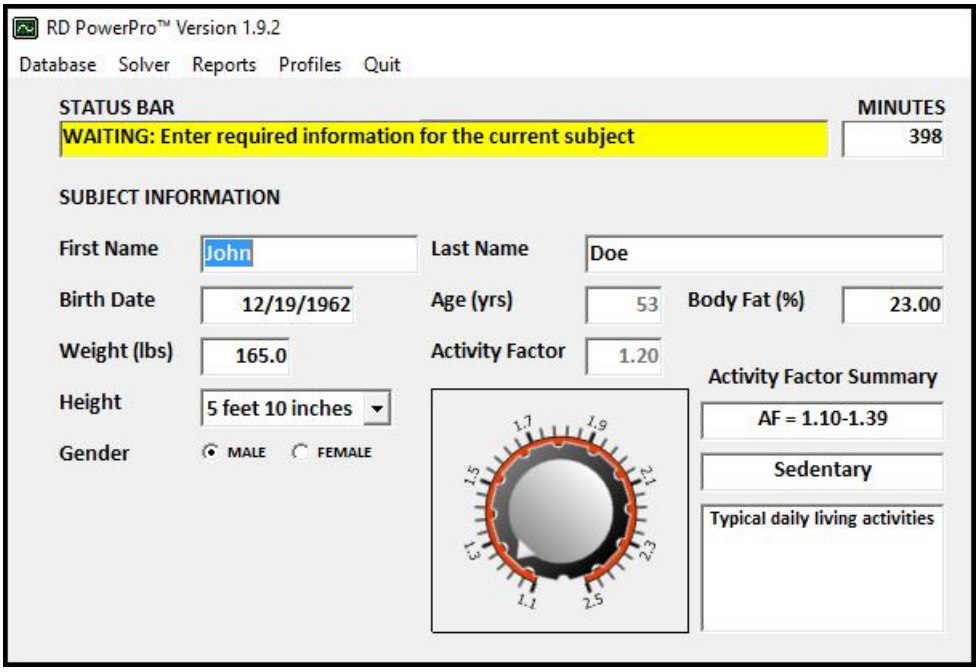
The SOFTWARE is organized into four zones or areas in which data is either entered and/or outputs are computed and displayed for the User's use. These areas are as follows:

- SUBJECT INFO: In this region, information with regards to the Subject is entered by the User.
- DROP-DOWN MENUS: In this region, four drop down menus are available. These drop down menu's control which User Profile is being edited as well as allow for the selection of the Body Compensation Method, Macronutrient Distribution, and the Subject's SPORTS information (as applicable).
- NUMERICAL DIET INFO ENTRIES: In this region, the numerical information with regards to the Subject's proposed diet is entered
- COMPUTED OUTPUTS: The Main outputs of the software are displayed in this region. It is required that a complete profile and diet be entered in order for the computed outputs to be displayed to the User of the Software.



SUBJECT INFORMATION

This section summarizes the SUBJECT INFORMATION portion of the SOFTWARE.

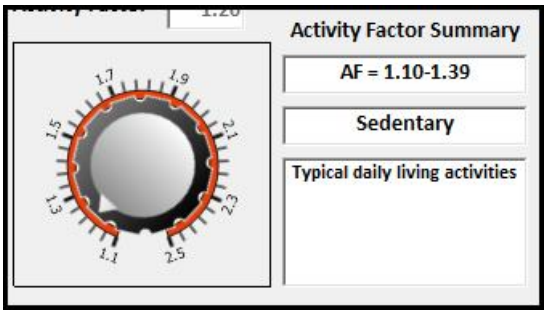


In the case of when the Body Compensation Method is set to the Cunningham Method, an additional dialog box is displayed that requires the User to enter the (known) FAT FREE MASS (in pounds) of the Subject. The following table summaries the field names and the limits placed on these input fields.

Description	Entry Method	Characters allowed	String Length	Limits on Data Entry
First Name	User Entered	a-z, A-Z, 0-9, ', `, " "	30	None
Last Name	User Entered	a-z, A-Z, 0-9, ', `, " "	30	None
Birth Date	User Entered	0-9, ".", "/", "\"	10	See AGE
Age	Computed	N/A	N/A	4<= Age <= 100
Body Fat	User Entered	0-9, "."	5	0 < BF < 100%
Weight	User Entered	0-9, "."	5	0 < Weight < 400 lbs
Height	Drop down	Select from list	N/A	4 ft 0 inches to 7 ft 11 inches
Gender	Select Button	N/A	N/A	Male or Female
Fat Free Mass (entered as part of Cunningham Method)	User Entered	0-9, "."	5	0 < FFM < Weight

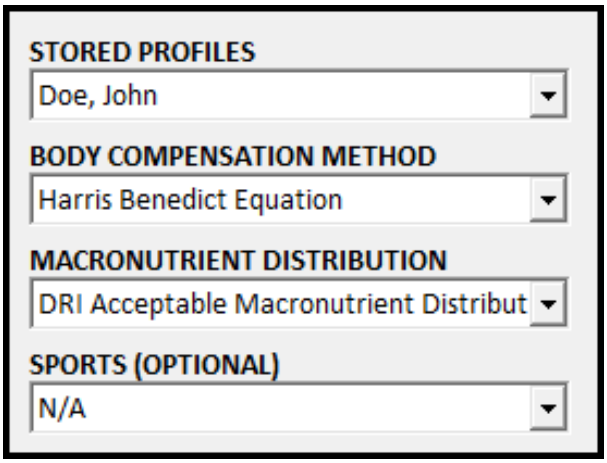
In order to determine the actual energy (calories) required by the Subject, an Activity Factor must be entered into the system by the User. Instead of a numerical entry field, the SOFTWARE engages an active dial "gauge" on the screen. In order to change the Activity Factor, simply click on the GAUGE with your mouse and turn it CLOCK WISE/COUNTER CLOCK WISE (as applicable) in order to enter the Activity Factor of the Subject.

The current numerical value of the Activity Factor and Attributes of the Activity Factor of the current entry are display in the associated dialog boxes next to the GAUGE as shown.

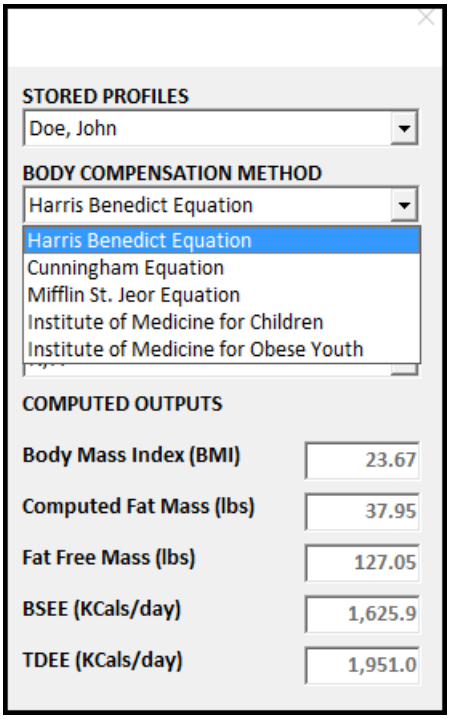


DROP DOWN MENUS

There are four drop down menus that are available as part of the SOFTWARE in the upper right corner of the form as shown.

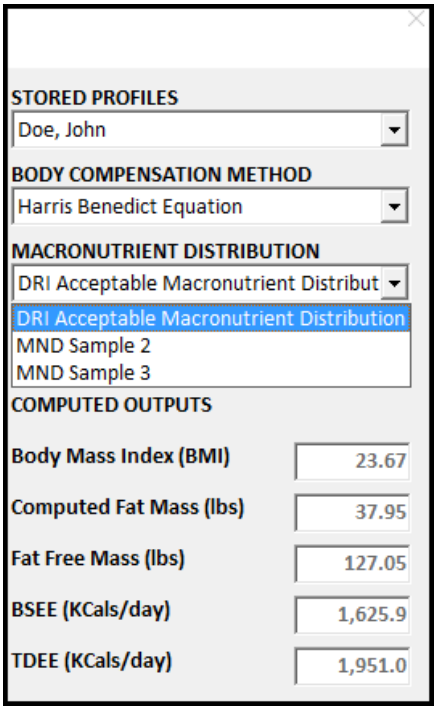


The STORED PROFILES drop down menu allows the User to quickly access stored subjects profiles. The number of stored profiles allotted to the User depends on the RD PowerPro™ product that was purchased by the User. In addition, the Network Version model of the SOFTWARE allows the User to access the Profiles created by other Users that are part of the same NETWORK GROUP.



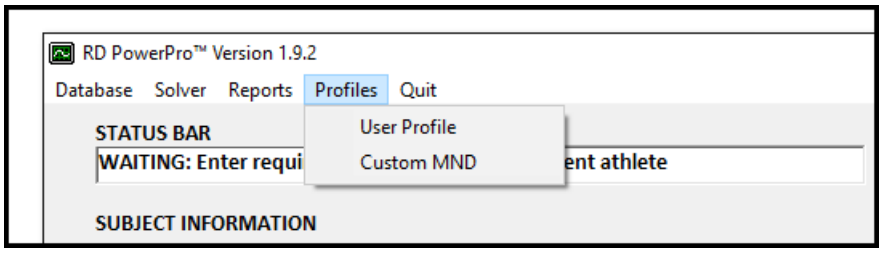
The BODY COMPENSATION METHOD drop down menu allows the User to select the various BCM that are preprogrammed into the SOFTWARE. At the time that this document was created, the following BCM methods were available (as shown via the SCREEN SHOT).

Depending on the BCM selection, various limits may be placed on the data being entered by the User. For example, an age limit of 4 to 18 years (inclusive) is placed on the Subject's birth date IF the Institute of Medicine for Children is selected.



The MACRONUTRIENT DISTRIBUTION drop down menu allows for the selection of the desired MND method. The SOFTWARE comes preprogrammed with the DRI Acceptable Macronutrient Distribution method.

The User may CREATE their own MND methods via the MAIN MENU/PROFILES and then selecting Custom MND.



Upon creation of a custom MND, the User created MND items will automatically appear in the MND drop down menu and may be applied to Subject's profiles.

NUMERICAL DIET INFO ENTRY FIELDS

The SOFTWARE takes a unique approach in the method of entering the Subject's proposed diet into the SOFTWARE. The Diet Input Fields are located in the lower left corner of the Main Form as illustrated. The default for a new Subject's profile is for all the number of servings for each Diet Item to be set identically to zero.

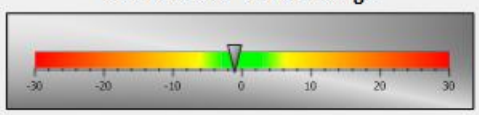
ITEM	NUTRIENT SUMMARY	KCals per Serving	Num of Servings
Starch, Bread, Cereals	15 gm CHO, 3 gm PRO, 0-1 gm FAT	80.0	0
Fruit	15 gm CHO	60.0	0
Vegetables	5 gm CHO, 2 gm PRO	25.0	0
Dairy: Fat-Free, Low-Fat	12 gm CHO, 8 gm PRO, 0-3 gm FAT	100.0	0
Dairy: Reduced-Fat	12 gm CHO, 8 gm PRO, 5 gm FAT	120.0	0
Dairy: Whole	12 gm CHO, 8 gm PRO, 8 gm FAT	160.0	0
Protein: Lean	7 gm PRO, 2 gm FAT	45.0	0
Protein: Medium-Fat	7 gm PRO, 5 gm FAT	75.0	0
Protein: High-Fat	7 gm PRO, 8 gm FAT	100.0	0
Fat	5 gm FAT	45.0	0

- A diet may be configured manually by the User by changing the number of servings for each Item.
- Alternatively, the SOFTWARE provides an automated method of computing the "best" diet via the SOLVER feature.
- The SOLVER function is covered in detail in Section VII.

COMPUTED OUTPUTS are AUTOMATICALLY computed when the number of servings for any ITEM becomes non-zero and the Subject configuration is completed. The number of servings must be between a number between 0 and 40, inclusive. The nutrient summary and KCals/Serving for each item are NOT editable fields.

	Gms/day	KCals/day	% KCals	% KCals Guide
Carbs	263.0	1,052.0	54.54	45 - 65
Protein	109.0	436.0	22.60	10 - 35
Fat	49.0	441.0	22.86	20 - 35
Total		1,929.0	100.00	

RD PowerPro™ Calorie Gauge



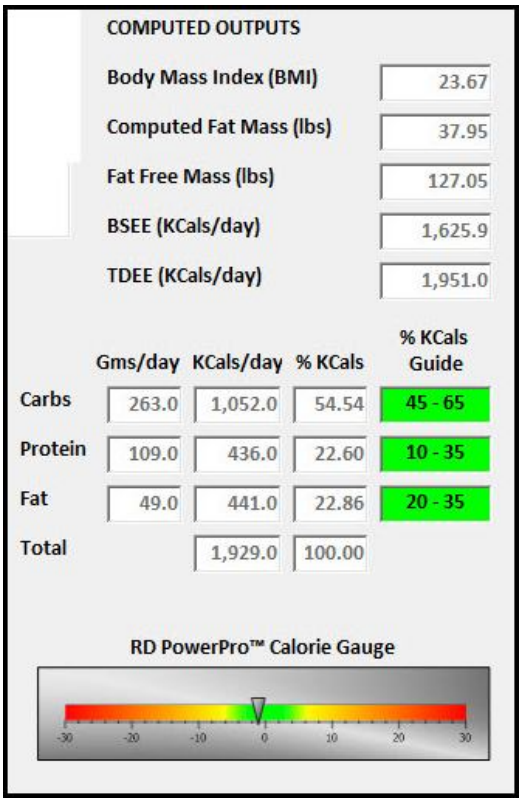
Based on the number of servings per item type, the SOFTWARE automatically computes the following values:

- Total Grams/Day for Carbs, Protein, and Fat
- KCals/Day for Carbs, Protein, and Fat
- % KCals for Carbs, Protein, and Fat

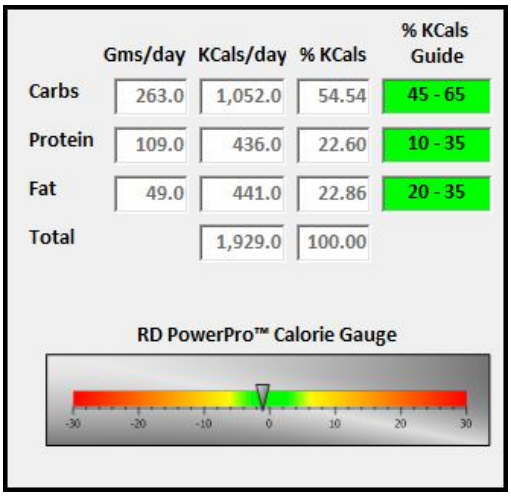
If the Subject configuration is complete, the RD PowerPro™ Calorie Gauge is updated which illustrates graphically the alignment of the diet versus TDEE.

COMPUTED OUTPUTS

When all the Subject Information, Diet Info, and Configuration Inputs are fully completed, the COMPUTED OUTPUT information will begin to populate automatically. The following screen shot illustrates the outputs that are provided by the SOFTWARE.



- Body Mass Index or BMI is a measure of body fat based on height and weight of an individual. It is defined as the body mass divided by the square of the body height and has units of kg/m**2.
- The Computed Fat Mass is a computed value based on the subject's weight and Body Fat percentage. In the case where the Body Compensation method is set to the Cunningham Method, the Fat Mass of the Subject must be entered.
- Free Fat Mass (FFM), also known as lean body mass, refers to all of your body components EXCEPT for FAT.
- Basal Energy Expenditure (BSEE) is the energy needed to carry out fundamental metabolic function. When the Cunningham Equation is selected for the Body Compensation Method, the SOFTWARE will report the RMR value.
- Total Daily Energy Expenditure (or TDEE) is the estimated value for the number of calories the subject burns each day. It is based on the Subjects profile as well as the Subject's activity factor.



Based on the number of servings per item type, the SOFTWARE automatically computes the following values:

- Total Grams/Day for Carbs, Protein, and Fat
- KCals/Day for Carbs, Protein, and Fat
- % KCals for Carbs, Protein, and Fat

If the Subject configuration is complete, the RD PowerPro™ Calorie Gauge is updated which illustrates graphically the alignment of the diet versus TDEE.

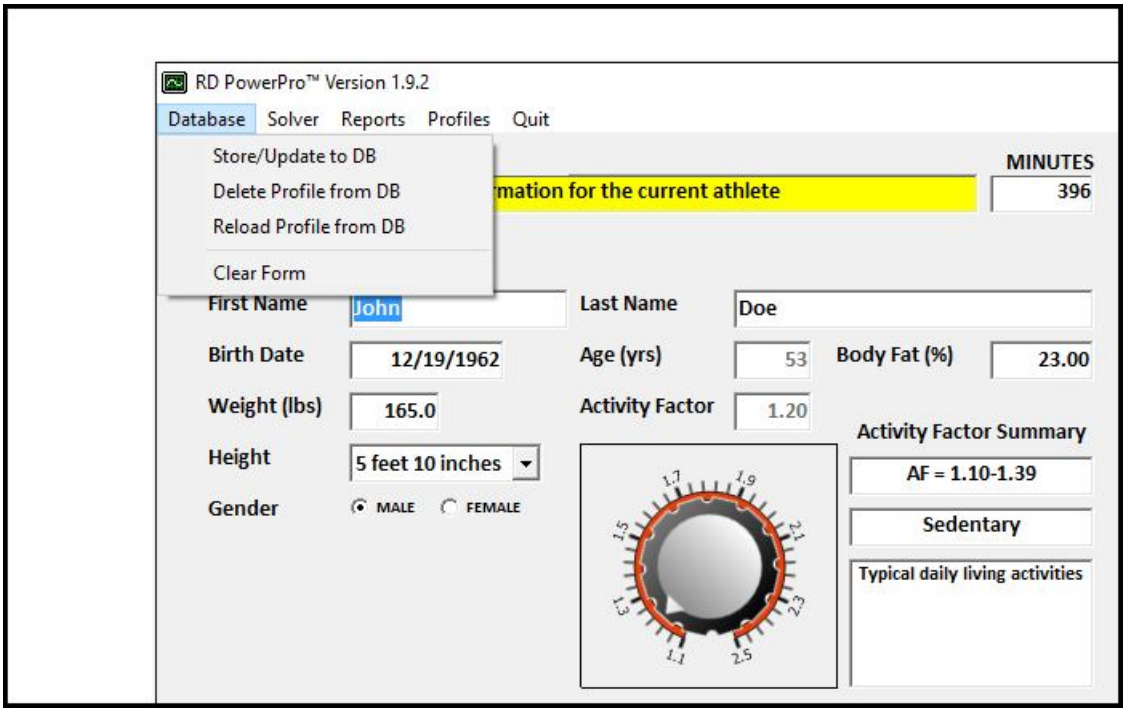
V. Database Operations

RD PowerPro™ provides inherent storage and management of subject profiles as part of the SOFTWARE license. These profiles are stored on a MySQL Database server that is connected to the Internet managed by Roth Technologies, LLC.

The following functions are available for managing subject's profiles.

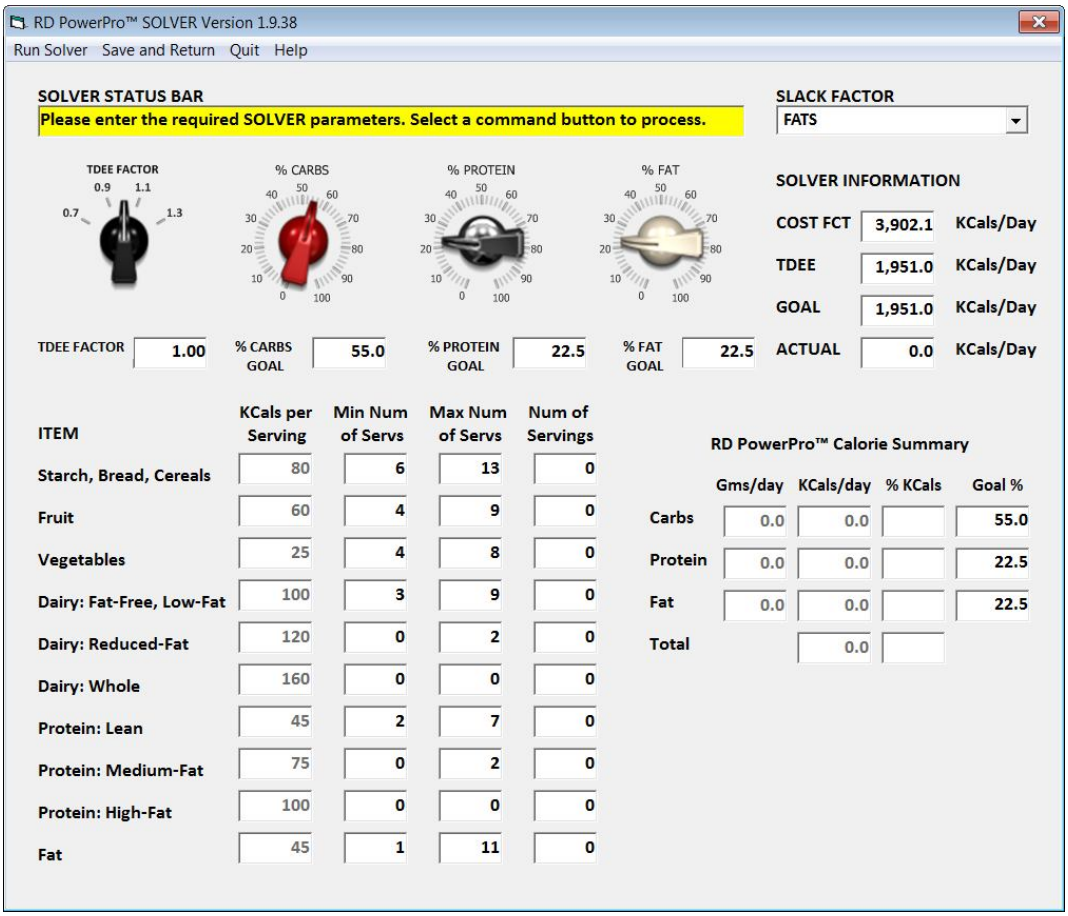
- Store or Update Subject Profile to the database
  - If the profile is new, a new profile is created and stored on the database
  - If the profile already exists, the stored profile is updated on the database
- Delete Subject Profile to the database
  - This allows the User to permanently delete the profile from the database
- Reload Subject Profile to the database
  - If the subject's profile was modified and the User does not like the changes made, the subject's profile can be reloaded FROM the database. Any updates made to the profile (and not saved) are deleted
- Clear Form
  - This allows the User to complete CLEAR the current form and basically start over with a clean slate

It is very important that your connection to the Internet be reliable. If you have a spastic Internet connection -- you may encounter errors with the SOFTWARE reading and writing database information to the Server.



VI. RD PowerPro™ Solver

The SOFTWARE offers a power tool for solving managing the diet requirements for a given subject by means of the RD PowerPro™ SOLVER function. Solver may be accessed via the Main Menu. It requires that the information for a Subject be completed in terms of SUBJECT INFORMATION and the DROP DOWN MENUS. When the Solver function is selected, the Solver Form becomes activated as shown.



In order to properly use the Solver function, the User shall set the TDEE Factor, the % Goals for Carbs, Proteins, and Fats, AND set the min and max number of serving limits for each of the diet items.

- The TDEE factor is utilized to compute the Calorie Goal of the current subject. The Calorie Goal is computed by the equation Calorie Goal = TDEE Factor * TDEE
  - The TDEE factor may be set to a value between 0.70 and 1.30. If this is set to 1.00, then the desired number of calories will be set to the TDEE of the subject.
  - In the example above, if the TDEE Factor was set to 1.00, then the Calorie Goal is set to the TDEE which is 1,951 KCals/Day
  - If the subject was attempting to lose weight, the TDEE would be set to a value less than 1.00 (for example, 0.80) and the Calorie Goal would equal 0.8 * 1,951 = 1,561 KCals/Day

- The Solver will also attempt to compute a diet that matches the percentage goals for Carbs, Protein, and Fat. Note that these percentages must equal to 100 percent. As a result, if the entered goals do not equal 100 percent identically, the SLACK FACTOR selection (upper right hand corner of the form) will be adjusted accordingly.

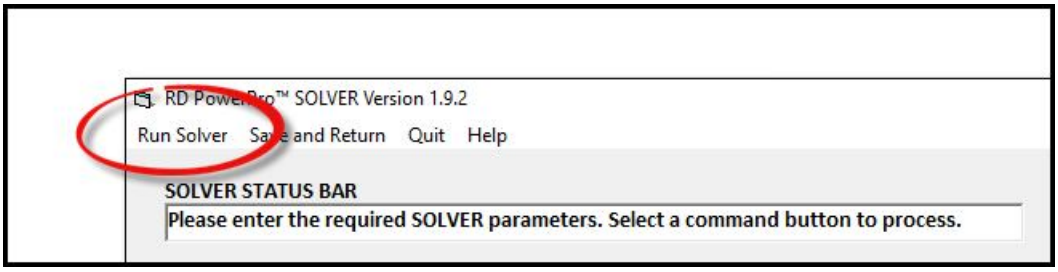
- Finally, the Min and Max Limits for each of the diet items is set by the User. The Min and Max Limits allows the dietician to set reasonable boundaries for the diet. It also allows the dietician to fine tune diets for subjects with special needs such as a diet that is dairy free.

  - In this hypothetical example, in order to compute a diet that is completely free of dairy, the min and max servings for all three dairy items would be set identically to zero.

ITEM	KCals per Serving	Min Num of Servs	Max Num of Servs	Num of Servings
Starch, Bread, Cereals	80	6	13	0
Fruit	60	4	9	0
Vegetables	25	4	8	0
Dairy: Fat-Free, Low-Fat	100	0	0	0
Dairy: Reduced-Fat	120	0	0	0
Dairy: Whole	160	0	0	0
Protein: Lean	45	2	7	0
Protein: Medium-Fat	75	0	2	0
Protein: High-Fat	100	0	0	0
Fat	45	1	11	0

Figure 1 Example: Min and Max Number of Servings set to zero for Dairy Items

- When all the input settings have been entered by the User, select the Run Solver menu option to execute the function. Depending of your computer speed, this process may take ten to twenty seconds to complete.



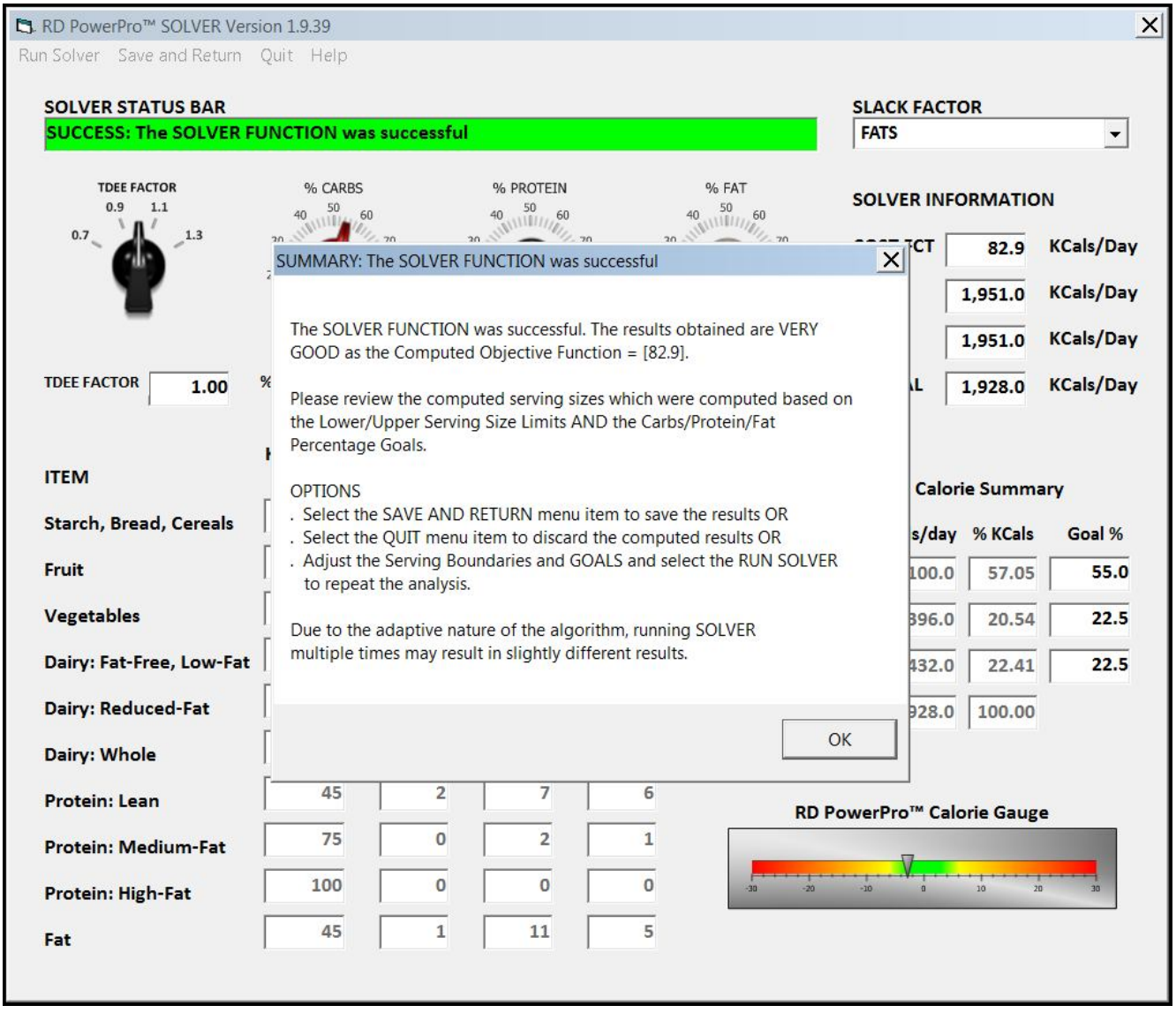
When the Solver function is completed, a message box will appear that will inform the User the results obtained.

The Solver process may be repeated multiple times. In Mathematical terms, if the input boundaries are reasonable, there may be an infinite number of solutions to the problem. The User may adjust the inputs to the Solver function (i.e. adjust the TDEE factor, the percentage goals, and the min/max limits on the food items) and select the Run Solver to obtain a new solution.

When you are finished with the Solver function, the User has two choices

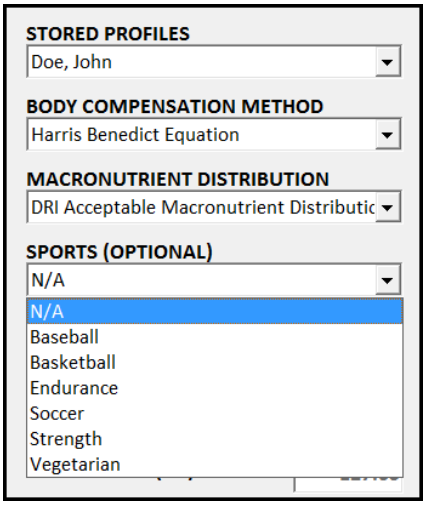
- Save and Return: Select this menu item to SAVE the results from your LAST Solver function run
- Quit: Select this menu item to discard the results obtained.

In both cases, the User will be returned to the Main (Nutritional) Form.



VII. Sports Nutrition

The SOFTWARE comes programmed with SPORTS specific information that can be extremely useful when the User is working with an athlete. The subject's applied sports field can be assigned via the SPORTS dropdown menu on the Main Form as shown.



When the subject's information is filled out and the SPORTS dropdown menu is assigned, the SPORTS menu item becomes active. Selecting this menu item will bring up the SPORTS form as shown.

All the fields EXCEPT for the Athlete Category are locked and may not be edited in the SPORTS form. The SPORTS form provides the following information:

- Daily Carbohydrate Goals based on Activity Levels
- Daily Protein Goals
- Hydration Planning
- Carbohydrate and Protein Recovery information to be used after a workout

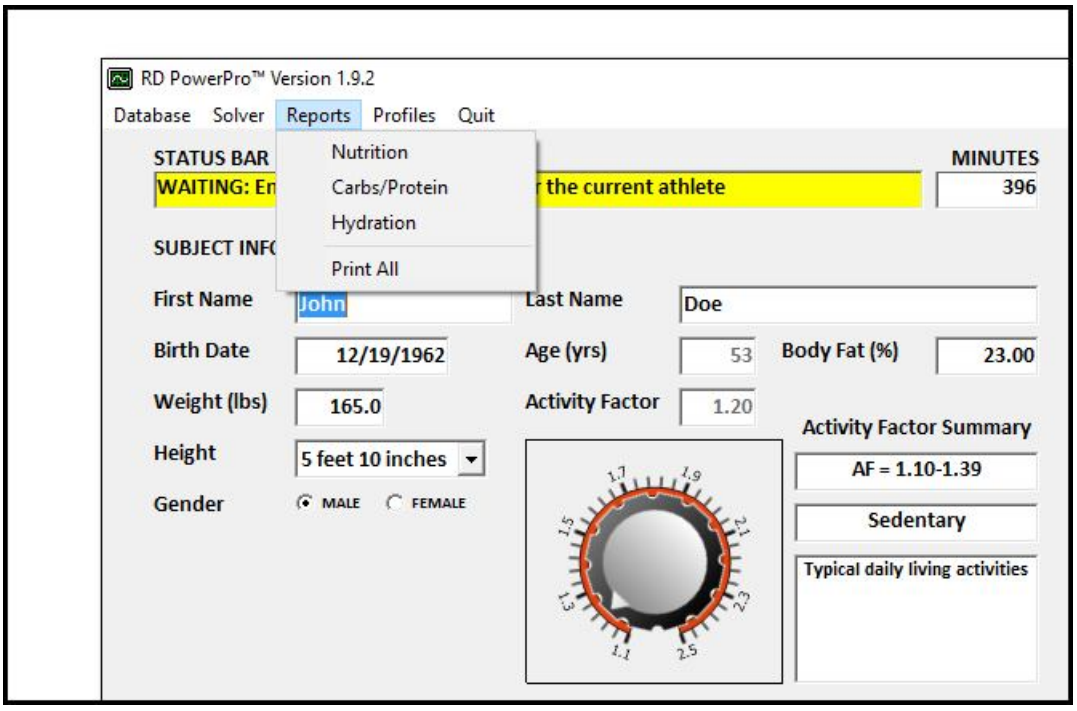
The Carbohydrate, Protein, and Hydration Planning reports may be generated from this form from the REPORT menu option. Select the RETURN TO NUTRITION MODE to return to the MAIN FORM.

VIII. Reports

Once all the subject's information has been entered, the REPORTS menu option becomes available on the main menu. The REPORTS option is a powerful tool to the User in that it allows the generated information to be exported to Microsoft Excel in a preprogrammed format that is suitable for instant printing (or emailing) by the User.

There are three reports available for generation by the SOFTWARE. These reports are as follows:

- Nutrition
- Carbs/Protein
- Hydration



All three reports may be generated all at one time by selecting the ALL menu option. All three reports are illustrated in the following pages via screen shots. The User is free to update and modify the format of the report since the information is loaded into Microsoft Excel.

Please note that Microsoft Excel 2003, 2007, 2010, or 2013 MUST be loaded on the User's computer in order for the reports to be generated. We do NOT provide the Excel software program. If you do not have Excel on your computer, the reports will not be generated.

Also, the reports shown in this User's Guide are as of the date generated. The reports may be modified slightly with the current SOFTWARE version is released.

Nutrition Report (example provided)

RD PowerPro™ Nutrition Summary

NAME	Doe, John
REPORT DATE	4/10/2016 17:08
BIRTH DATE	12/19/1962
AGE	53
GENDER	MALE
HEIGHT (inches)	70
WEIGHT (lbs)	165
BODY FAT (%)	23.00
ACTIVITY FACTOR	1.20
BODY MASS INDEX	23.67
FAT FREE MASS (lbs)	127.05
BEE (KCals/Day)	1,625.87
TDEE (KCals/Day)	1,951.04

ITEM	NUTRIENTS	KCALS/SERVING	NUM OF SERVINGS
Starch, Bread, Cereals	15 gm CHO, 3 gm PRO, 0-1 gm FAT	80	9
Fruit	15 gm CHO	60	4
Vegetables	5 gm CHO, 2 gm PRO	25	4
Dairy: Fat-Free, Low-Fat	12 gm CHO, 8 gm PRO, 0-3 gm FAT	100	3
Dairy: Reduced-Fat	12 gm CHO, 8 gm PRO, 5 gm FAT	120	1
Dairy: Whole	12 gm CHO, 8 gm PRO, 8 gm FAT	160	0
Protein: Lean	7 gm PRO, 2 gm FAT	45	5
Protein: Medium-Fat	7 gm PRO, 5 gm FAT	75	1
Protein: High-Fat	7 gm PRO, 8 gm FAT	100	0
Fat	5 gm FAT	45	4

Body Compensation Method	Harris Benedict Equation
MacroNutrient Distribution Method	DRI Acceptable Macronutrient Distribution

	Grams/Day	KCals/Day	% KCals	% KCals Guide
Carbs	263.0	1,052.0	54.54	45 - 65
Protein	109.0	436.0	22.60	10 - 35
Fat	49.0	441.0	22.86	20 - 35
Total		1,929.0	100.00	

Jane Doe
JD Nutrition, LLC
1234 Address Way
San Antonio, TX 78216
210-555-5555
sales@janedoe.com

printed on 4/10/2016 at 5:10 PM

Carb and Protein Report for Athletes

RD PowerPro™ Protein and Carb Requirements for Athletes

NAME	Doe, John
REPORT DATE	4/10/2016 17:11
BIRTH DATE	12/19/1962
AGE	53
GENDER	MALE

DAILY PROTEIN GOALS			
NOTES	ITEM	ESTIMATED PROTEIN RANGE	
Four equally spaced meals thoughout the course of the day and one large pre-sleep meal is ideal for maximizing protein synthesis and negating protein breakdown. One of the meals should occur after a workout to benefit the enhanced protein synthesis. The large pre-sleep meal helps lessen the impact of protein break-down that occurs during sleep.	MEAL 1	18.7 g	22.4 g
	MEAL 2	18.7 g	22.4 g
	MEAL 3	18.7 g	22.4 g
	MEAL 4	18.7 g	22.4 g
	PRE-SLEEP MEAL		0.0 g
	TOTAL	74.8 g	89.8 g

DAILY CARBOHYDRATE GOALS				
ACTIVITY LEVEL	DESCRIPTION	CARBOHYDRATE GOALS	ESTIMATED CHO RANGE	
LIGHT	Low-intensity or skill-based activities	as specified	224 g/day	374 g/day
MODERATE	Moderate exercise program: 1 hour/day	as specified	374 g/day	524 g/day
HIGH	Endurance program: 1-3 hours/day moderate-high intensity exercise	as specified	449 g/day	748 g/day
VERY HIGH	Extreme commitment: >4-5 hours/day moderate-high intensity exercise	as specified	599 g/day	898 g/day

BEFORE, DURING, AND AFTER EXERCISE CARBOHYDRATE GOALS				
ACTIVITY LEVEL	DESCRIPTION	CARBOHYDRATE GOALS	ESTIMATED CHO RANGE	
General Fueling Up	Prepartion for events less than 90 minutes	as specified	524 g/day	898 g/day
Carbohydrate Loading	Preparation for events greater than 90 minutes of sustained or intermittent exercise	Start 36-48 hours before event at rate specified	748 g/day	898 g/day
Quick Recovery	< 8 hours recovery between two fuel demanding exercise sessions	Consume at rate specified for first 4 hours. Then resume daily fuel needs	75 g/hour	90 g/hour
Pre-Event	Before exercise > 60 minutes	Consume amount specified 1-4 hours before exercise	75 g	299 g
During Exercise	Brief Exercise < 45 minutes	Not needed		
	Sustained High-Intensity Exercise: 45 - 75 minutes	Small amounts inluding mouth rinse		
	Endurance Exercise and 'Stop and Start' Sports: 1 - 2.5 hours	as specified	30 g/hour	60 g/hour
	Ultra Endurance Exercise: > 2.5 - 3 hours	as specified	Up to 90 g/hour	

Jane Doe
JD Nutrition, LLC
1234 Address Way
San Antonio, TX 78216
210-555-5555
sales@janedoe.com

printed on 4/10/2016 at 5:11 PM

Hydration Report for Athletes

RD PowerPro™ Hydration Guideline Report

NAME	Doe, John
REPORT DATE	4/10/2016 17:12
BIRTH DATE	12/19/1962
AGE	53
GENDER	MALE
HEIGHT (inches)	70
WEIGHT (lbs)	165
BODY FAT (%)	23.00
ACTIVITY FACTOR	1.20
BODY MASS INDEX	23.67
FAT FREE MASS (lbs)	127.05
BEE (KCals/Day)	1,625.87
TDEE (KCals/Day)	1,951.04

TIME PERIOD	AMOUNT Metric Units	AMOUNT English Units	NOTES WITH REGARDS TO HYDRATION
4 Hours Before Event	374 - 524 mL	12.7 - 17.7 Fluid Ounces	Do start your excercising by being well hydrated. This requires preparing four (4) hours before the event. If sweating lightly, water is an acceptable fluid replacement beverage. For heavy sweating, sports drinks help replace the electrolytes lost in sweat and supply performance boosting carbohydrates to aid exercise performance.
2 Hours Before Event (if urine output is low)	224 - 374 mL	7.6 - 12.7 Fluid Ounces	Make sure you do not overdrink. Excessive water drinking can lead to dangerous electrotyic disturbances. A bloated stomach, puffy fingers and ankles, a bad headache, and confusion are signs of hyponatremia.
During the Event	Every 15 minutes drink 118 - 177 mL	Every 15 minutes drink 4 - 6 fluid ounces	Don't gain weight during exercise. If you gained weight during the event means that you drank more fluids than what you required.
Post Event	Drink 1,043 - 1,565 mL for every kilogram lost via sweat during the event	Drink 16 - 24 fluid ounces for every pound lost via sweat during the event	Drink the amount prescribed for the mass lost during the event. This requires that you measure your body weight before the event.

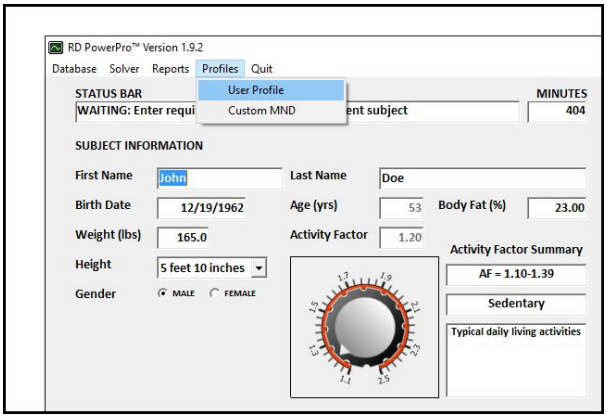
Jane Doe
JD Nutrition, LLC
1234 Address Way
San Antonio, TX 78216
210-555-5555
sales@janedoe.com

printed on 4/10/2016 at 5:12 PM

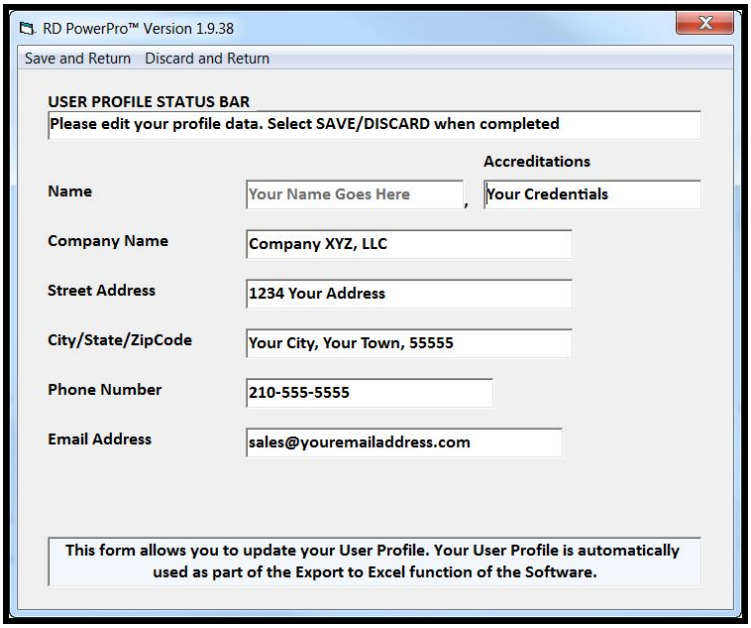
IX. User Profile

As was observed in the REPORT function, the User's information (name, address, email, and phone number) were included as part of the generated report. In order to allow the User flexibility in the reporting function, the SOFTWARE allows the User to directly modify this information and store it to the online database.

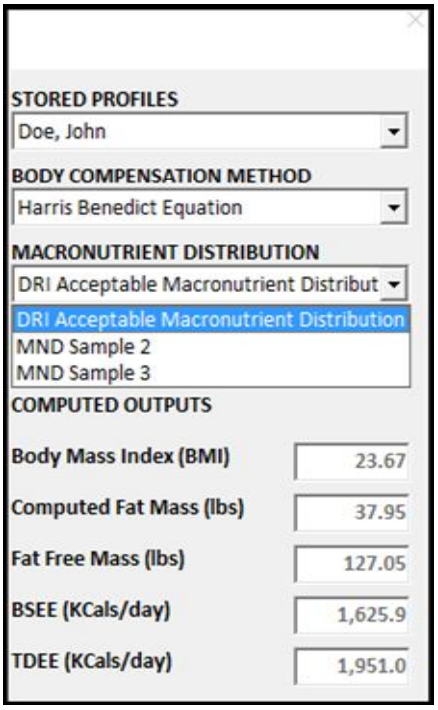
In order to modify the User information, the User Profile may be accessed and modified from the Main Menu under the PROFILES option as shown.



When this is selected the User Profile form will be displayed on the screen. All the fields may be modified EXCEPT for the User Name. When the modifications are completed, select SAVE AND RETURN to save the changes. Select DISCARD AND RETURN to discard the changes you have made.

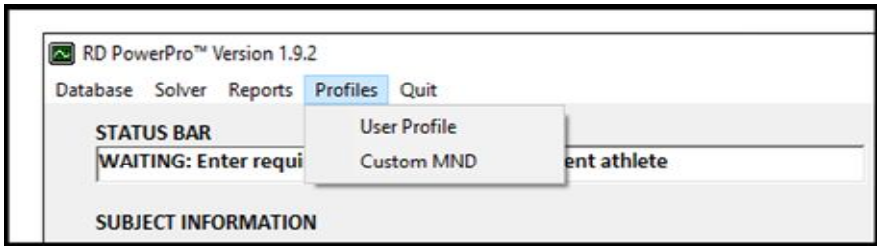


X. Custom Macronutrient Distributions



The MACRONUTRIENT DISTRIBUTION drop down menu allows for the selection of the desired MND method. The SOFTWARE comes preprogrammed with the DRI Acceptable Macronutrient Distribution method.

The User may CREATE their own MND methods via the MAIN MENU/PROFILES and then selecting Custom MND.



Upon creation of a custom MND, the User created MND items will automatically appear in the MND drop down menu and may be applied to Subject's profiles.

When the Custom MND option is selected, the following database form will appear on the screen. The Custom MND drop down menu allows the User to access and modify previously developed MND. The following fields are available and required to generated a custom MND:

- MND Name: This is the alphanumerical MND string or identifier that will be assigned to the custom MND
- MIN/MAX Carbs: This is the min and max percentage carb goals for the custom MND
- MIN/MAX Protein: This is the min and max percentage protein goals for the custom MND
- MIN/MAX Fat: This is the min and max percentage fat goals for the custom MND

As noted, the numerical values to enter for the min and max values are percentages. When completed, the following options are available:

- Store MND: This menu option will store your customer MND to the online database
- Delete MND: The current displayed MND will be deleted from the online database
- Return: Selecting this option will return the program control back to the Main Form

By default, the SOFTWARE comes loaded with the DRI Acceptable Macronutrient Distribution as an option. This preloaded MND may NOT be edited by the User and will not show up in the Custom MND form.

XI. Reporting Errors or to Request Feature Updates

Report system crashes or situations where the SOFTWARE generates incorrect results via email to sales@rdpowerpro.com. Please provide as much information as possible with regards to the setup of the program when the error occurred.

We also encourage and accept feature requests from our Users. Please email these requests to sales@rdpowerpro.com as well.