

# ALDA

## Balance Gear

(Model: HC-BG-A1)

## User Manual



## COPYRIGHT & TRADEMARKS

Specifications are subject to change without notice. ALDA is a registered trademark of ALEXANDAVE INDUSTRIES CO., LTD.

No part of the specifications may be reproduced in any form or by any means or used to make any derivative such as translation, transformation, or adaptation without permission from ALEXANDAVE INDUSTRIES CO., LTD. Copyright © 2015 ALEXANDAVE INDUSTRIES CO., LTD. All rights reserved.

The content of the User Manual, including all figures and drawings, is copyright-protected information belonging to ALEXANDAVE INDUSTRIES CO., LTD, and is provided solely for the purpose of operating and maintaining the device. Using the content for other purposes or copying the content is prohibited, unless prior written consent has been obtained from ALEXANDAVE INDUSTRIES CO., LTD.

<http://www.alexandave.com/HC-BG-A1/>

# CONTENTS

1 INTRODUCTION .....	5
1.1 WELCOME.....	5
1.2 SYSTEM OVERVIEW .....	6
1.3 SYSTEM SPECIFICATIONS.....	7
1.4 SYSTEM REQUIREMENTS .....	7
2 GENERAL INSTRUCTION ON USING THE PRODUCT.....	8
2.1 STEPS 1 CHARGING THE ALDA™ BALANCE GEAR .....	8
2.2 STEP 2 INSTALLING THE ALDA™ BALANCE GEAR SOFTWARE .....	8
2.3 STEP 3 PAIRING THE ALDA™ BALANCE GEAR .....	10
2.4 STEP 4 WEARING THE ALDA™ BALANCE GEAR.....	12
3 TESTING & TRAINING SETUP.....	14
3.1 BEFORE GETTING STARTED .....	14
3.2 GETTING STARTED.....	14
3.3 PERSONAL PROFILE .....	16
3.4 STABILITY TEST & TRAINING.....	18
3.5 MY POSTURAL CONTROL .....	24
3.6 LIMIT OF STABILITY .....	27
3.7 EXPORTED DATA .....	31
4 BALANCE TEST AND TRAINING.....	33
4.1 STABILITY TEST .....	33
4.1.1 STABILITY TEST SETUP.....	34
4.1.2 TEST CONDITIONS .....	35
4.2 STABILITY TRAINING .....	36
4.2.1 STABILITY TRAINING SETUP.....	36
4.2.2 TRAINING PROGRAM – HARD SURFACE.....	37
4.2.3 TRAINING PROGRAM – FOAM SURFACE.....	39

4.2.4 TRAINING PROGRAM – EYES CLOSED.....	40
4.3 MY POSTURAL CONTROL .....	41
4.3.1 MY POSTURAL CONTROL SETUP .....	41
4.3.2 MY POSTURAL CONTROL TEST CONDITIONS .....	41
4.4 LIMIT OF STABILITY TRAINING .....	42
4.4.1 LIMIT OF STABILITY SETUP .....	42
4.4.2 LIMIT OF STABILITY TRAINING CONDITIONS.....	42
5 CLEANING / CARE / MAINTENANCE.....	43
5.1 CLEANING AND CARE .....	43
5.2 MAINTENANCE.....	43
5.3 DISPOSAL .....	43
6 TROUBLESHOOTING .....	44
7 SERVICE & SUPPORT .....	45
8 MANUFACTURE.....	46
APPENDIX .....	47

# 1 INTRODUCTION



## 1.1 WELCOME

Thank you for your purchase of the ALDA™ Balance Gear. The ALDA™ Balance Gear is designed to improve your body balance with real-time evaluation and training guideline to improve your balance, thereby increasing your mobility, and improving life quality.

ALDA™ Balance Gear provides an easy way to get up and running collecting data with your balance performance. It also provides recording, and calibration features that enable you to take full advantage of the ALDA™ Balance Gear.

The advantages of balance evaluation and training with ALDA™ Balance Gear System:

- Efficient measurement
- Continuous measurement
- Easily to measure dynamic balance and mobility
- Collect information of stability during static or dynamic balance such as pitch, roll, yaw, acceleration, tilt, angular velocity or rotation.

**Read This Before You Begin** — When using your ALDA™ Balance Gear System, basic safety precautions should always be followed to reduce the risk of injury to persons, including the following:

- Read all of the instructions listed here and/or in the user manual before you operate this device. Give particular attention to all safety precautions. Retain the instructions for future reference.
- This device must be installed and used in strict accordance with manufacturer's instructions, as described in the user documentation that is included with the

device.

## 1.2 SYSTEM OVERVIEW

### Inside the Box

Before installing the Balance Gear, check that the following items are included in the box with the Balance Gear. If any items are missing, please contact your distributor or technical support. They are competent to help you.

ITEM			DESCRIPTION
<b>Balance Gear</b>	Z-BG-A1-101		Measuring body movements during standing and gait, or during other movements
<b>Locking Key</b>	Z-BG-A1-102		Key for turning the Balance Gear power off
<b>Dongle</b>	Z-BG-A1-103		The wireless transmission of measurement data
<b>Strap</b>	Z-BG-A1-2		Strap loop for holding the Balance Gear around waist.
<b>Flash Drive</b>	Z-BG-A1-4		Contains User Manual in PDF format and Balance Gear Software
<b>Charge Cable</b>	Z-BG-A1-5		Cable for connecting Balance Gear and USB port
<b>Brief Guide</b>			Provides quick install guide of the Balance Gear

### 1.3 SYSTEM SPECIFICATIONS

Transmitter	
1.	Product Name: Balance Gear (Model: HC-BG-A1)
2.	USB Charging: DC 5V, 240mA
3.	Power Consumption: 20mA
4.	Wireless: 2.4 GHz ISM band Operation
5.	Communication Distance: 10 m (Indoor)
6.	Axis: 9 Degree of Freedom
7.	Battery Capacity: 240mAh
8.	Full Charge: 45 minutes
9.	Discharge Time: 10 hour
10.	Size: W56.8 x D16.5 x H47.9 mm
11.	Weight: 24 g
12.	Operating Temperature: 0°C ~ 45°C
13.	Relative Humidity: 40-50% RH

Receiver	
1.	Operating Voltage: DC 5V, 45mA
2.	Wireless: 2.4 GHz ISM band Operation
3.	Communication Distance: 10 m (Indoor)
4.	Size: W28.5 x D10.2 x H46.6 mm
5.	Weight: 8 g

### 1.4 SYSTEM REQUIREMENTS

Hardware minimal requirements in PC/NB:	
1.	CPU : 1.6 GHz or faster processor (Core i3 or above)
2.	RAM : 128 MB
3.	HD : 200 MB, 5400 RPM hard disk drive
4.	USB 2.0

Software minimal requirements in PC/NB:	
1.	Windows 8.1 (x86 and x64) Windows 8 (x86 and x64) Windows 7 SP1 (x86 and x64)
2.	Adobe Reader
3.	Screen Resolution : 1024x768 (or above)
4.	Administrator rights to install the driver and software (contact your system administrator)

## 2 GENERAL INSTRUCTION ON USING THE PRODUCT

### 2.1 STEPS 1 CHARGING THE ALDA™ BALANCE GEAR



To charge the ALDA™ Balance Gear, plug the micro-USB ends of the charging cable into Balance Gear. The capacity of the (fully charged) battery supports a measurement duration of maximum 10 hours. Plug the regular USB end of the charging cable into your laptop OR into an IEC 60950 approved USB charger.



Do not charge the Balance Gear and performing measurements simultaneously.

### 2.2 STEP 2 INSTALLING THE ALDA™ BALANCE GEAR SOFTWARE



Installed the ALDA™ Balance Gear software by inserting the flash drive provided in the package.



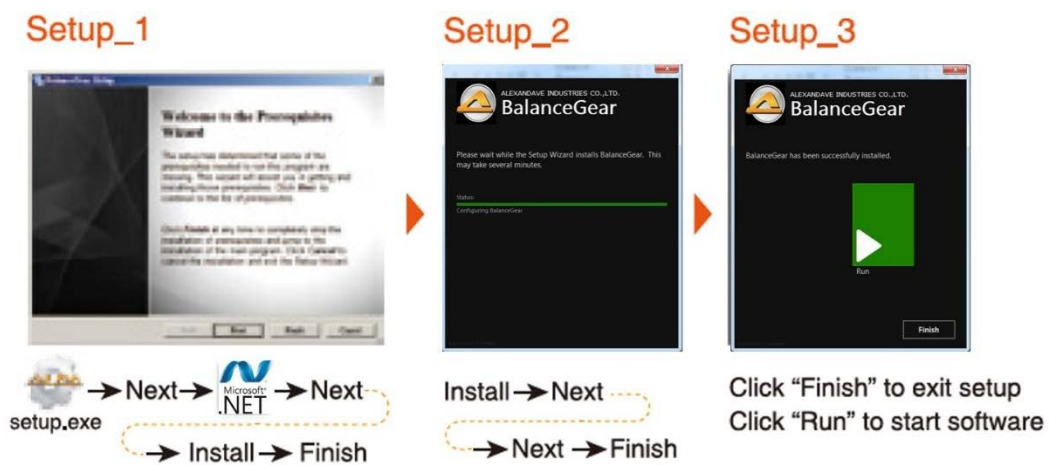
The following steps are required to get up and running:

1. Install the “ALDA software” by plugging the flash drive into your computer (see figure 1).



Figure 1. Plugin the USB Stick

2. To start the installation, double click the ALDA™ Balance Gear Setup icon.



3. After installation, you will see an icon appeared on the screen, unplug the flash drive.



Figure 3. The ALDA™ Balance Gear icon on desktop

## 2.3 STEP 3 PAIRING THE ALDA™ BALANCE GEAR

1. Insert the dongle into a free USB 2.0 port (see figure 2). The USB-port can be located at the front or the back of your PC, or at the side of your laptop.



Figure 2. Insert the Dongle into a free USB 2.0 port

2. To pair the Balance Gear and Dongle, please put the Balance Gear close to the Dongle (within 5cm) until green light flashes rapidly (see figure 3).



Figure 3. Balance Gear is pairing with the Dongle



Avoid to connect the USB 3.0 connector on the USB 3.0 device or the USB 3.0 cable while pairing the Balance Gear and Dongle. The broadband noise emitted from a USB 3.0 device can affect the SNR (signal-to-noise ratio) and limit the sensitivity of Dongle.

## Indicator Lights

The ALDA™ Balance Gear are equipped with an LED. It blinks and flashes to communicate what it's doing or if it needs charging. Below is a table with different LED modes and the explanations.

<b>LED Mode</b>	<b>Status</b>	<b>Mode Explanation</b>
<b>Slow Green Flash</b> (1 Green flash every 2 seconds)	Awaiting connection (Fully Charged)	The sensor is on and waiting for connection with the computing device.
<b>Fast Green Flash</b> (10 Green flashes per seconds)	Connected (Fully Charged)	The sensor is on and correctly connected the computing device.
<b>Slow Red Flash</b> (1 Red flash every 2 seconds)	Awaiting connection (The power supply is critical)	The sensor is on and waiting for connection with the computing device, but it is running low on battery and needs to be charged. Please pause the measurement and recharge the battery.
<b>Fast Red Flash</b> (10 Red flashes per seconds)	Connected (The power supply is critical)	The sensor is on and correctly connected the computing device, but it is running low on battery and needs to be charged. Please pause the measurement and recharge the battery.
<b>Steady Red Light</b>	Low Battery	The battery is being charged (the USB has been connected)

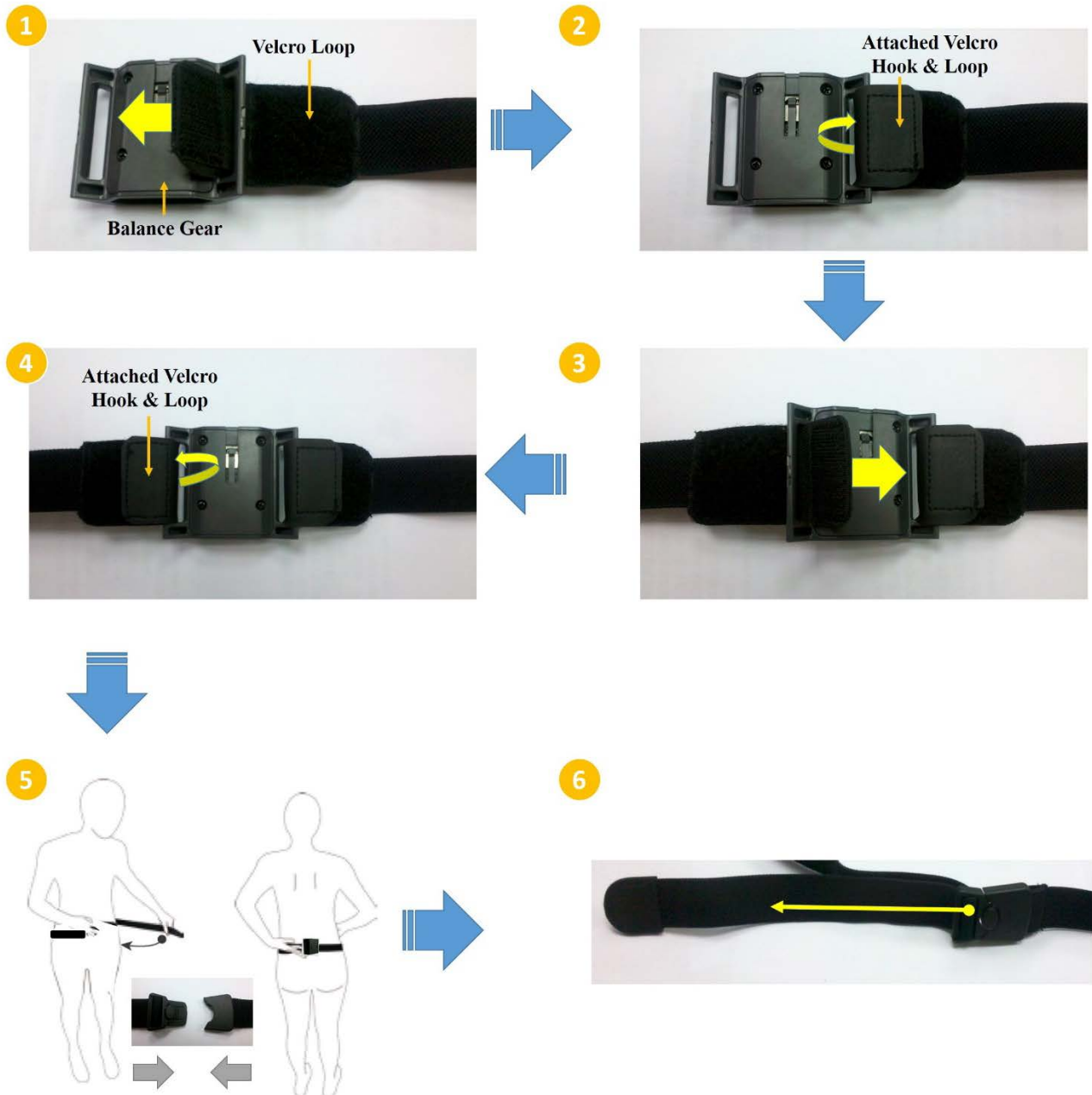
Under normal discharge loads, ALDA™ Balance Gear battery have a life span of about 300 cycles. With moderate use, ALDA™ Balance Gear battery is expected to deliver approximately 80% of their rated capacity after 300 cycles or about one year of use.

Alexandave Industries Co., Ltd. does not provide any warranties for the battery life, as all rechargeable batteries can be expected to lose charging capacity over time and this is not considered a defect. Your actual battery life will vary depending on the conditions in which it is used.

For ALDA™ Balance Gear battery replacement, please contact your distributor or technical support. They are competent to help you.

## 2.4 STEP 4 WEARING THE ALDA™ BALANCE GEAR

Follow these steps to wear your Balance Gear properly:



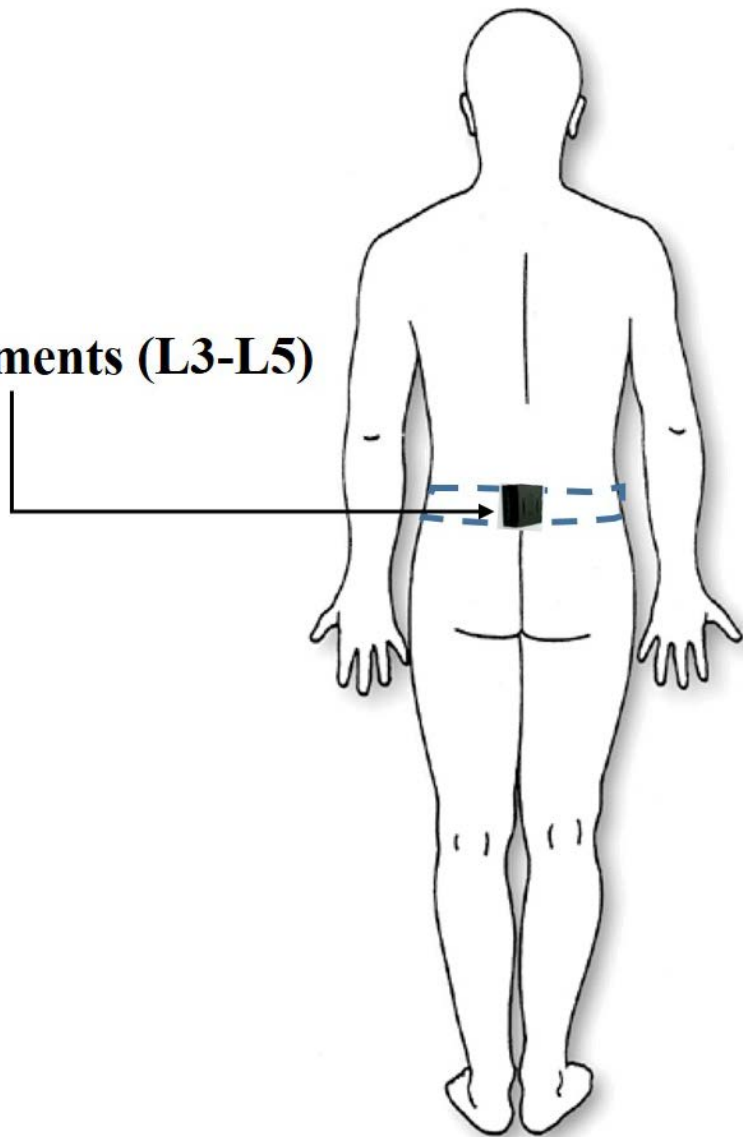


Be sure to have the Balance Gear securely fasten to the lower back (at L5 lumbar vertebral column) for optimal measurement.

**CAUTION**

**RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.  
DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.**

**Lumbar Segments (L3-L5)**



## 3 TESTING & TRAINING SETUP

### 3.1 BEFORE GETTING STARTED

1. Make sure you have plenty of space around you to safely train. Please stand in front of a table and proceed training via a PC or laptop.
2. Clear the space around your feet from any obstacles you may trip on during training.
3. Be careful if you train on a rug; the rug might bunch and become a tripping hazard, as well as create misreading.
4. Make sure the sensors are kept at least 1 meter (39 inches) away from any magnetic objects (such as large speakers or appliances).

### 3.2 GETTING STARTED

To start up the ALDA™ Balance Gear application, double click the ALDA icon (see figure 4) on your desktop.



Figure 4. The ALDA™ Balance Gear icon on desktop



Figure 5. The ALDA™ Balance Gear User Interface

The program (configuration tools) includes the toolbar (see figure 5) below

- ① PERSONAL PROFILE.
- ② STABILITY TEST & TRAINING.
- ③ MY POSTURAL CONTROL.
- ④ LIMIT OF STABILITY.

### 3.3 PERSONAL PROFILE

The PERSONAL PROFILE is the editable Profile window. Please edit the user's personal profile includes ID, DIAGNOSIS, NAME, GENDER, BIRTHDAY and AFFECTED SIDE (OPTIONAL-ONLY FOR STROKE) (see figure 6). Custom ID can be used if the person has a predefined ID in some other database. The PERSONAL PROFILE enable users to access their settings and data for reference after balance evaluation and training.

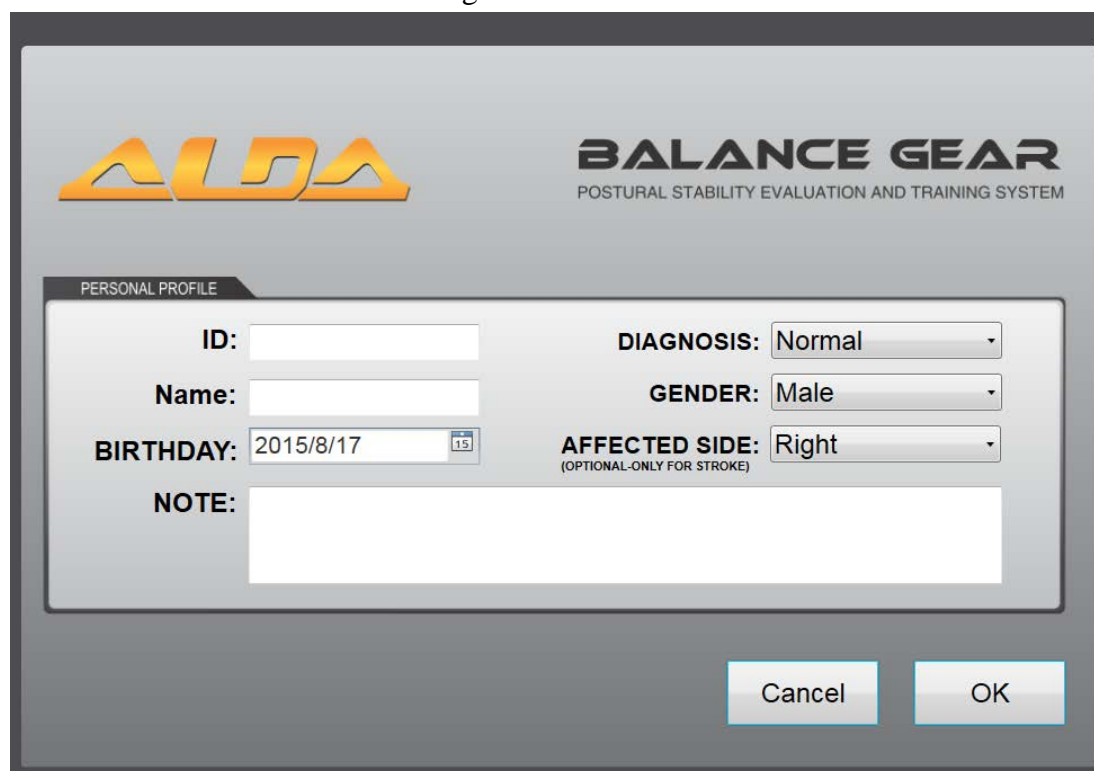
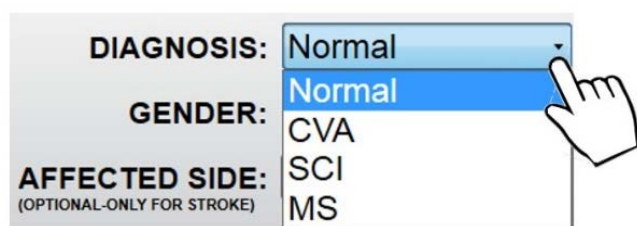
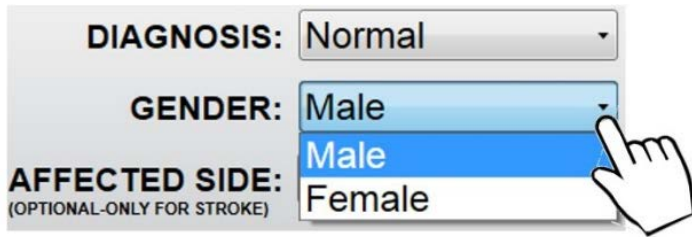


Figure 6. The PERSONAL PROFILE window

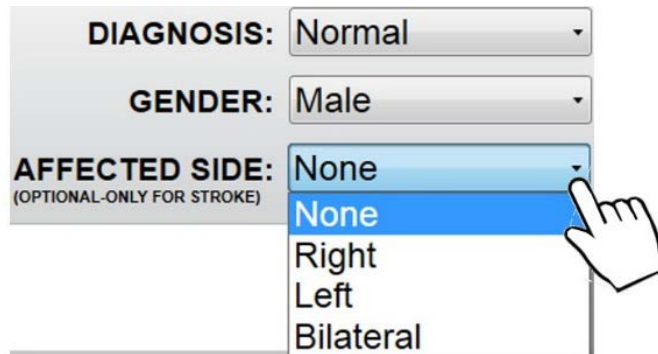


**DIAGNOSIS:** Click the DIAGNOSIS toolbar and select the user's physical condition (Normal, Cerebral Vascular Accident (CVA), Spinal Cord Injury (SCI), Multiple Sclerosis (MS)).





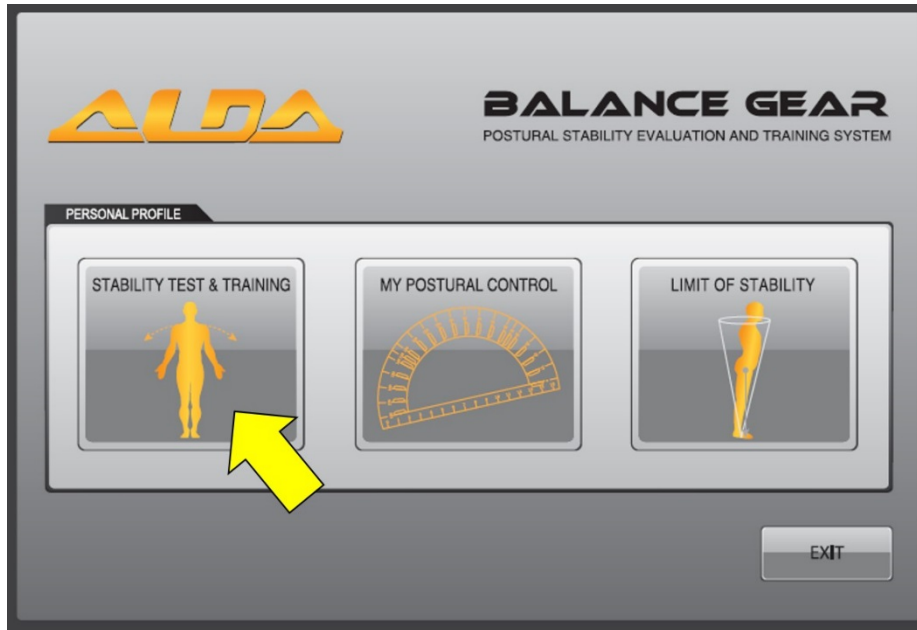
GENDER: Click the GENDER toolbar and select gender of user.



AFFECTED SIDE: Click the AFFECTED SIDE toolbar and select the user's hemiplegia side (None, Right, Left, or Bilateral).

### 3.4 STABILITY TEST & TRAINING

This is initial step prior to evaluation and training your fundamental balancing stability. At this step, the gear helps you regain your stability even at an advanced age. Follow these steps to regain your Stability:



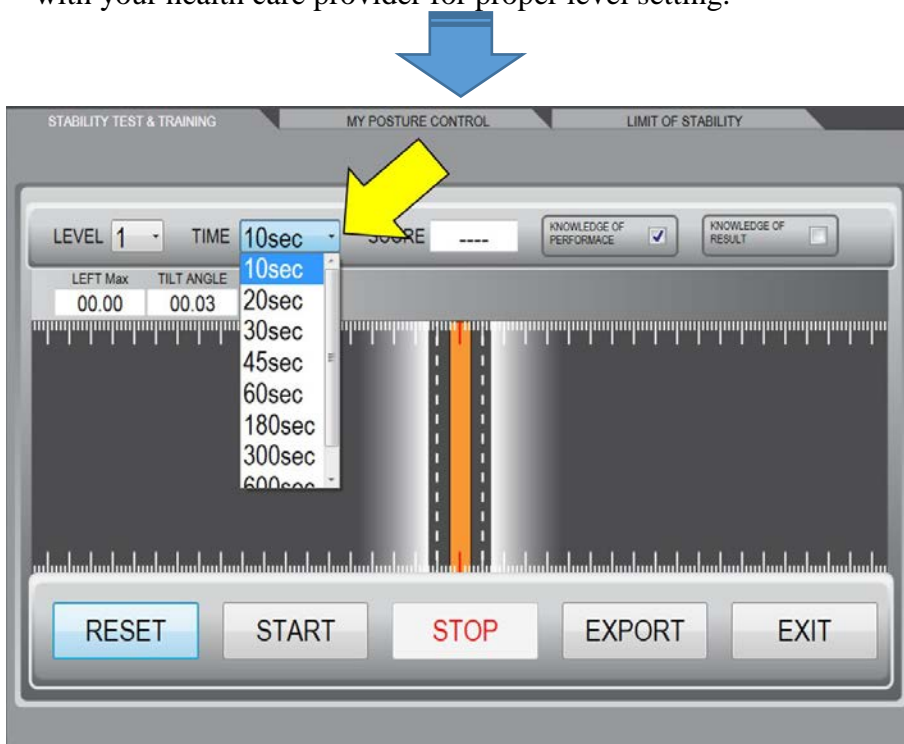
**STABILITY TEST & TRAINING:** You can move your cursor to “STABILITY TEST & TRAINING” icon to find out the test & training direction.



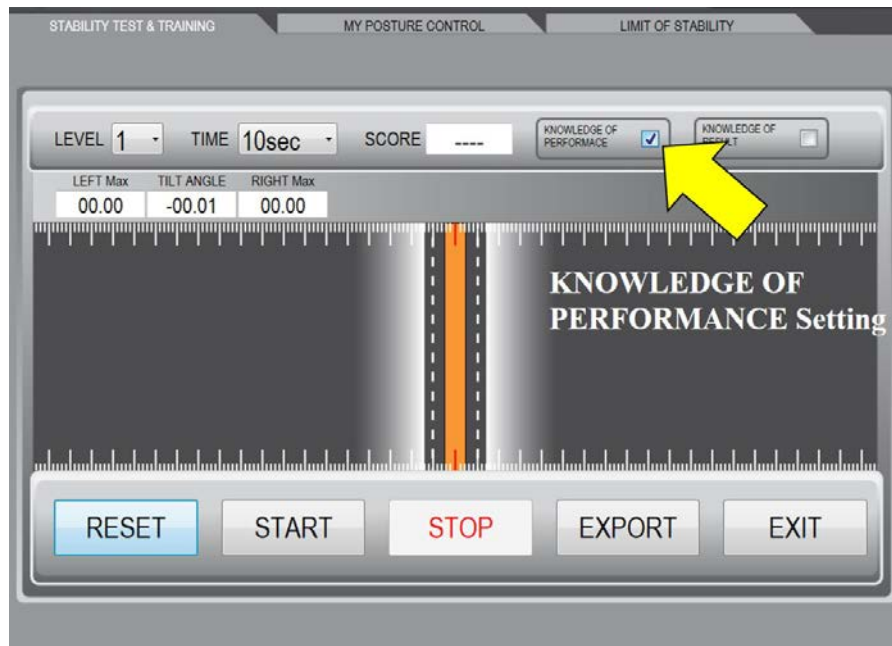
**STABILITY TEST & TRAINING:** You can double click “STABILITY TEST & TRAINING” to start the test or training.



**LEVEL:** The sway angle range for STABILITY TEST & TRAINING are divided into 10 levels, ranging from 1-10. “Level 1” indicates the highest level of postural sway and “Level 10” the lowest level of function. Please consult with your health care provider for proper level setting.



**TIME:** Please see TABLE 4.1 for setting up training program to achieve your goals.



#### KNOWLEDGE OF PERFORMANCE/KNOWLEDGE OF RESULT:

Various rehabilitation approaches had been used to improve skill reacquisition of the impaired balance. Basic neurological research suggested that the repetitive motor activity forms the basis of skill reacquisition. Aside from practice, different types of biofeedback provided to the subject are the key factor in motor skill reacquisition. Biofeedback variables include the KNOWLEDGE OF PERFORMANCE (KP) or KNOWLEDGE OF RESULT (KR).

KP feedback was about goal-related performance containing information about the nature of movement pattern. The pattern was produced during the performance and included identification of the parts of the skill which were performed correctly and incorrectly. In contrast, KR feedback was about visualizing the outcome of the performance given to the patient at the end of the task.

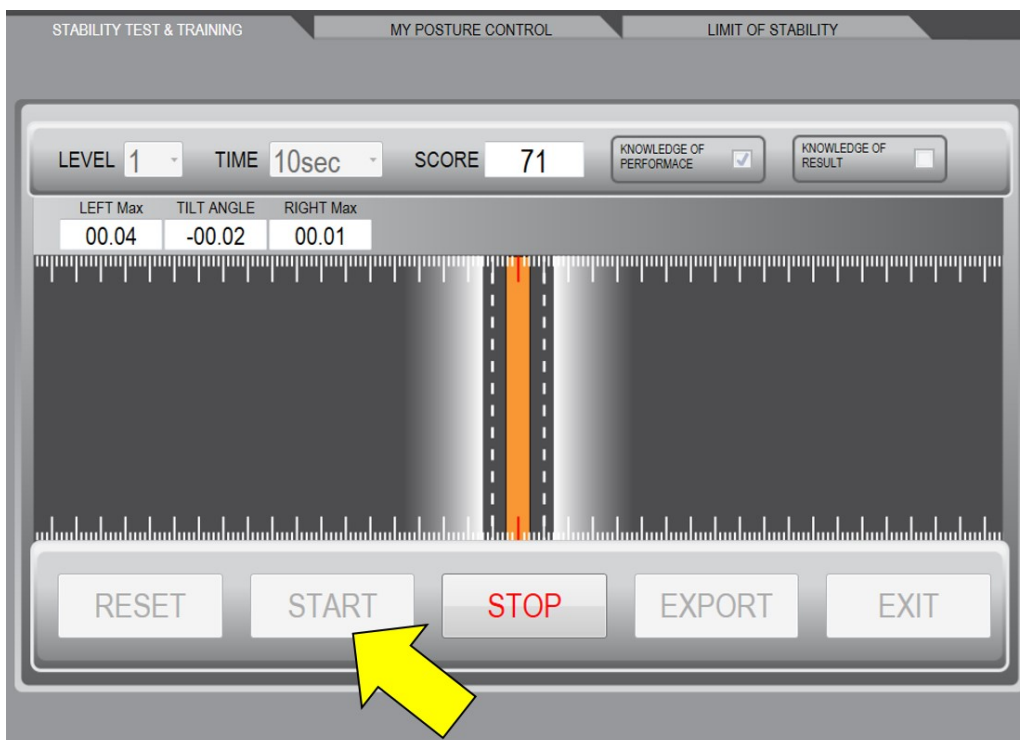
The user can configure the default KP settings which will be used for all the supported evaluation and training protocols unless you have a specific need for KR setting.

Please consult with your health care provider to pick up the proper program.



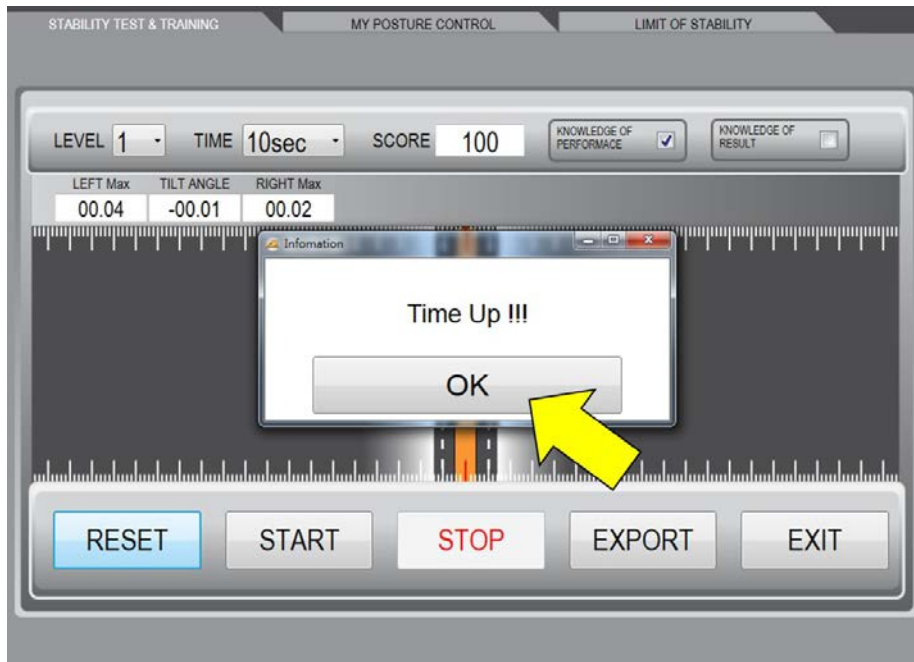


RESET: You can always hit “RESET” to let the brown slider bar back to middle of the STABILITY TEST & TRAINING window.



START: After all setting is done, hit “START” to proceed your program.





Time Up: You will see a “Time up” message when the program ends.

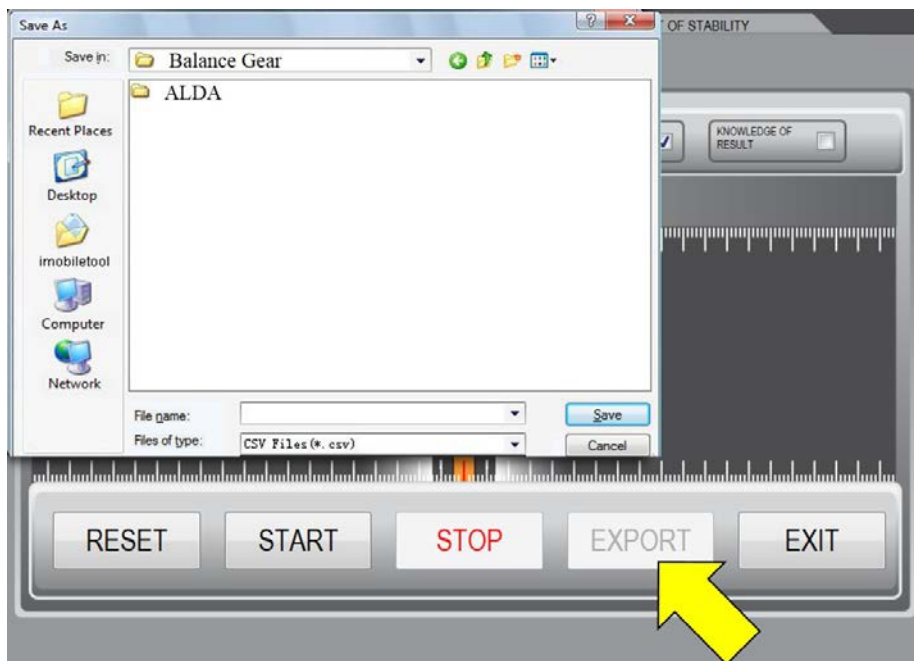
STOP: You can hit “STOP” wherever you want to pause your program.

The data is not saved when you hit “STOP”.

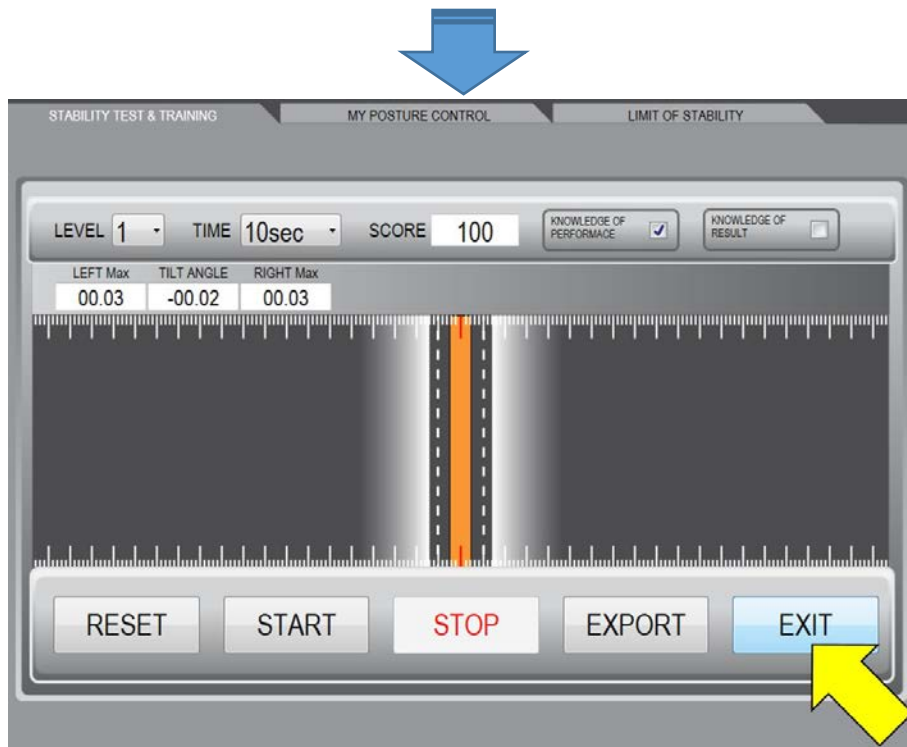
LEFT Max: The peak value (degree) of body sway to left

TILT ANGLE: The instant angle of body sway

RIGHT Max: The peak value (degree) of body sway to right



EXPORT: After the program is completed, you can hit “EXPORT” to export and save the report.



EXIT: You can always hit “EXIT” wherever you want to leave your program.

### 3.5 MY POSTURAL CONTROL

At this stage, the gear helps you find out where your balance limits are in order to set a target as a reference for training. By the target you can track how you are progressing.



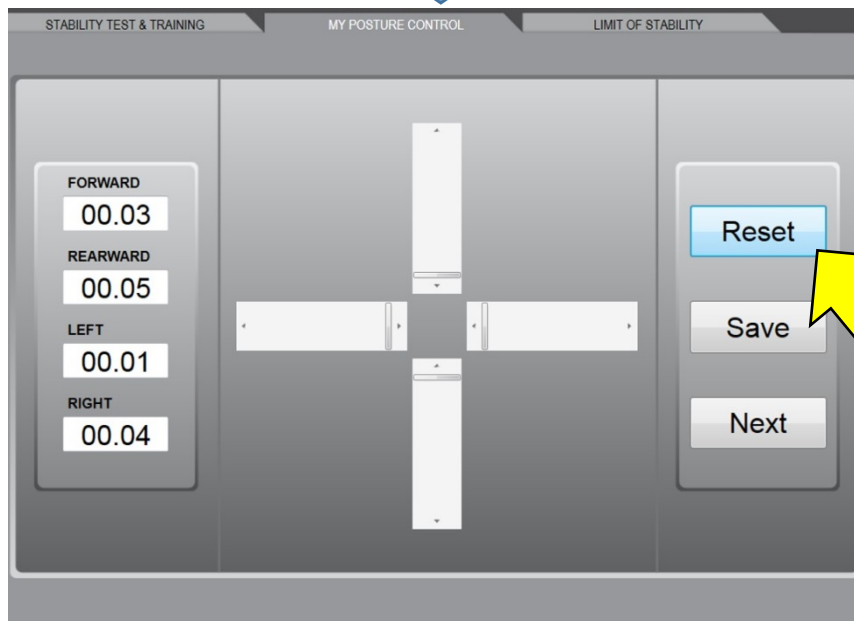
MY POSTURAL CONTROL: You can move your cursor to “MY POSTURAL CONTROL” icon to find out the test direction.



MY POSTURAL CONTROL: You can hit “MY POSTURAL CONTROL” to start the

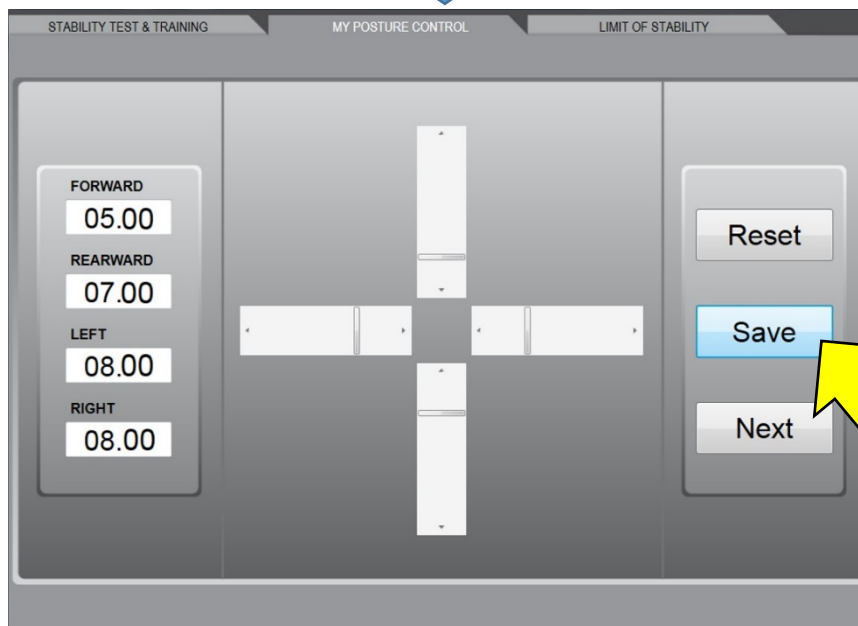


balance limits evaluation.



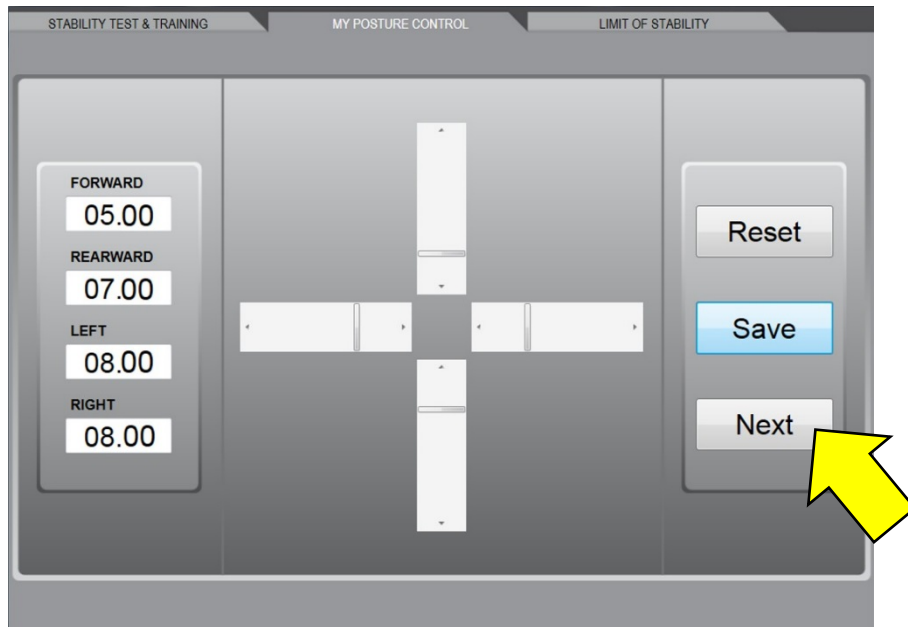
RESET: You can always hit “RESET” to let both slider bars in four directions back to the origin point.

Posture requirement: Stand barefoot with feet in a comfortable position, and arms along sides with palms directed toward thighs. Performed maximal voluntary leaning forward, rearward, left, right respectively.



SAVE: After all evaluation (lean forward 、 rearward 、 left 、 right) is done, hit

“SAVE” to record the data.



NEXT: After the program is completed, you can hit “NEXT” to proceed your program.

### 3.6 LIMIT OF STABILITY

At this stage, the gear uses your personal limitations as guideline to improve your sense of balance. It helps you build up posture against gravity and ensure that balance is maintained. Data is from MY POSTURAL CONTROL program.

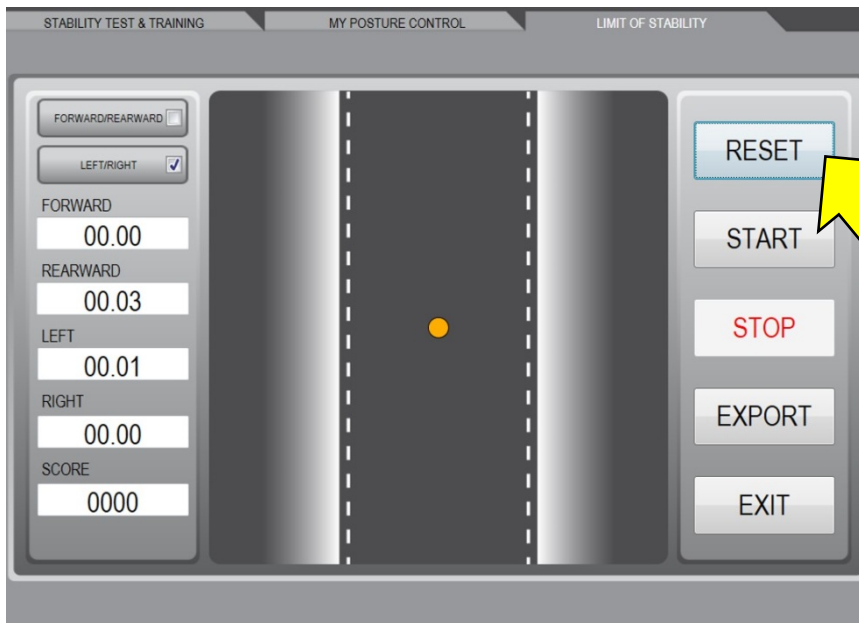


LIMIT OF STABILITY: You can move your cursor to “LIMIT OF STABILITY” icon to find out the training direction.

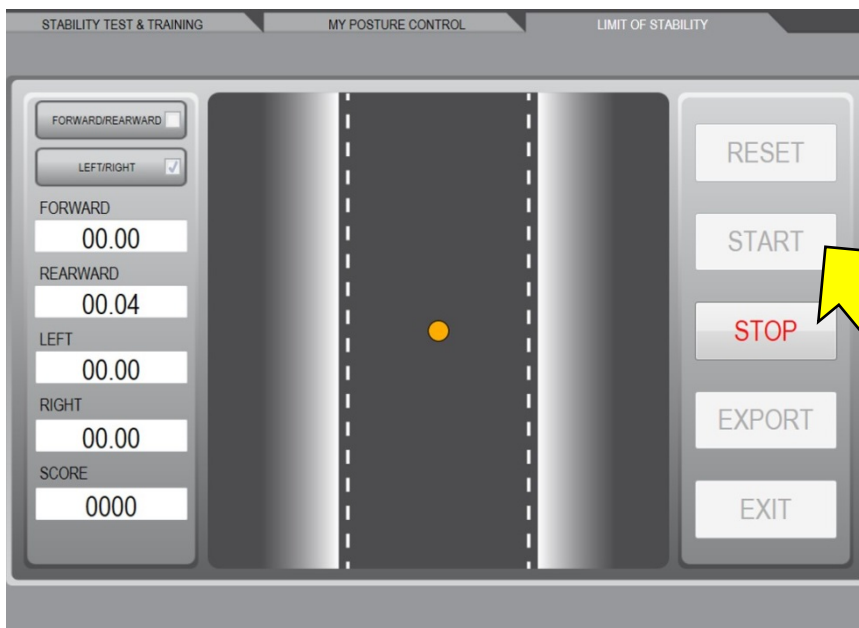


LIMIT OF STABILITY: You can hit “LIMIT OF STABILITY” to start the training.



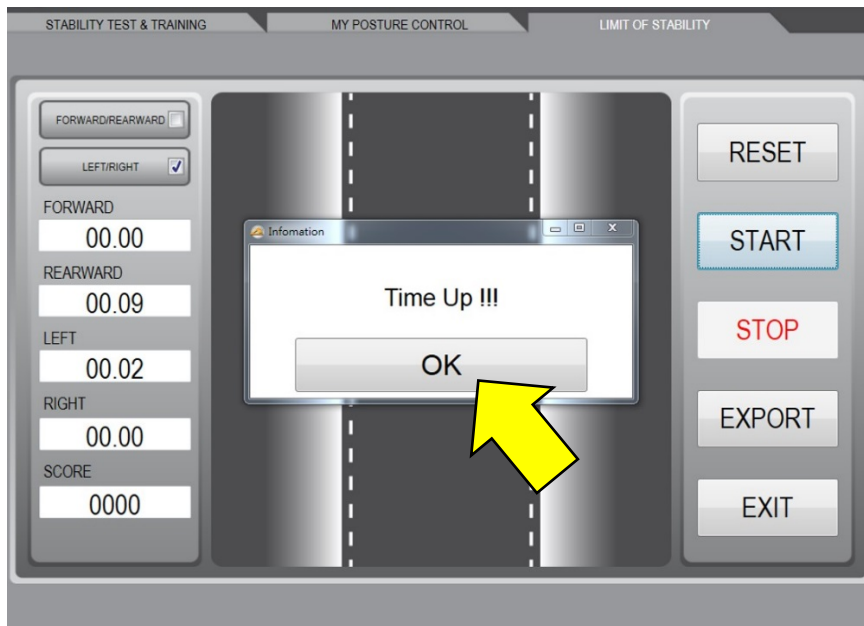


RESET: You can always hit “RESET” to let the brown dot back to middle of the double dotted line.



START: After all setting is done, hit “START” to proceed your program.

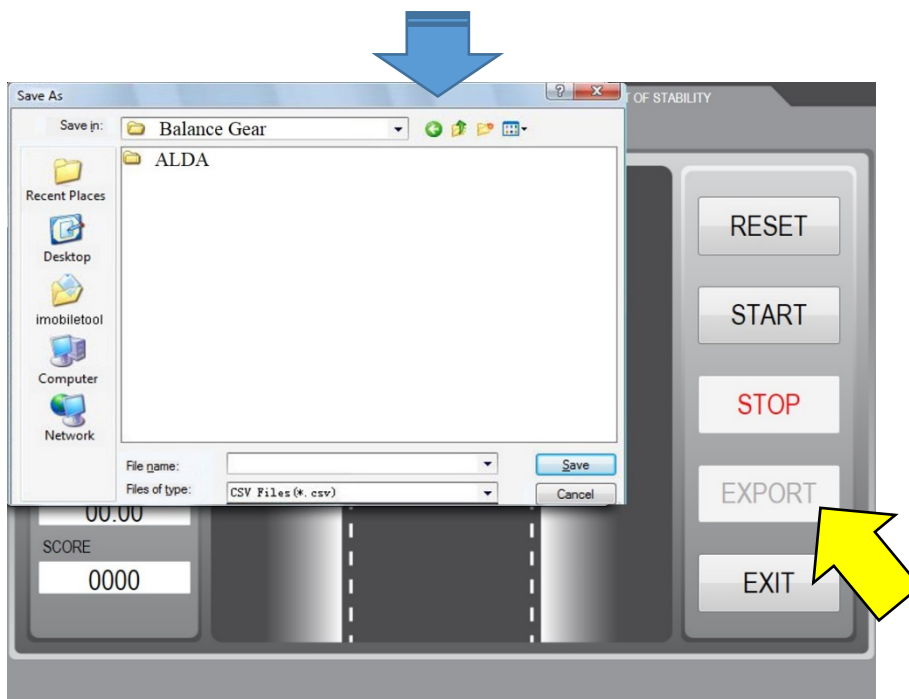




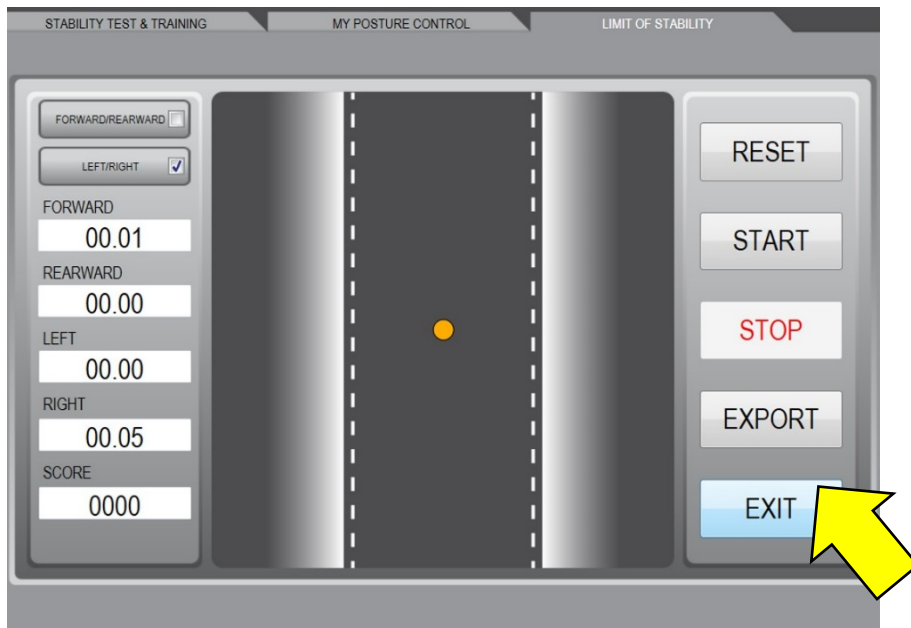
Time up: You will see a “Time up” message when the program ends.

STOP: You can hit “STOP” wherever you want to pause your program.

The data is not saved when you hit “STOP”.



EXPORT: After the program is completed, you can hit “EXPORT” to export and save the report.



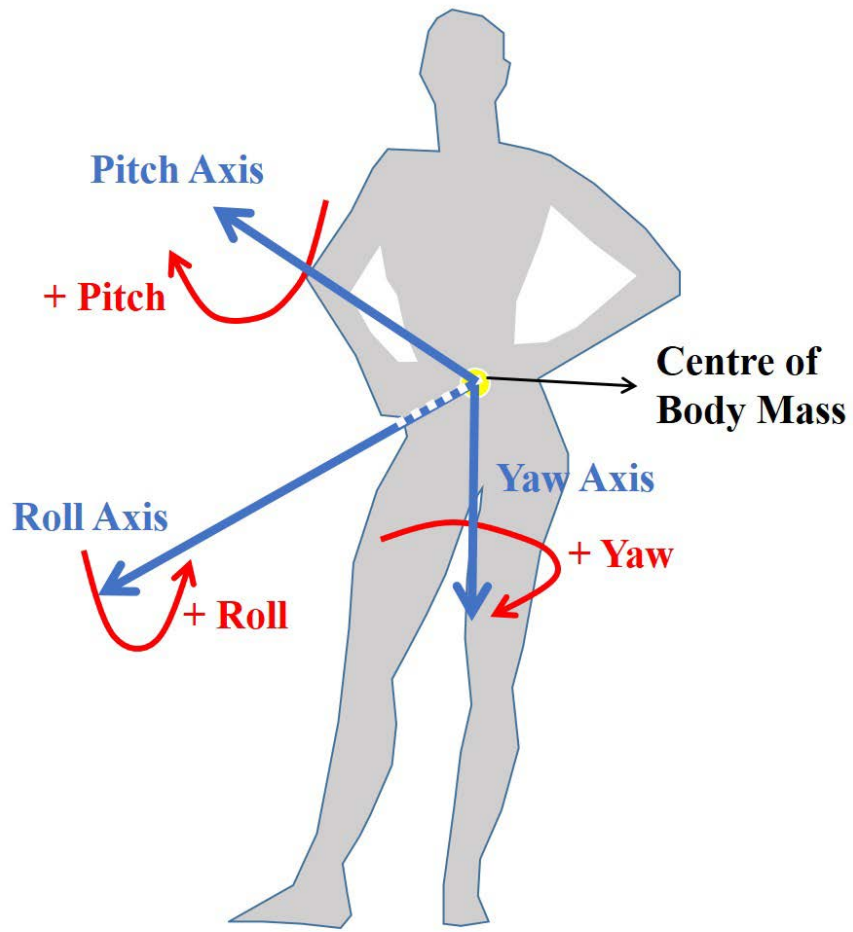
EXIT: You can always hit “EXIT” wherever you want to terminate your program.

### 3.7 EXPORTED DATA

Time (ms)	roll (deg)	pitch (deg)	yaw (deg)	gyro x (deg/s)	gyro y (deg/s)	gyro z (deg/s)	acc x (g)	acc y (g)	acc z (g)
0	-0.055	0.027	-0.016	0	0	0	-0.003	-0.014	1.021
10	-0.055	0.022	-0.016	0	-0.061	-0.122	-0.003	-0.02	1.023
20	-0.049	0.022	-0.022	0.061	0	0	-0.001	-0.024	1.022
30	-0.055	0.022	-0.022	0	0	-0.061	-0.016	-0.019	1.031
40	-0.055	0.027	-0.022	0	0	-0.061	0.003	-0.021	1.028
50	-0.055	0.027	-0.022	0	0.061	0.061	0.003	-0.02	1.012
60	-0.055	0.027	-0.022	0	0.061	0.061	-0.005	-0.026	1.029

The Data in the EXPORT FILE (in .CSV format)

- ❶ EXPORT date and time.
- ❷ PERSONAL PROFILE record.
- ❸ STABILITY TEST & TRAINING time record.
- ❹ Roll (degree) - postural sway from side-to-side.
- ❺ Pitch (degree) – postural sway forward or backward.
- ❻ Yaw (degree) – rotation of trunk to the left or right.
- ❼ Roll velocity (degree/sec) – angular velocity of tilting side to side.
- ❽ Pitch velocity (degree/sec) – angular velocity of tilting forward or backward.
- ❾ Yaw velocity (degree/sec) – angular velocity of turning left or right.
- ❿ Roll acceleration (g-force) – X direction acceleration (side to side).
- ⓫ Pitch acceleration (g-force) – Y direction acceleration (forward / backward).
- ⓬ Yaw acceleration (g-force) – Z direction acceleration (left / right).





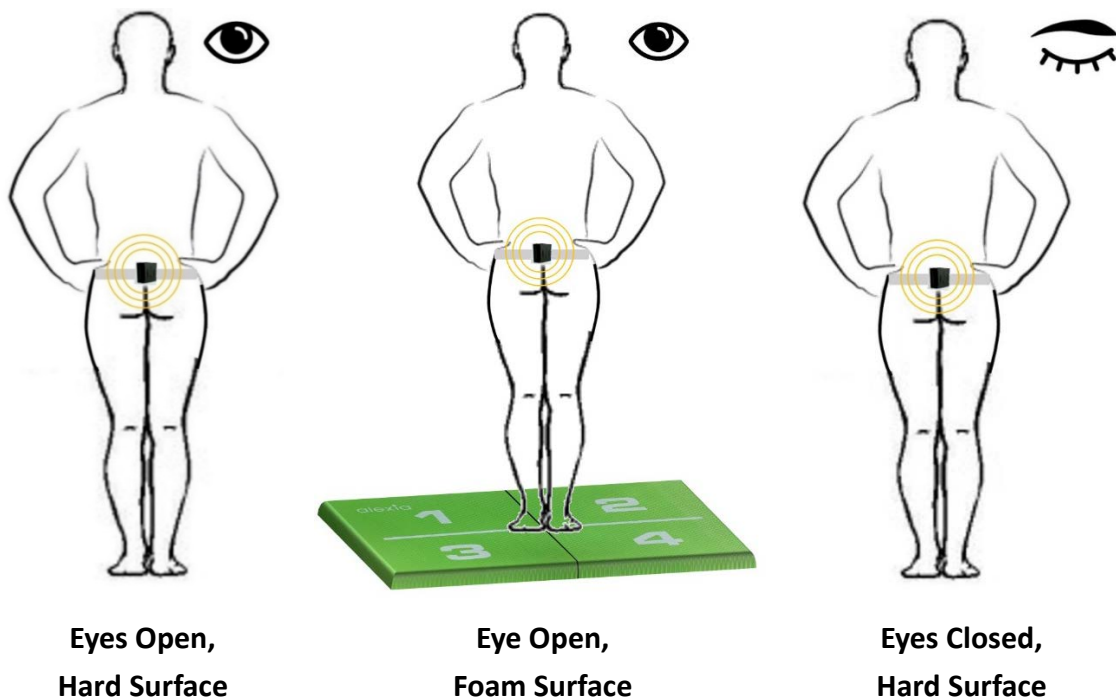
## 4 BALANCE TEST AND TRAINING

A variety of consequences can occur due to poor balance therefore therapist need to address each component in order to prevent injury, re-injury or further trauma. The ALDA™ Balance Gear provides stability test and training and visual/audio feedback input important to balance.

The Stability Test is recommended test protocol for balance assessment on a static surface. This test provides a generalized assessment of how well a user can integrate various senses with respect to balance and compensate when one or more of those senses are compromised.

### 4.1 STABILITY TEST

The balance-testing regime consist of stance on two different surfaces. The stance is double leg stance. The two different surfaces include both a hard surface (ground) and foam surface. Users' stance should consist of the hands on the waist, eyes closed and a consistent foot position depending on the stance. All testing was conducted barefoot to eliminate additional balance and stability from the shoes.



#### 4.1.1 STABILITY TEST SETUP



1. Select STABILITY TEST & TRAINING and press RESET.
2. User should stand comfortably with their feet together and hands at side.
3. Press start and start the following test condition.



Balance Gear is not meant to replace the expertise or experience of your medical expert. If you are unsure if you are at risk, consult with your medical expert. Balance Gear is one training tool that can improve trunk stability, mobility and overall balance.



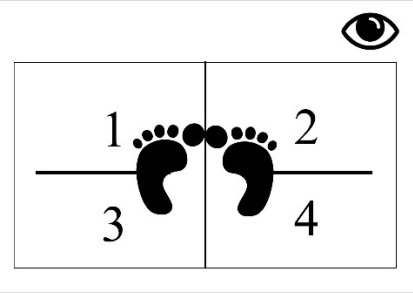
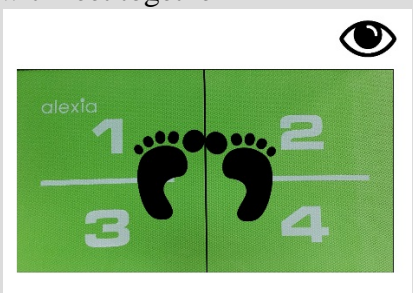
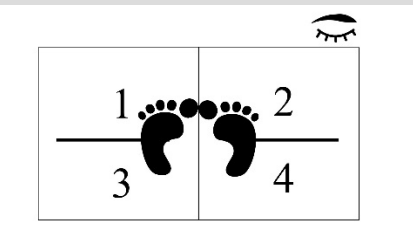
**CAUTION: IF AT ANY TIME WHILE USING BALANCE GEAR YOU EXPERIENCE DISCOMFORT, UNUSUAL FATIGUE OR FEEL DIZZY, STOP IMMEDIATELY AND CONSULT A QUALIFIED MEDICAL EXPERT BEFORE RESUMING BALANCE GEAR TRAINING. DO NOT ATTEMPT TO EXCEED A COMFORTABLE RANGE OF MOTION. DISREGARD OF THIS CAUTION CAN RESULT IN PERSONAL INJURY.**

#### 4.1.2 TEST CONDITIONS

1. Eyes Open, Hard Surface, Feet Together
2. Eyes Open, Foam Surface, Feet Together
3. Eyes Closed, Hard Surface, Feet Together

**TABLE 4.1**

**Performance Based Measure of Balance**

Activity	Sets	Time	Grading
Eyes open, standing on hard surface with feet together 	3	60sec	<b>Young</b> --- Roll: $< 0.5^\circ$ , Pitch: $< 1.3^\circ$  <b>Middle-aged</b> --- Roll: $< 0.7^\circ$ , Pitch: $< 1.4^\circ$  <b>Elderly</b> --- Roll: $< 0.9^\circ$ , Pitch: $< 1.8^\circ$
Eyes open, standing on foam with feet together 	3	30sec	<b>Young</b> --- Roll: $< 0.8^\circ$ , Pitch: $< 1.5^\circ$  <b>Middle-aged</b> --- Roll: $< 1.2^\circ$ , Pitch: $< 1.7^\circ$  <b>Elderly</b> --- Roll: $< 1.5^\circ$ , Pitch: $< 2.2^\circ$
Eyes closed, standing on floor with feet together 	3	10sec	<b>Young</b> --- Roll: $< 0.6^\circ$ , Pitch: $< 1.6^\circ$  <b>Middle-aged</b> --- Roll: $< 0.7^\circ$ , Pitch: $< 1.8^\circ$  <b>Elderly</b> --- Roll: $< 1^\circ$ , Pitch: $< 2.3^\circ$

Roll: postural sway in medial–lateral direction

Pitch: postural sway in anterior–posterior direction

Young: (18-35 years), Middle-aged: (36-55 years), Elderly (above 55 years)

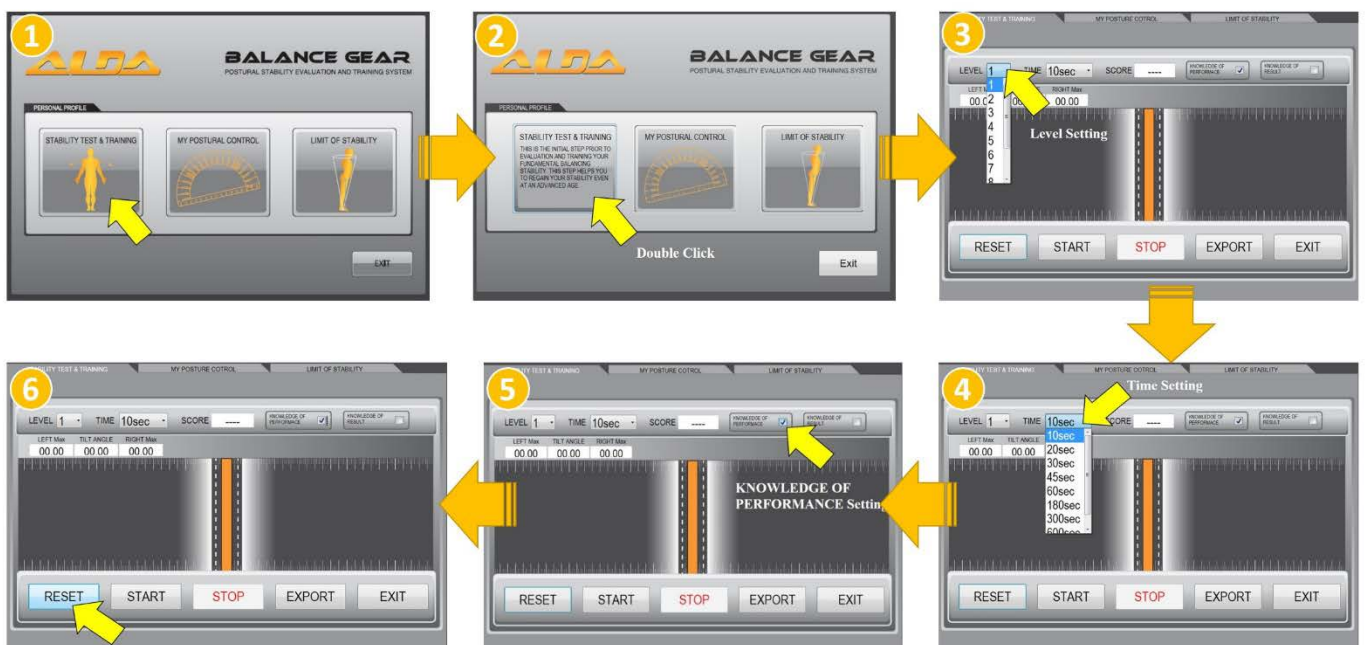
Reference: (1) Biomedical Engineering: Applications, Basis and Communications, Vol. 24, No. 5 (2012) 461-469.

(2) Journal of Gerontology: MEDICAL SCIENCES, 2001, Vol. 56A, No. 7, M438-M447.

## 4.2 STABILITY TRAINING

Stability training played an important role in postural balance. It brings many health benefits including better proprioception leading to better balance. Besides, implementing preventive stability test & training earlier in life may prevent falls in later years, which positively impacts health cost and ultimately improve elderly's well-being.

### 4.2.1 STABILITY TRAINING SETUP



1. Select STABILITY TEST & TRAINING program.
2. Double click the STABILITY TEST & TRAINING icon.
3. Choose the level, level may depend on the prior STABILITY TEST.
4. Select the training time depend on the following programs.
5. Click on the KNOWLEDGE OF PERFORMANCE for visual feedback.
6. Press the RESET button, then press START to start the training program.

## 4.2.2 TRAINING PROGRAM – HARD SURFACE

1. Eyes Open, Hard Surface, Feet Together
2. Eyes Open, Hard Surface, Toes Stand
3. Eyes Open, Hard Surface, Heels Stand
4. Eyes Open, Hard Surface, Semi-Tandem
5. Eyes Open, Hard Surface, Full-Tandem
6. Eyes Open, Hard Surface, One Leg Stand

### Score

Excellent - Score: >81~100

Very Good - Score: > 61~80

Good - score: > 41~60

Fair - score: > 21~40

Poor – score: < 20

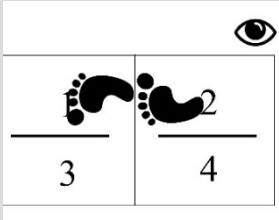
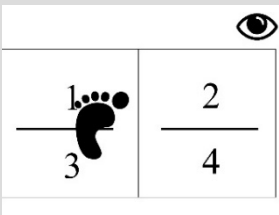
TABLE 4.2.2

### Stability Training Program

	Sets	Time	Activity
1.	1	60sec	Eyes open, standing on hard surface with feet together.
2.	1	30sec	Eyes open, standing on floor with toes stand.
3.	3	10sec	Eyes open, standing on floor with heels stand.
4.	2	30sec	Eyes open, standing on hard surface with one foot in front (semi-tandem). Repeat 2 repetitions on each foot in front.

**TABLE 4.2.2**

**Stability Training Program**

		<b>Sets</b>	<b>Time</b>	<b>Activity</b>
5.		2	30sec	Eyes open, standing on floor with heel of one foot directly in front of the toes of the other foot (full tandem). Repeat 2 repetitions on each foot in front.
6.		2	30sec	Eyes open, standing on one leg without holding. Repeat 2 repetitions on each foot in one leg stand.

### 4.2.3 TRAINING PROGRAM – FOAM SURFACE

1. Eyes Open, Foam Surface, Feet Together
2. Eyes Open, Foam Surface, Semi-Tandem
3. Eyes Open, Foam Surface, Full-Tandem
4. Eyes Open, Foam Surface, One Leg Stand

Score

Excellent - Score: >81~100

Very Good - Score: > 61~80

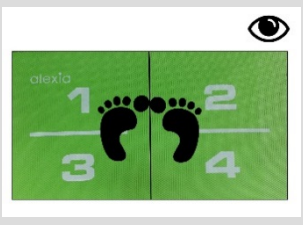
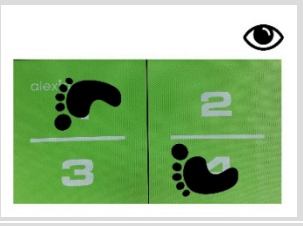
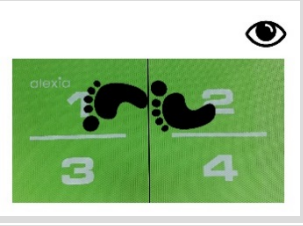
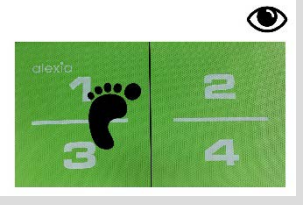
Good - score: > 41~60

Fair - score: > 21~40

Poor – score: < 20

TABLE 4.2.3

#### Stability Training Program

	Sets	Time	Activity
1. 	2	60sec	Eyes open, standing on foam with feet together.
2. 	2	60sec	Eyes open, standing on foam with one foot in front (semi-tandem). Repeat 2 repetitions on each foot in front.
3. 	2	60sec	Eyes open, standing on foam with heel of one foot directly in front of the toes of the other foot (full tandem) Repeat 2 repetitions on each foot in front.
4. 	2	30sec	Eyes open, standing one leg on foam without holding. Repeat 2 repetitions on each foot in one leg stand.

#### 4.2.4 TRAINING PROGRAM – EYES CLOSED

1. Eyes Closed, Hard Surface, Feet Together
2. Eyes Closed, Hard Surface, Semi-Tandem
3. Eyes Closed, Hard Surface, Full-Tandem

#### Score

Excellent - Score: >81~100

Very Good - Score: > 61~80

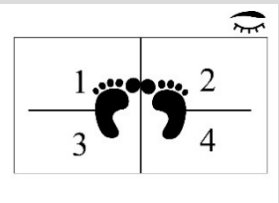
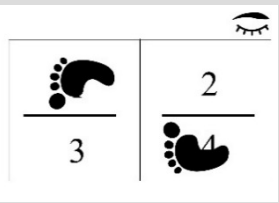
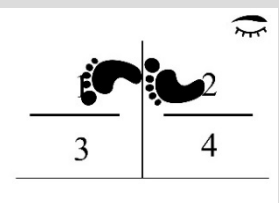
Good - score: > 41~60

Fair - score: > 21~40

Poor – score: < 20

TABLE 4.2.4

#### Stability Training Program

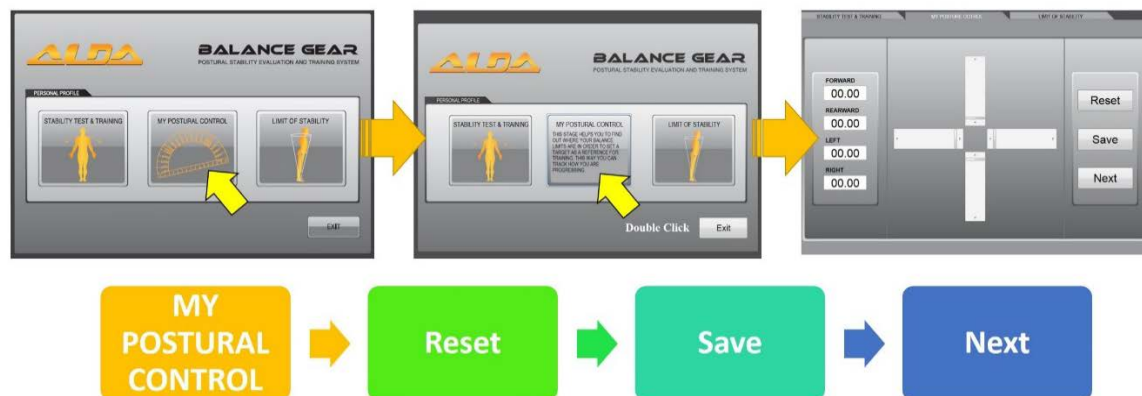
	Sets	Time	Activity
1. 	2	60sec	Eyes closed, standing on floor with feet together.
2. 	2	60sec	Eyes closed, standing on floor with one foot in front (semi-tandem) Repeat 2 repetitions on each foot in front.
3. 	2	60sec	Eyes closed, standing on floor with heel of one foot directly in front of the toes of the other foot (full tandem) Repeat 2 repetitions on each foot in front.



### 4.3 MY POSTURAL CONTROL

At this stage, the gear helps you to find out where your greatest distance in any direction a person can lean away from a midline vertical position without falling, stepping, or reaching for support.

#### 4.3.1 MY POSTURAL CONTROL SETUP



1. Select MY POSTURAL CONTROL.
2. Press Reset and start the following test conditions.

#### 4.3.2 MY POSTURAL CONTROL TEST CONDITIONS

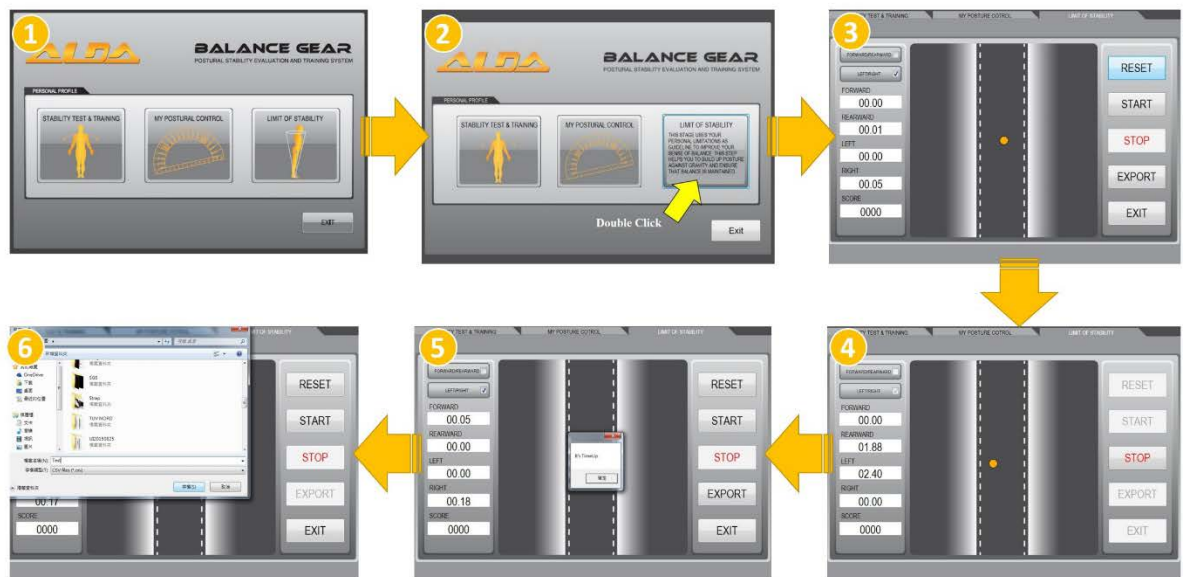
The ankle strategy is used to actively maintain balance for small amounts of sway. Only ankle movement occurs to maintain the balance and is most commonly used when the perturbation is small and the support surface is firm.

1. Eyes Open, Hard Surface, Feet Together, FORWARD sway
2. Eyes Open, Hard Surface, Feet Together, REARWARD sway
3. Eyes Open, Hard Surface, Feet Together, LEFT sway
4. Eyes Open, Hard Surface, Feet Together, RIGHT sway

## 4.4 LIMIT OF STABILITY TRAINING

The LIMIT OF STABILITY training uses your personal limitations as guideline to improve your sense of balance. This step helps you to build up posture against and ensure that balance is maintained.

### 4.4.1 LIMIT OF STABILITY SETUP



### 4.4.2 LIMIT OF STABILITY TRAINING CONDITIONS

One of the most important biomechanical constraints on balance control involves controlling the body Centre of Mass (COM) with respect to its base of support of feet. In the LIMIT OF STABILITY training, the user can learn to control their COM and maintain equilibrium without changing the base of support.

1. Eyes Open, Hard Surface, Feet Together, FORWARD sway
2. Eyes Open, Hard Surface, Feet Together, REARWARD sway
3. Eyes Open, Hard Surface, Feet Together, LEFT sway
4. Eyes Open, Hard Surface, Feet Together, RIGHT sway

## 5 CLEANING / CARE / MAINTENANCE

### 5.1 CLEANING AND CARE

- Before cleaning the device, insure that the USB charging cable has been unplugged.
- Contact surfaces of charge cable should not be exposed to humidity. No liquid should infiltrate the ALDA™ Balance Gear.

### 5.2 MAINTENANCE

- Regular maintenance of the ALDA™ Balance Gear is not required.
- The loss of charge acceptance of the ALDA™ Balance Gear battery is due to cell oxidation, which occurs naturally during use and as part of aging.
- ALDA™ Balance Gear battery cannot be restored with cycling or any other external means.

### 5.3 DISPOSAL

- Warning: Never expose ALDA™ Balance Gear to excessive heat or an open flame.
- ALDA™ Balance Gear should be disposed of like other rechargeable devices. They should never be thrown away in the trash without first removing the battery. Lithium-Ion Polymer batteries are classified as hazardous substances in most municipalities should be disposed of according to local law or practice.

## 6 TROUBLESHOOTING

When the LED in the bottom side (behind micro-USB port) of the ALDA™ Balance Gear are light green and fast flash (10Hz), the software is started and there is a connection between the ALDA™ Balance Gear device and the PC.

<b>Error</b>	<b>Troubleshooting</b>
<b>LED is Steady Green Light</b>	The ALDA™ Balance Gear failed to initialize, LED is maintain steady green light more than 2 sec. Please using the locking key to turn off the power. Then extract the locking key from Balance Gear to restart the Balance Gear.
<b>LED is Fast Red Flash (10 Red flashes per seconds)</b>	The ALDA™ Balance Gear is on and correctly connected the computing device, but it is running low on battery and needs to be charged. Please end the measurement and recharge the battery.
<b>LED is Slow Red Flash (1 Red flash every 2 seconds)</b>	The ALDA™ Balance Gear is on and waiting for connection with the computing device, but it is running low on battery and needs to be charged. Please end the measurement and recharge the battery.

When you are not able to solve your problem, please contact your distributor or technical support. They are competent to help you.

## 7 SERVICE & SUPPORT

1. For product returns, repairs and servicing, please contact your local distributor.
2. If your battery lose their ability to hold a charge over time due to the normal aging, the battery should be replaced. Please contact your local dealer or distributor.
3. Consumable parts, such as batteries or protective coatings designed to diminish over time unless failure has occurred due to a defect in materials or workmanship. As with all batteries, the maximum capacity of the battery will decrease with time and use; this is not a defect. Only defective batteries and batteries that leak are covered by this warranty.
4. If the serial number sticker is purposely removed, ALEXANDAVE has the power to void your warranty.

## 8 MANUFACTURE

### **Alexandave Industries Co., Ltd.**

9F-1, No.203, Gongyuan Road, Linkou District 24453, New Taipei City,  
Taiwan

Tel: +886-2-2600-2671 #18

Fax: +886-2-2600-2670/2600-2662

E-Mail: alex1168@alexandave.com

Website: [www.alexandave.com/HC-BG-A1/](http://www.alexandave.com/HC-BG-A1/)

## APPENDIX

### FCC STATEMENT



The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

To comply with the FCC RF exposure compliance requirements, this device and its antenna must not be co-located or operating to conjunction with any other antenna or transmitter.

Note: This equipment has been tested and found to comply with the limits for a Class B Digital Device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction, may cause harmful interference to radio communication. However, there is no grantee that interference will not occur in a particular installation. If this equipment dose cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

## **NCC NOTICE**

經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。前項合法通信，指依電信法規定作業之無線電通信。低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。