

# **USER'S MANUAL**

## **FUTREX<sup>®</sup>-5500A/ZL**

### **BODY FAT AND FITNESS ANALYZER**

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**Version 1.0**



# FUTREX-5000A/ZL USER'S MANUAL

This manual provides you with all the information needed to operate the FUTREX-5500A/ZL

## Table of Contents

Appearance and Part Names .....	3
Preparation .....	4
Printer Paper Installation .....	5
Models of the Futrex Body Fat & Fitness Analyzers .....	6
Percent Body Fat Estimation .....	7
Selecting the Biceps Measurement Site .....	12
Adjusting the Body Fat Percentage Readout .....	13
Estimating Relative Fat Distribution .....	14
Date Function .....	16
Connecting the FUTREX to a Computer .....	17
Printout Programs .....	18
Fitness Analysis .....	18
Update Analysis .....	21
Youth Fitness Analysis .....	23
Color Fitness Analysis Reports .....	24
Function Mode .....	25
Trouble Shooting .....	30
General Specifications .....	34
Keypad Description .....	35

**Note: FUTREX CAUTIONS THE USER AND/OR INDIVIDUAL TESTED TO SEEK THE ADVICE OF A HEALTH CARE PROFESSIONAL PRIOR TO UNDERTAKING ANY NUTRITION AND/OR EXERCISE PROGRAM.**

## Appearance and Part Names



Futrex-5500A/ZL



Optical  
Standard



Light Wand



AC Adapter



Biceps  
Locator



Light Shield



RS-232 Cable



Fitness  
Wheel



Bodyometry™  
Software

## Preparation

### 1) Battery Installation

Insert 6 1.5V “AA” size alkaline batteries into the battery compartment located on the rear of the Main Body. Be sure the batteries are oriented as indicated in the battery compartment.

**NOTE:** Batteries must be alkaline type. Other types will not work.

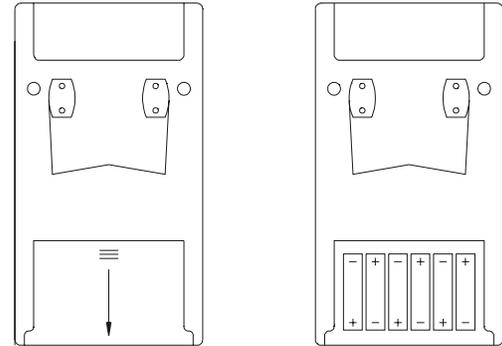
### 2) Light Wand

Connect the Light Wand Cable to the connector jack located on the right hand side of the Main Body.

It is recommended that the Light Wand always remain attached to the Main Body. This will avoid possible damage to the connector.

### 3) A/C Adapter

Connect the A/C Adapter cable to the connector jack located on the right side of the Main Body (the jack closest to the top of the unit).

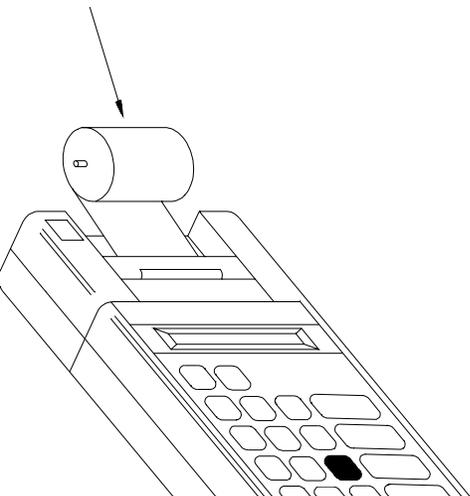


## Printer Paper Installation

Remove the clear plastic cover from the printer.

Start feeding the paper into the slit inside the Paper Roll Compartment by pressing the **PAPER FEED** key.

**NOTE:** The paper must be thermal paper and cut square prior to inserting



## Models of the FUTREX Body Composition Analyzer

There are three models available for estimating percent body fat in humans:

- **FUTREX-5500/XL**

Estimates the percent body fat of Adults only (ages 18-80)

- **FUTREX-5500A/ZL**

Estimates the percent body fat of:

- 1.) Adults
- 2.) Adolescent Children (13-17)
- 3.) Pre-Adolescent Children (5-12)

When age is entered, the FUTREX-5500A/ZL automatically sets the instrument to the proper calibration (e.g. if you entered the subject's age as 14 during the Body Fat Measurement Sequence (page 7), the FUTREX-5500A/ZL will use its Adolescent calibration to determine percent body fat).

- **FUTREX-5500A/WL**

Includes a special calibration for high school aged athletes (13-23) as well as all features of the FUTREX-5000A/ZL

***CAUTION: This Manual is only for use with the FUTREX-5500A/ZL***

## Percent Body Fat Measurement

TO ESTIMATE PERCENT BODY FAT:

1) Turn Power Switch ON.

The display will show a software version number (e.g. AO.51) and will then start a 15 second countdown. The display will show **Sd**.

2) Insert Light Wand into Optical Standard. Be sure the silver stripe from the Light Wand is aligned with the silver stripe from the Optical Standard.

3) Press the **ZERO ADJUST** Key. The display will now show 0.0. The zero adjustment has been made.

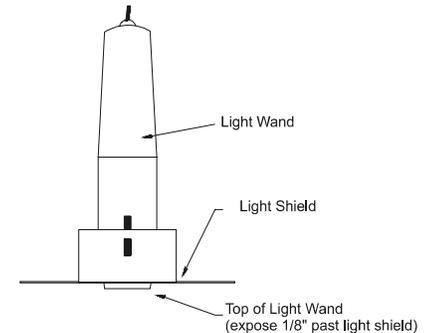
4) Remove Light Wand from the Optical Standard.

Install the Light Shield on the Wand as shown in the sketch (allow the Wand to protrude from the edge of the shield by about 1/8 of an inch). The Light Shield was provided to ensure that no external light interferes with the estimation of percent body fat. Therefore, this shield should always be used when estimating percent body fat.

The FUTREX-5500A/ZL is ready to start the body fat estimation sequence.

5) Press **ENTER** to start the body fat estimation sequence.

6) The FUTREX-5500A/ZL is normally delivered using English units (pounds and inches). The unit can be converted to accept metric units (see page 24).



6) Enter Age in years

**NOTE:** The age entered in Step 6 automatically places the instrument into the proper calibration for estimation. (i.e. adults 18 and above, adolescents 13-17, pre-adolescents 5-12)

7) Enter Sex by pressing the MALE or FEMALE Key.

8) Enter Weight in lb or kg. Press ENTER.

9) Enter Body Frame by pressing the SMALL, MEDIUM or LARGE Key (not asked if the subject is between the ages of 5 and 17).

There are many methods for measuring Frame Size. Futrex does not recommend any specific method but does offer two techniques often used for determining frame size:

a) Ankle Girth

- Measure the ankle girth at the smallest point above the ankle with the tape as tight as possible.
- Standards

	<b>Small Frame</b>	<b>Medium Frame</b>	<b>Large Frame</b>
Men	Less than 8 inches	8 to 9.25 inches	Greater than 9.25 inches
Women	Less than 7.5 inches	7.5 to 8.75 inches	Greater than 8.75 inches

b) Wrist Girth

- Place your left thumb and middle finger around your right wrist and gently squeeze your fingers together.
- Small Frame - Fingers overlap
- Medium Frame - Fingers touch
- Large Frame - Fingers do not touch

**NOTE:** If you have long fingers, this method may underestimate your frame size.

10) Enter Height in inches or cm (whole numbers only: e.g. 68 in. is acceptable). Refer to page 24 to switch between English and Metric units. Press ENTER.

11) Enter F.I.T. Value (not asked if the subject is between the ages of 5 and 17).

The following procedure provides a quantitative method to determine a subject's Physical Activity Rating.

A person's F.I.T. value is a function of 3 parameters:

- Exercise Frequency - How often the exercise is performed.
- Exercise Intensity - How much energy is expended during exercise.
- Exercise Time - How many minutes the exercise is performed during each session.

The F.I.T. value is calculated by multiplying all three parameters:  $F.I.T. = \text{Frequency} \times \text{Intensity} \times \text{Time}$

The F.I.T. values help to account for the long term effects of physical activity.

**When entering the F.I.T. values, you should consider what the individual's average Frequency, Intensity and Time have been over the past six months.**

For example, if an individual has not been particularly active for a short period of time (i.e. several weeks), but had been previously training for competitive athletics, you should take that previous training regimen into account for the F.I.T. values. Conversely, if an individual has been training hard for a short time (i.e. several weeks), but was much less active previously, you should take the previous light activity into account for the F.I.T. values.

11A) Enter Frequency Value. Press **ENTER**.

FREQUENCY	5	Daily or almost daily (6 or 7 times per week)
	4	3 to 5 times per week
	3	1 or 2 times per week
	2	A few times per month
	1	Less than once per month

11B) Enter Intensity Value. Press **ENTER**.

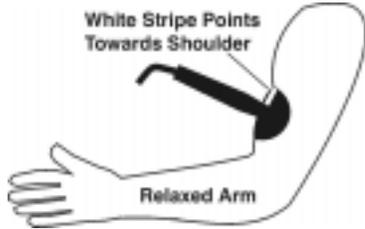
INTENSITY	5	Aerobic activities that result in sustained heavy breathing and perspiration (e.g. high impact aerobics, running, speed swimming, distance cycling).
	4	Intermittent aerobic activities that result in sustained heavy breathing and perspiration (e.g. tennis, racquet-ball, squash).
	3	Moderate aerobic activity (e.g. normal bike riding, jogging, low impact aerobics).
	2	Moderate aerobic activity (e.g. recreational volleyball, moderate speed walking).
	1	Light aerobic activity (e.g. normal walking, golfing).

11C) Enter Time Value. Press **ENTER**.

TIME	4	Over 30 minutes
	3	20 - 30 minutes
	2	10 - 20 minutes
	1	Under 10 minutes

**NOTE:** You may customize how the FUTREX-5500A/ZL asks the F.I.T. Questions. See Page 27 for details.

12) Place Light Wand firmly on biceps of the dominant arm as shown below: (see page 12 for locating exact estimation point).



**NOTE:**  
IT IS IMPORTANT TO: Aim the silver stripe of the Light Wand directly toward the shoulder. Keep the arm relaxed (do not permit the subject to flex his/her muscle). A relaxed biceps can be achieved by having the subject seated while resting his arm (elbow bent) on a table.

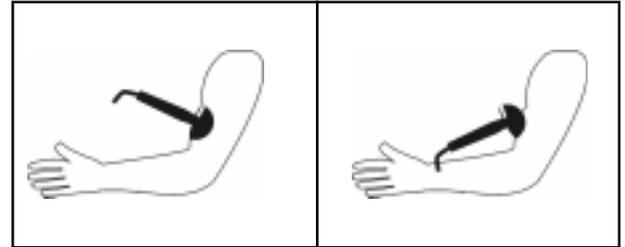
Use the Light Shield to block the external light. Always avoid measurements under strong lights (e.g. direct sunlight) because errors may occur.

- 13) Press the **GREEN BUTTON** on the light wand (**NOTE:** the **ENTER** button on the keypad may also be used). The display will flash a decimal point following the number “1”. Then the number “2” will be displayed.

**CAUTION:** Do not move the Light Wand while the decimal point is illuminated. The actual estimation is being made at that time.

- 14) Remove the Light Wand and replace it on the same point on the biceps as shown in the illustration below:

- 15) Press the **GREEN BUTTON** on the light wand.  
The display will flash a decimal point following the number “2”.



- 16) Percent Body Fat is displayed and printed.  
The FUTREX-5500A/ZL will also print the following information:

- Fat Weight (lbs of body weight that is fat).
- Lean (fat-free) body weight.
- Total Body Water (FUTREX-5500 A/ZL Adult Users Only).

This is the calculation of the subject's normal hydration state. The percent body water is based on research that has shown lean tissue to be composed of approximately 73% water, whereas fat contains 4 to 8% water. For example:

Men between 6 - 24% Fat; 69 - 57% Water

Women between 9 - 35% Fat; 67 - 50% Water

**To Repeat the Measurement Sequence** - Press **ENTER** and follow the steps outlined under 5-16.

**OFF Message** - An Off Message will appear and the FUTREX-5500A/ZL Automatic Power Down feature will turn the unit off if the user has not pressed any key for 6 minutes. To use the unit again, turn the Power Switch OFF and ON again.

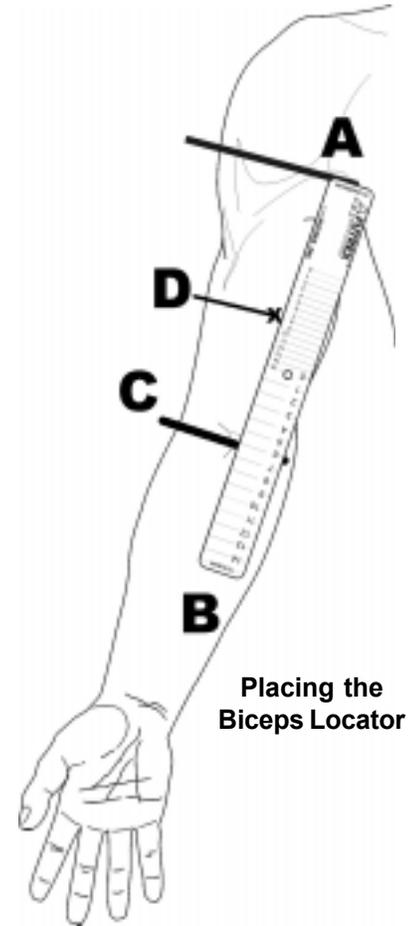
## Selecting the Measurement Site

Prior to conducting the actual body composition analysis, you should locate the proper measurement site at the biceps of the dominant arm.

- 1) Have the test subject hold his/her arm straight out, with the elbow locked, and the palm of the hand facing up towards the ceiling.
- 2) Using the Biceps Locator (shown below), find the “halfway point” between the armpit and the inside of the elbow, where the elbow bends (i.e. the acromion). As shown in the illustration, place the end marked “To Underarm” at the point marked “A.” The end marked “To Elbow” should extend past the bending point of the elbow towards point marked “B” in the illustration.
- 3) Once the Biceps locator is in place as described in step 2, identify the number on the Biceps Locator that crosses the point “C” on the arm. Point “C” is the place where the elbow bends.
- 4) Locate the corresponding number identified by point “D” in the illustration (e.g. if the number at point “C” is “6,” then find the corresponding “6” at point “D.”) This is the midpoint, or the “belly” of the biceps.
- 5) It is recommended that you mark this spot by placing a small line just to the inside or outside of the spot with a highlighter or washable marker.



**Biceps Locator**



**Placing the  
Biceps Locator**

## Adjusting The Percent Body Fat Reading

The FUTREX-5500A/ZL has been carefully calibrated to provide body fat estimations. The calibration is traceable to the generally accepted hydrostatic procedure.

However, some users may desire to have the FUTREX-5500A/ZL estimations traceable to their own laboratory. For those users the following adjustment procedure is provided:

- 1) Turn unit on.
- 2) During countdown press **CLEAR, SELECT PROGRAM, RISKS**.
- 3) The Digital display will read "A1"  
  
Press **ENTER**
- 4) The digital display will show the value of the optical standard.
- 5) If no change to the calibration is desired - press **CLEAR**.
- 6) If you wish to change the calibration:  
Press **SELECT PROGRAM**, then press **RISKS**. The display will show "0.0" (if no calibration adjustment has been made) or the previously entered adjustment value.
- 7) To adjust the calibration:  
Press the numbered key to enter the amount of adjustment. For example, if you want to decrease the instrument's estimates by 1.0% - press **1**, press **0**, then the minus sign, and then **ENTER**. All future body fat estimates will now read 1.0% lower.
- 8) Once the correct offset has been entered into the unit, press **ENTER**. The adjusted optical standard value will be displayed.
- 9) To exit this mode: Press **CLEAR**.

## Estimating Relative Fat Distribution

In addition to estimating percent body fat, a relative body fat estimation on other sites of the body (e.g. quadriceps, abdominal region) can be obtained using the FUTREX-5500A/ZL.

- 1) Turn Power Switch ON.  
The display will show a software version number (e.g. 7.30) and will then start a 15 second countdown.  
The display will show "**Sd**".
- 2) Insert Light Wand into Optical Standard.  
The silver stripe on the Light Wand should be lined up with the silver stripe on the Optical Standard.
- 3) Press the **ZERO ADJUST** Key.  
The display will now show "0.0". The zero adjustment has been made.
- 4) Press the Number "**2**" Key.  
This will shut off the printer function.
- 5) Remove Light Wand from the Optical Standard.  
The FUTREX-5500A/ZL is ready to estimate relative body fat. The display will show "1."
- 6) Place the Light Wand in the Light Shield and place firmly on the body part where you want to estimate the "Relative Fat."

**NOTE:** It is important to:

- Aim the silver stripe of the Light Wand vertically toward the upper portion of the body.
- Keep the body site to be estimated relaxed (do not permit subject to flex muscle area being estimated).
- Use the Light Shield to block the external light. **ALWAYS** avoid estimations under strong lights (e.g. direct sunlight) because errors may occur.

- Press **GREEN BUTTON** on the Light Wand.  
The display will then show a decimal point following the number “1”. The number “2” will then be displayed.

**CAUTION:** Do not move the Light Wand while the decimal point is illuminated. The actual estimation is being made at that time.

- Remove the Light Wand and replace it on the same site on the body. Press **GREEN BUTTON** on the Light Wand. The display will then show a decimal point following the number “2.”

7) The Relative Body Fat Estimation is displayed.

**NOTE:** This relative body fat is not a direct “Percentage” estimation. This value, however, can be used as a guide to monitor changes in fat distribution within the location estimated.

**To Estimate Another Site or Repeat an Estimation** - Place the Light Wand firmly on the particular body site and follow steps outlined in 6 and 7.

**OFF Message** - An **OFF** Message will appear and the FUTREX-5500A/ZL Automatic Power Down feature will turn the unit OFF if the user has not pressed any key for 6 minutes. To use the unit again, turn the Power Switch OFF and then ON again.

## Displaying the Date

The FUTREX-5500A/ZL allows you to display the date on each printed test result. The default setting from the factory is to not display the date.

If you wish to display the date, you must first activate that feature:

- 1) Switch the instrument “ON.”
- 2) During the 15 second countdown press the Number “2” key. The letter “F” will be displayed
- 3) Press the Number “7.” You will see either F7 0 or F7 1.
- 4) To activate the date function press “1.” Once F7 1 is displayed, press **ENTER** and switch the instrument **OFF**.
- 5) To deactivate the date display, follow the steps outlined above, but make sure that F7 0 is displayed.

## Changing the Date

If you activate the Date function, the FUTREX-5500A/ZL requires that the date be manually changed each day. Use the following procedure to change the date:

- 1) Press **SELECT PROGRAMS** then press the Number “6” key. The printer will show the current setting, e.g. June 1, 1996.
- 2) Printer then prompts user to change month. Use keypad to enter new month (i.e. “1” = January, “2” = February, ... “12” = December). If no change, just press **ENTER**.
- 3) Printer prompts user to change day. If no change, press **ENTER**, or type in correct number and press **ENTER**.
- 4) Printer prompts user to change year. If no change press **ENTER**, or type in the correct two digits (i.e. 2003 would be 03) then **ENTER**.

**NOTE:** If an invalid month, day or year is entered, the display will reset to “0”, and you must enter a correct value.  
For example, the only valid entries for month are 1 through 12. If in error you enter 15, the display will show “0”.

## Connecting the Futrex to a Computer

The FUTREX-5500A/ZL allows you to communicate with a PC to make use of software that is included with your FUTREX-5500A/ZL. In order to connect to the PC, you must use the RS-232 cable that was included with your instrument.

- 1) Connect the RS-232 cable to the serial connection on your PC.
- 2) Plug the connector on the opposite end of the RS-232 Cable into the FUTREX-5500A/ZL.



RS-232 Cable

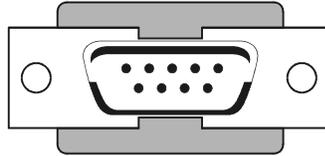


Illustration of a Typical Serial  
Connection on the Back of a PC



FUTREX-5500A/ZL

- 3) The FUTREX-5500A/ZL must be configured to be in DATA STREAM MODE:
  - Switch the instrument ON.
  - During the 15 second countdown press the RISKS key (also the number “2” key)
  - The letter “F” will appear.
  - Press the number “8” Key.
  - You will see F8 0.
  - Press the number “1” Key. You will then see F8 1.
  - Switch the instrument OFF and then back ON.
  - The instrument is now in DATA STREAM MODE.
  - To take the instrument out of DATA STREAM MODE, make sure that F8 0 is displayed.

## Printout Programs

Using its built-in thermal printer, the FUTREX-5500A/ZL can provide two analysis programs for Adult User's only:

- Fitness Analysis (Also available using the optional Epson Printer Kit. See page 20 for details.)
- Update Analysis
- Youth Fitness Analysis

## Fitness Analysis

The Fitness Analysis is based upon the Metropolitan Life Insurance Tables combined with the National Institutes of Health published data on the interrelationship between body weight/fat and longevity/health risks. The program prints diet and activity suggestions to allow you to reach the recommended fat/weight levels.

This analysis provides the user with information that covers a broad spectrum of the technical literature. This is deemed necessary, because there is no "one best method" of performing a fitness analysis.

### **To Obtain a Fitness Analysis Printout on the FUTREX-5500A/ZL Built-In Thermal Printer:**

- 1) Turn Power Switch ON  
The display will show a software version number (e.g. 7.30) and will then start a 15 second countdown.
- 2) Press the CLEAR Key to cancel the 15 second countdown.
- 3) Press the SELECT PROGRAM Key.
- 4) Press the FITNESS Key for final printout using the built-in printer.
- 5) Enter Age using the numbered keys. Press ENTER.
- 6) Enter Sex by pressing the MALE or FEMALE Key.

- 7) Enter Height in inches or cm (whole numbers only; e.g. 68 in. is acceptable, 68.5 will not be accepted). See page 24 to switch between English and Metric units. Press **ENTER**.
- 8) Enter Weight in lb. or kg. (whole numbers only). See page 25 to switch between English and Metric units. Press **ENTER**.
- 9) Enter Body Frame Size by pressing **SMALL**, **MEDIUM** or **LARGE**. Refer to page 8 to determine size.
- 10) Enter the Percent Body Fat obtained from the FUTREX-5500A/ZL (be sure to press the decimal point). Press **ENTER**.
- 11) Enter Activity Level by pressing the **LIGHT**, **MODERATE** or **HEAVY** key. This value corresponds to your daily activity during normal working hours.
- 12) Enter F.I.T. Level by entering in Frequency, Intensity and Time of your physical activity. Refer to Step 11 on page 9 to determine your F.I.T. rating.
- 13) The complete Fitness Analysis is then printed.

**To Estimate Percent Body Fat** - Turn the FUTREX-5500A/ZL OFF and then ON again.

**OFF Message** - An OFF Message will appear and the FUTREX-5500A/ZL Automatic Power Down feature will turn the unit OFF if the user has not pressed any key for 6 minutes. To use the unit again, turn the Power Switch OFF and then ON again.

## To Obtain a Fitness Analysis Printout using the optional Epson Printer Kit

The FUTREX-5500A/ZL can print the Fitness Analysis Report directly to an external printer without need for any external computer. The following is required if you desire to use this feature:

- Plain white tractor feed paper.
- Printer - Epson Model LX-300 +.
- RS-232 Printer Serial Cable - To communicate from the FUTREX-5500A/ZL to the Epson Printer.

This printing function is performed as follows: (**NOTE:** F4 must have been set to “1”; see page 27).

- 1.) Turn on both the printer and FUTREX-5500A/ZL. Wait for countdown to finish or press **CLEAR**. The RS-232 serial cable must be attached between the units.
- 2.) Press **SELECT PROGRAMS**, then **COLOR PRINTER**. The FUTREX-5500A/ZL internal printer will display: “Use Previous Data; 1 = YES, 2 = NO”. If you type in “NO” (i.e. “2”), follow the Fitness Analysis Procedure described on page 18 starting with Step 5.
- 3.) If “YES” (i.e. “1”) was typed in, the FUTREX-5500A/ZL will use the data from the last person that was measured and the instrument’s printer will ask:
  - Enter “Body Frame” by pressing **SMALL**, **MEDIUM** or **LARGE**. Refer to page 8 to determine size.
  - “Enter Activity Level” - This is the amount of daily physical activity the person does during normal work environment. It does not include any exercise program the person does. Enter either **LIGHT** (e.g. office work), **MODERATE** (e.g. someone delivering mail), or **HEAVY** (e.g. a ditch digger).
- 4.) The Epson Printer will then print the Fitness Analysis Report. **CAUTION: Paper must be in printer.**

**NOTE:** Printer must be set to 2400 baud rate. If a malfunction occurs (e.g. paper jam), you must turn off both the printer and the FUTREX-5500A/ZL before restarting.

## Update Fitness Analysis

This printout (for Adult Users only) allows you to compare your previous weight and percent body fat with your current values. It is available only from the FUTREX-5500A/ZL's built in thermal printer.

To Obtain an Update Analysis Printout:

- 1) Turn Power Switch ON.  
The display will show a software version number (e.g. 7.30) and will then start a 15 second countdown.
- 2) Press the **CLEAR** Key to cancel the 15 second countdown.
- 3) Press the **SELECT PROGRAM** Key.
- 4) Press the **UPDATE** Key.
- 5) Enter Age using the numbered keys. Press **ENTER**.
- 6) Enter Sex by pressing the **MALE** or **FEMALE** Key.
- 7) Enter Height in inches or cm (whole numbers only: e.g. 68 in. is acceptable, 68.5 will not be accepted). Press **ENTER**. Refer to page 24 to switch between English and Metric units.
- 8) Enter Original Weight in lb. or kg. (whole numbers only). This value refers to the weight of the subject prior to starting any weight gain or reduction program. Press **ENTER**. Refer to page 25 to switch between English and Metric units.
- 9) Enter Current Weight in lb. or kg. Press **ENTER**.
- 10) Enter Body Frame by pressing the **SMALL**, **MEDIUM** or **LARGE** key. Refer to step 9 on page 8 to determine frame size.

- 11) Enter Original Percent Body Fat obtained from the FUTREX-5500A/ZL prior to starting any body fat gain/loss program (be sure to press the decimal point). Press **ENTER**.
- 12) Enter Current Percent Body Fat. This is the percentage value recently obtained by the FUTREX-5500A/ZL. Press **ENTER**.
- 13) Enter Activity Level by pressing the **LIGHT**, **MODERATE** or **HEAVY** key. This value corresponds to your daily activity during normal working hours.
- 14) Enter F.I.T. by entering in values for Frequency, Intensity and Time of physical activity. Refer to step 11 on page 9 to determine your F.I.T. rating.
- 15) Enter Number of Weeks between current and original body fat estimation.
- 16) The complete Update Analysis will be printed.

**To Print Another Update Analysis:** follow steps 3 through 16.

**To Estimate Percent Body Fat** - turn the FUTREX-5500A/ZL OFF and then ON again.

**OFF Message** - An Off Message will appear and the FUTREX-5500A/ZL Automatic Power Down feature will turn the unit OFF if the user has not pressed any key for 6 minutes. To use the unit again, turn the Power Switch OFF and then ON again.

## Youth Fitness Analysis

This printout allows you to print a fitness analysis report for children from the ages of 5 to 17. To obtain a Youth Analysis Printout:

- 1) Turn Power Switch ON.  
The display will show a software version number (e.g. 7.30) and will then start a 15 second countdown.
- 2) Press the **CLEAR** Key to cancel the 15 second countdown.
- 3) Press the **SELECT PROGRAM** Key.
- 4) Press the **SMALL** Key.
- 5) Enter Age using the numbered keys. Press **ENTER**.
- 6) Enter the number of months since last birthday using the numbered keys. Press **ENTER**.
- 7) Enter sex using the **MALE** or **FEMALE** key. Press **ENTER**.
- 8) Enter Height in inches or cm (whole numbers only: e.g. 68 in. is acceptable, 68.5 will not be accepted). Press **ENTER**. Refer to page 25 to switch between English and Metric units.
- 9) Enter Original Weight in lb. or kg. (whole numbers only). This value refers to the weight of the subject prior to starting any weight gain or reduction program. Press **ENTER**. Refer to page 25 to switch between English and Metric units.
- 10) Enter Current Weight in lb. or kg. Press **ENTER**.
- 11) Enter Current Percent Body Fat. This is the percentage value recently obtained by the FUTREX-5500A/ZL. Press **ENTER**.
- 12) The complete Youth Fitness Analysis will be printed.

## Color Fitness Analysis Reports

The FUTREX-5500A/ZL can directly communicate with an external printer without need for any external computer using Futrex's unique full color fitness forms. The following is required if you desire to use this feature:

- Preprinted Color Forms - This 4 page form provides extensive data for your clients.
- Printer - Epson Model LX-300 +.
- RS-232 Printer Serial Cable - To communicate from the FUTREX-5500A/ZL to the Epson Printer.

This printing function is performed as follows: (**NOTE:** F4 must have been set to "0"; see page 26).

- 1) Turn on both the printer and FUTREX-5500A/ZL. Wait for countdown to finish or press **CLEAR**. The RS-232 serial cable must be attached between the units.
- 2) Press **SELECT PROGRAMS**, then **COLOR PRINTER**. The FUTREX-5000A/ZL internal printer will display: "Use Previous Data; 1 = YES, 2 = NO". If you type in "NO" (i.e. "2"), follow the Fitness Analysis Procedure described on page 18 starting with Step 5.
- 3) If "YES" (i.e. "1") was typed in, the FUTREX-5500A/ZL will use the data from the last person that was measured and the instrument's printer will ask:
  - Enter "Body Frame" by pressing **SMALL**, **MEDIUM** or **LARGE**. Refer to page 8 to determine size.
  - Enter Activity Level - This is the amount of daily physical activity the person does during normal work environment. It does not include any exercise program the person does. Enter either **LIGHT** (e.g. office work), **MODERATE** (e.g. someone delivering mail), or **HEAVY** (e.g. a ditch digger).
4. The Epson Printer will then print the Fitness Analysis Report. **CAUTION: Color Forms must be in printer.**

**NOTE:** Printer must be set to 2400 baud rate. If a malfunction occurs (e.g. paper jam), you must turn off both the printer and the FUTREX-5500A/ZL before restarting.

## Function Mode

The Function Mode provides the user with 7 program options:

- Selection of Metric or English units.
- Selection of a Calorie Limit Mode.
- Use of Dotson-Davis Equations.
- Selection of Color Fitness Analysis or Standard Fitness Analysis
- Modification of F.I.T. Value Settings
- Selection of Date Display
- Selection of DATA STREAM MODE (for use in communicating with a computer)

### F1 - Selection of English or Metric Units

The subject's height and weight values can be printed in either English (lbs/in) or Metric (kg/cm) units.

After entering the Function Mode:

- Press 1  
The display will show either "F1 0" or "F1 1".  
  
If "F1 0" is displayed, English Units are being used (lbs/in).  
If "F1 1" is displayed, Metric Units are being used (kg/cm).
- To Change Between Units  
Press either "0" or "1" and the display will show the change.
- Press **ENTER** if this is correct.
- To Exit the Function Mode, turn the FUTREX-5500A/ZL OFF.

## F2 - Selection Calorie Limit Mode

The Fitness Analysis Program can be operated in two different calorie modes. The first mode allows the FUTREX-5500A/ZL to calculate the subject's daily caloric intake. The second mode allows the subject to enter his/her daily caloric intake value.

After entering the Function Mode:

- a) Press **"2"**  
The display will show either "F2 0" or "F2 1".  
  
If "F2 0" is displayed, then the unit will automatically calculate the subject's daily caloric intake.  
If "F2 1" is displayed, the user will be asked to enter a specific calorie intake value.
- b) To Change Between Modes:  
Press either **"0"** or **"1"** and the display will show the change.
- c) Press **ENTER** if this is correct.
- d) To Exit the Function Mode, turn the FUTREX-5500A/ZL OFF.

### F3 - Use of Dotson-Davis Equations

After entering the Function Mode:

- a) Press “3.”

The display will show either “F3 0” or “F3 1”.

If “F3 0” is displayed, the Dotson-Davis Equation will be used.

If “F3 1” is displayed, the Dotson-Davis Equation will be omitted from the Body Fat Estimation Program.

- b) To Change Between Equations:

Press either “0” or “1” and the display will show the change. Press **ENTER** if this is the correct change.

- c) To Exit the Function Mode, turn the unit OFF.

### F4 - Color Fitness Analysis/Standard Fitness Analysis Selection

After entering the Function Mode:

- a) Press “4”

If “0” is displayed, the unit is set to print using the Color Forms.

If “1” is displayed, unit is set to print Fitness Analysis on plain paper.

- b) To change, press “0” or “1”. Press **ENTER** to save the change.

- c) To Exit the Function Mode, turn the unit OFF.

## F5 & F6 - F.I.T. Value Settings

You may utilize the F5 and F6 settings to customize how your FUTREX-5500A/ZL asks the F.I.T. Value questions. The following table provides the F.I.T. settings for each configuration:

<b>F5</b>	<b>F6</b>	<b>Setting</b>
0	0	No Exercise Questions
1	0	One Exercise Level Question (Light, Moderate, Heavy)
0	1	F.I.T. Values (entered by operator for each reading)
1	1	F.I.T. Values (pre-set values entered by operator)*

\* **NOTE:** If you select this configuration, you will be prompted by the FUTREX-5500A/ZL to pre-set the F.I.T. levels once you have set both F5 and F6 to "1." You will see the following output from the printer:

```
F.I.T. Mode:  Preset
Frequency = 2
Intensity = 3
Time = 2
Change? (1 = Yes  2 = No)
```

If these are the values you want simply press "2." If you want to change the values, press "1" and the instrument will prompt you for each F.I.T Value

### Important Note

It is important to remember that once the F5 and F6 values are both set to "1," every time you enter the Function setting mode and press "**ENTER**," the instrument will prompt you to verify the F.I.T. Settings. If, for example, you use the F1 setting to switch from English to Metric measurement units, once you have made that F setting change and pressed ENTER, the printer will begin to verify the F.I.T. values. You may simply turn the instrument off at this time to log the F setting change that you did make, and no change will be made to the pre-set F.I.T. Values.

## F7 - Date Display

After entering the Function Mode:

- a) Press “7”  
If “0” is displayed, the unit will display the date on the printout.  
If “1” is displayed, unit will **not** display the date on the printout.
- b) To change, press “0” or “1”. Press **ENTER** to save the change.
- c) To Exit the Function Mode, turn the unit OFF..

## F8 - Data Stream

This function allows the FUTREX-5500A/ZL measured data to be sent to an external PC computer that is utilizing Futrex’s Bodyometry™ software or other compatible software.

After entering the Function Mode:

- a) Press “8”  
If “0” is displayed, no data is being sent.  
If “1” is displayed, all measured data will be sent to the external computer.
- b) To change, press “0” or “1”. Press **ENTER** to save the change.
- c) To Exit the Function Mode, turn the unit OFF.

## Troubleshooting

<b>PROBLEM</b>	<b>PROBABLE CAUSE</b>	<b>CORRECTIVE MEASURES</b>
1) Display shows "LOBAT"	Batteries are low	a) Replace batteries (Refer to page 4).
2) Display shows "1999.9" or "-1999.9"	a) Bad connection between Light Wand and Probe Socket  b) Too much/too little light	a) Be sure the Light Wand is properly inserted into to Probe Socket  b) Be sure the Light Wand is properly seated in the Optical Standard when Zero Adjusting.

PROBLEM	PROBABLE CAUSE	CORRECTIVE MEASURES
<p>3) Bad Repeatability</p>	<p>a) Inconsistent Measurement Technique</p> <p>b) Incorrect Zero Adjustment Procedure</p> <p>c) Not measuring at the proper location on the arm</p>	<p>a) Ensure that there us enough pressure applied between the Light Wand and the subject's arm</p> <p>b) When taking a measurement, ensure that the Silver Stripe on the Light Shield is pointing towards the subject's shoulder (the Silver Stripe on the Light Wand should be aligned with the Silver Stripe on the Light Shield).</p> <p>c) Always use the Light Shield to block external light.</p> <p>d) Avoid taking measurements under strong lights (e.g. direct sunlight) as errors may occur</p> <p>e) When Zero Adjusting, ensure that the silver line on the Light Wand is aligned with the silver line on the Optical Standard.</p> <p>f) When Zero Adjusting, make sure that the Light Shield has been removed from the Light Wand. This is to ensure that the Light Wand is properly seated in the Optical Standard.</p> <p>g) Always use the Biceps Locator to find the measurement site. Instructions can be found on page 12.</p>

PROBLEM	PROBABLE CAUSE	CORRECTIVE MEASURES
<p>4) Unusually high body fat estimates (40-50%)</p>	<p>a) Too much light present during the measurement.</p>	<p>a) Do not lift the Light Wand from the subject's biceps until a "2" appears on the screen during the first estimation or the printer starts printing after the second estimation.</p> <p>b) Use the Light Shield to block the external light. Always avoid measurements under strong lights (e.g. direct sunlight) because errors may occur.</p>
<p>5) Printer Stops</p>	<p>a) Low batteries.</p> <p>b) Bad battery contact.</p> <p>c) Bad AC connection.</p>	<p>a) Replace batteries (see page 4).</p> <p>b) Remove batteries and clean tabs with isopropyl alcohol (rubbing alcohol).</p> <p>c) Unplug the AC Adapter from the wall socket and from the unit. Clean the adapter contact with isopropyl alcohol (rubbing alcohol).</p>

PROBLEM	PROBABLE CAUSE	CORRECTIVE MEASURES
6) Print is too light or does not print.	a) Printing on wrong side of the paper. b) Wrong type of printer paper. c) Print head is dirty.	a) Make sure paper is inserted to print on the “shiny” side of the paper.  b) Paper must be thermal paper.  c) Clean the print head by carefully removing the Paper Cutter. Insert a clean piece of rough paper (a typical business card is ideal) between the print head and rear paper roller.  <b>CAUTION:</b> Do not bend the print head; pressure on the rear paper roller will allow the card to be inserted.
7) Printer prints black lines.	a) Low batteries. b) Bad battery connections.	a) Replace batteries (Refer to page 4).  b) Remove batteries and clean tabs with isopropyl alcohol (rubbing alcohol).

**FOR MORE INFORMATION OR ASSISTANCE, CALL 1-301-733-9368**

## General Specifications

- 1) MEASUREMENT TECHNIQUE
  - Estimation Principle: Near Infrared Interactance Technique based on technology from the United States Department of Agriculture.
  - Estimation Range: 2.5% to 50%
  
- 2) PRINTER OUTPUT
  - Fitness Analysis
  - Update Analysis
  - Color Printer
  - Physical Rating
  
- 3) SERIAL PORT: Bi-directional synchronous 2400 baud, 8 bit, 1 stop; +/-9 volt nominal
  
- 4) USER "ID" SEQUENCE: 1 to 32,000 auto-incremented; not user resettable
  
- 5) POWER SOURCE: Six AA 1.5V alkaline batteries, 110 Volt or 220 Volt AC Adapter
  
- 6) DIMENSIONS:
  - Main Body - 4.7 x 9.5 x 2.2 inches
  - Light Wand - 1.2(dia.) x 4.5 (length) inches
  
- 7) WEIGHT: 2 lbs. (total)
  
- 8) ACCESSORIES:
 

Optical Standard	x1	
Arm Band	x1	
Thermal Printer Paper (rolls)	x5	(one roll is supplied installed in the instrument's printer. Paper must be thermal paper type)
"AA" battery	x6	
User's Manual	x1	
Light Shield	x1	

## Keypad Descriptions

Summary:

**Key Name**

- ZERO ADJUST : When the Display shows “Sd”, insert the probe firmly into the “Optical Standard”, and press this key to automatically calibrate the unit.
- SELECT PROGRAM: This key is pressed prior to the Program Keys in order to select one of the “Computation Programs”.
- FITNESS : One of the “Computation Programs”. This key selects the “Fitness Analysis” program.  
UPDATE : One of the “Computation Programs”. This key selects the “Update Analysis” program.
- COLOR PRINTER: Activates RS-232 Serial Port to send data to be printed onto the four page preprinted color form.
- SMALL : These keys are used to enter your body frame size in the “Fitness Analysis” or  
MEDIUM : the “Update Analysis” programs. Press the proper key when the “Enter body frame” message  
LARGE : appears on the printer.
- MALE : These keys are used to enter your sex into the “Fitness Analysis” or “Update Analysis”  
FEMALE : programs. Press the appropriate key when the “Enter sex” message appears on the printer.
- CLEAR : This key cancels incorrectly entered numbers.  
ENTER : This key is used to store numbers that have been entered. It is also used to start the body fat estimation sequence.
- PAPER FEED : For feeding paper into the printer.
- RISKS : Allows adjustment of the instrument’s calibration.
- DATE : Changes internally stored date stamp

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