



gForceDuo™

Muscle Strength Training Device

User Manual



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1. Preface

Dear user, thank you for purchasing OYMotion gForceDuo™ Muscle Strength Training Device products. In order to further understand the product, please read this manual carefully before use. Have a great experience!

2. Product Description

OYMotion gForceDuo™ Muscle Strength Training Device is a wearable device specially designed for users to perform active muscle training. This product has a built-in two-channel highly sensitive surface electromyography sensor, a nine-axis motion sensor, Bluetooth BLE4.2 wireless communication, vibration feedback motor, a rechargeable lithium battery and other modules. gForceDuo™ connects disposable electrode sheets through differential electrode cables to monitor the user's muscle exertion and posture of the wearing position in real time. Users have interesting interactions with training games running on tablets and other terminals to achieve guidance, real-time feedback and result assessment of the training process.

3. Applicable Model

OYM-REH-U001A ; OYM-REH-U001B ; OYM-REH-U001C ; OYM-REH-U001D ;
OYM-REH-U001E

4. Model Difference

Model	Name	Strap Length
OYM-REH-U001A		20cm
OYM-REH-U001B		26 cm
OYM-REH-U001C	gForceDuo™ - Muscle StrengthTraining Device	38 cm
OYM-REH-U001D		66 cm
OYM-REH-U001E		124 cm

5. Scope of Application

This product is suitable for users with upper limb dysfunction caused by cerebrovascular accidents, brain trauma or other neurological diseases, as well as users who need to restore upper limb function after surgery.

The product provides users with repeatable, task-oriented training through virtual scenario interactive games to increase muscle fiber recruitment rate, enhance muscle endurance, increase joint mobility, improve upper limb coordination and flexibility, and promote post-injury recovery. Reshape central and peripheral nerve functions and correct pathological movement patterns caused by hemiplegia.

6. Products and packaging

The gForceDuo™ Muscle Strength Training Device is mainly composed of the gForceDuo™ Muscle Strength Training Device, disposable electrode sheets, EMG cables, charging cables and supporting training game APP.



Packaging box



Packaging box



Disposable electrode sheets

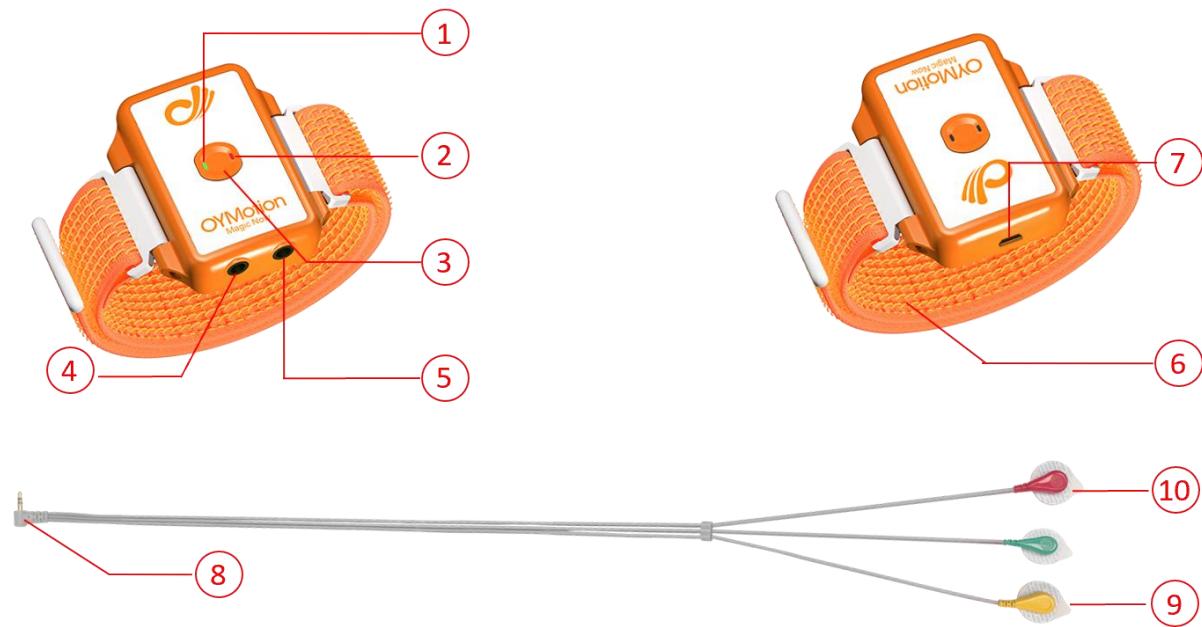


USB charging cable

7. Product Components

7.1. gForceDuo™ Muscle Strength Training Device

7.1.1. a



1-Green status indicator light

2-Red charging indicator light

3-Multi-function button

4-Myoelectric sensor channel 1

5-Myoelectric sensor channel 2

6-Velcro strap

7-USB charging port

8-Myoelectric wire connector

9-electrode

10-Disposable electrode sheets

7.1.2. Dimensions and weight



Measurement standard	Measurements
Velcro strap length	20/26/38/66/124 mm
Main module length	51mm
Main module width	41mm
Main module thickness	17mm
Cable length	100cm
Weight	About 27g

7.2. Disposable electrode sheets

Disposable electrode sheets consist of self-adhesive stickers, electrode buckles, sponge or non-woven backing, pressure-sensitive adhesive, silver/silver chloride electrodes, and anti-stick films. Users can purchase disposable ECG electrode sheets with an electrode buckle diameter of 3.7-3.8 mm.



Front (glue side)



Back side (electrode buckle side)

7.3. Supporting training game APP

The training game APP independently developed by Shanghai OYMotion Technologies Co., Ltd. can be installed directly on Android phones, tablets or smart TVs. gForceDuo™ communicates with the training game through Bluetooth. The games built into the training Game APP, through professional and interesting design, interact with users on the training process and provide real-time feedback to help users achieve early recovery.

For a detailed introduction to the supporting training game APP, see the corresponding instruction manual. Let's take one of the games as an example.

Table Tennis (Applicable to intelligent muscle strength training system app software)



Wrist Flexion

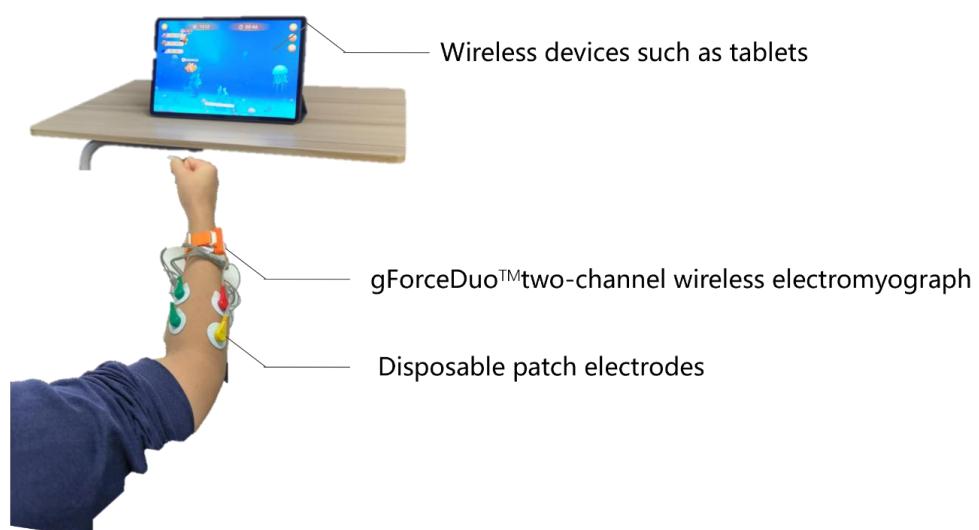


Wrist Dorsiflexion

Wearing gForceDuo, combined with the table tennis game in the gForceDuo intelligent muscle strength training system, follow the direction of the table tennis ball flying over the screen, with the elbow as the fulcrum, move the forearm to left or right. then drive the racket and hit the table tennis ball.



8. Product Connection Method



gForceDuo™ connection diagram

9. Product Instructions

9.1. **Electrode pad usage :** gForceDuo™ has 2 sets of EMG cables, each set has 3 wires, the colors are red, green and yellow. The red one is the reference level output line, and the adjacent green and yellow lines correspond to the left and right EMG differential pairs. When in use, connect the disposable electrode sheets through the snap button at the end of the cable. The two electrode sheets of the same set of EMG sensors need to be adjacent to the user's skin and placed in sequence along the direction of muscle contraction to be observed; the red button The connection line of the buckle is a reference level output, that is connected to the skin, such as areas above bones with relatively little muscle activity, through disposable electrode sheets.

9.2. **Myoelectric raw data:** The main purpose of gForceDuo™ is to monitor the contraction and force of muscles in two parts of the human body through two sets of differential pairs of myoelectric sensors. It is usually used to monitor two sets of muscles with opposite effects, such as the flexors and extensors of the forearm, and the biceps and triceps of the upper arm.

9.3. **Power on:** In the power off state, press the switch button of the gForceDuo™. The device will start up after about 1 second, and the green indicator light below the button will light up. At this time, release the button, the vibration motor will vibrate, and initialization will begin; after the device is initialized, it will start waiting for Bluetooth to be established. Connect , the green indicator light flashes once per second (in rare cases, the green indicator light will flash slowly at a frequency of once every 4 seconds, which indicates that the initialization failed, then restart the device and re-initialize it. Yes); after the training game APP successfully connects to gForceDuo™, the green indicator light stays on; when data or commands are transmitted, the green indicator light flashes quickly at a frequency of 2.5 times per second.

9.4. **Turn on the phone and enter the firmware upgrade:** In the power-off state, after continuously pressing the gForceDuo™ switch button for more than 10 seconds, the green indicator light flashes quickly 5 times, and then flashes slowly. At this time, the device enters firmware upgrade mode, and the Bluetooth name of the device changes to gForceDuo-BOOT. This operation should only be used if the device firmware is damaged or the device is seriously not working properly. Users can force the firmware upgrade of gForceDuo™. After entering the firmware upgrade mode, upgrade the firmware through the gForce APP; if you give up the upgrade, you can perform the next shutdown operation, and gForceDuo™ will re-enter the working mode when it is turned on normally again.

9.5. **Shut down:** When the power is on, press and hold the switch button for more than 5 seconds and then let go, the green indicator light will go out (if the internal attitude sensor data is successfully automatically corrected after this power is on, the green indicator light will flash 3 times quickly to remind you) , gForceDuo™ power turns off automatically.

9.6. **Charging:** Charge the gForceDuo™ through the USB cable. While the device is charging, the red indicator led below the button lights up; when charging is complete, the indicator led turns green.

10. Product Specifications

Main Indicators	Parameter
communication method	<ul style="list-style-type: none"> ● Bluetooth low energy BLE4.2
Communication distance	<ul style="list-style-type: none"> ● 10 meters (open space without barriers)
Power consumption	<ul style="list-style-type: none"> ● 0.13W
Battery	<ul style="list-style-type: none"> ● 160mAh/3.7V
Power input	<ul style="list-style-type: none"> ● Micro-USB 5V
Vibration motor	<ul style="list-style-type: none"> ● Built-in
Strap	<ul style="list-style-type: none"> ● Material: knitted ● Color: orange ● Length : 20/26/38/66/124 mm
Host	<ul style="list-style-type: none"> ● Material: plastic ● Color: White ● Button: orange ● Dimensions: 51 x 47 x 17mm
EMG sensor	<ul style="list-style-type: none"> ● Channel: 2 channels ● Electrodes: Disposable patch electrodes ● Gain: 13000 times
Motion sensor	<ul style="list-style-type: none"> ● 9-axis IMU sensor

11. Precautions

- 11.1. Users need to perform appropriate warm-up and relax exercises before and after training to prevent muscle damage.
- 11.2. If you encounter a sudden increase in muscle tension during training, please stop training, stretch the muscles, and reduce the tension before continuing to train.
- 11.3. Training time and intensity should be determined according to individual conditions . Generally, training can be performed multiple times a day, as long as the patient does not feel tired after training. It is recommended to train 3 times each in the morning, noon and evening. The time of each training session is determined according to the patient's tolerance, and they

should not feel fatigue after training.

- 11.4. This product needs to be used with the OYMotion training Game APP, and is only suitable for smart TVs, smart tablets, and smartphones with Android systems .
- 11.5. It can be used indoors and outdoors at room temperature. It is prohibited to use it in humid, watery, or electromagnetic-interference environments. It is prohibited to use it while charging.
- 11.6. The electrode sheets are disposable products. Users can purchase disposable ECG electrode sheets with an electrode buckle diameter of 3.7-3.8 mm. When using it, you should strictly follow the instructions for using the electrode sheets. If used repeatedly, signal distortion, interference, etc. may occur.
- 11.7. Use with caution if you are allergic to disposable electrodes. It is prohibited to stick electrode sheets on the user's skin with trauma or scars.
- 11.8. Use electrode sheets as soon as possible after opening. It is strictly prohibited to use it if the conductive adhesive is found to have dried up or cannot be adhered tightly.
- 11.9. When electrode sheets are used , the loss or disposal of discarded items should comply with the laws and regulations of the relevant local departments.

12. Packing List

thing	quantity
gForceDuo™ Muscle Strength Training Device	×1
EMG cables	×2
Disposable electrode sheets	×10
USB charging cable	×1
User Manual	×1
Warranty Card	×1

13. FCC Warning

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.

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

instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does 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.

Note: The Grantee is not responsible for any changes or modifications not expressly approved by the party responsible for compliance. such modifications could void the user's authority to operate the equipment.

The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.

14. Contact us

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