



GH Innotek Co., Ltd.

Company and product Introduction

BiG
breathe

GHIT
Good Health Innotech

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Good Health, Promise a Healthy Future

- 2021.** 01. Export to the United States, France, Bulgaria, Israel
CE Certification (Europe)
FDA Certification – 5 Items

- 2020.** 09. CE certification (planned)
05. ISO13485 Certification

- 2019.** 10. FDA Certification
09. Medical Device Manufacture and Sale Report (Japan)
03. [Big breathe] trademark registration

- 2018.** 11. Recognized as Company Research Institute(KOITA)
09. Medical Device Manufacturing Permit and Manufacturing Report
02. Recognized as R & D Department (KOITA)
02. Moved into Pusan National University Incubation Center
01. Research Institute Enterprise Registration

- 2017.** 10. GH INNOTEK Corporation Establishment



FDA certification



ISO 13485:2016



PMDA certification



KFDA certification



Research Institute Enterprise Registration



Company Research Institute Certificate



Software Business Registration



Copyright registration certification



Inspiratory Rehabilitation Device Patent



Portable breathing exercise and measuring device



Breathing condition monitoring device



[Big breathe] trademark registration

IMT/PEP

It is a respiratory exercise and rehabilitation medical device that not only trains the respiratory muscles of patients with respiratory diseases, but also strengthens the respiratory muscles of the elderly and vulnerable people. Through training using this device, you can strengthen lung function before and after surgery, and prevent pulmonary complications such as pneumonia after surgery.



IMT Pressure unit	PEP Pressure unit
10~40cmH ₂ O(Pressure control unit : 2cmH ₂ O)	5~20cmH ₂ O(Pressure control unit : 1cmH ₂ O)

- ※ IMT Pressure setting : MIP(Maximal inspiratory Pressure) 30% or more recommended
- ※ Tolerance : 2cmH₂O or 10%

Features and Advantages

Technology innovation

A product that can simultaneously exercise the inhaling and exhaling muscles

Convenient laundry

Easy to separate and combine, making it easy to clean.

Convenient laundry

Easy to separate and combine, making it easy to clean.

Target of use

- Those who need respiratory rehabilitation such as lung disease
- People who lack normal lung capacity
- Those who need cardiopulmonary endurance
- Preventer of lung complications after surgery



Use effect

Strengthening the respiratory muscles



Increased diaphragm thickness



Pelvic basal muscle enhancement



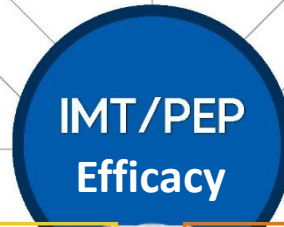
Increased cardiac output



IMT/PEP

It prevents the accumulation of secretions in the airways.
 If you can inhale many breaths at once through constant training, your quality of life (QOL) index improves.
 Effective in the treatment of bronchial asthma when used with a nebulizer or MDI chamber

Delayed worsening of COPD symptoms



Improvement of symptoms of pulmonary insufficiency
 Enhances lung function before and after surgery and prevents pulmonary complications such as pneumonia after surgery
 Reduces symptoms of shortness of breath, such as lack of exercise, aging, and asthma by increasing the strength and durability of the respiratory muscles



IMT

IMT

PEP

PEP

FEV1 (Forced Expiratory volume in one second): **7.9% Increase**
FVC (Forced vital capacity): **9.8% Increase**
Pimax (maximal inspiratory mouth pressures): **23.6% Increase**
Pm Peak / Pimax (peak pressure/maximal inspiratory pressure) **26.6% Increase**

MVV (maximum voluntary ventilation): **22% Increase**
MIP (maximum inspiratory pressure): **8% Increase**
MEP (maximum expiratory pressure): **32% Increase**
6-minute walk test (6-minute walk test, m,): **4.9% ↑**

- Helps patients for preventing pulmonary complications after abdominal surgery.
- **HR** (heart rate,) **6.8% Decrease**
- **PR** (respiratory rate,) **9% Decrease**

※ summary of major papers

MODE 01

Strengthens the diaphragm by inducing abdominal breathing when inhaling
 -> Increases lung capacity, delays the secretion of lactic acid to improve exercise capacity

IMT

MODE 02

Strengthening the exhalation muscles to drain sputum from the lungs and airways

PEP

MODE 03

Simultaneous use of breathing and exhalation is possible

IMT

+

PEP

The efficacy of Threshold resistive exercise and Flow resistive exercise

Threshold resistive group

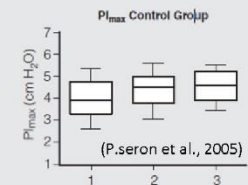
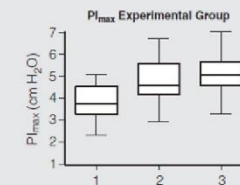
37% Increase

Breathing strength

Flow resistive group

Slight Increase

※ P. seron et al., 2005



(P. seron et al., 2005)

IMT

It is a manual function recovery device used for the purpose of use in breathing training (inspiratory muscle exercise).

Training with this device can increase athletic performance and relieve shortness of breath.

Tolerance : $\pm 5\text{cmH}_2\text{O}$ or $\pm 10\%$

Model	CMH ₂ O									
	1Level	2Level	3Level	4Level	5Level	6Level	7Level	8Level	9Level	10Level
IMT Low	31	35	42	50	56	63	70	80	88	97
IMT Middle	40	51	65	78	92	109	120	138	154	174
IMT High	51	71	92	116	135	158	186	207	230	256




Green IMT Low

Sports enthusiast
First time users
Those who need breathing exercises.



Blue IMT Middle

Associate Executive Available
For amateur athletes such as swimming, cycling and triathlon



Red IMT High






For professionals
People who need professional breathing strength training, such as singers, vocal music, and professional athletes

Use effect

- It is a respiratory exercise and rehabilitation Shortness of breath completes
- Increased exercise capacity by increasing lung capacity
- Improves cardiorespiratory endurance, so you can climb uphill comfortably.
- With constant training, you can breathe a lot of air at once, and it helps improve your singing skills.
- By improving cardiorespiratory endurance, it improves the ability of sports that require a lot of breathing such as marathon, soccer, swimming, and mountaineering.









Use effect

<p>Sports Training</p> 	<p>Male and female diet</p> 	<p>Increased lung capacity</p> 	<p>Respiratory muscle exercises</p> 	<p>Vocal Music/ Trumpet</p> 
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IMT/PEP

IMT

					
Simple flow path	Big breathe	P company			
Breathing method	Flow resistive	Breathing method	Threshold resistive	Breathing method	Threshold resistive
Exercise effect	Less	Exercise effect	Effective	Exercise effect	Effective
Way of exercise	Bidirectional	Way of exercise	Bidirectional	Way of exercise	One-way

					
Simple flow path	Big breathe	P company			
Breathing method	Flow resistive	Breathing method	Threshold resistive	Breathing method	Threshold resistive
Exercise Effect	Less	Exercise Effect	Effective	Exercise Effect	Effective
Product Weight	300g	Product Weight	48g	Product Weight	74g

Packaging products



New IMT/PEP Plastic Case



New IMT Plastic Case



New IMT Paper Case



Packing IMT/PEP (49g) 50ea/1box



Packing IMT (48g) Plastic Case 25ea/1box Paper Case 50ea/1box



Box Size (mm) (W) 470 × (D) 418 × (H) 283

Public health center, respiratory rehabilitation program operation

Education through professional medical staff at National University Hospital

Education operation: Pusan National University Hospital respiratory exercise expert

Preparation: Exercise band, **IMT_Low**

Operates as a 4 week monthly course for 4 months (April, June, September, November)

Operation center to be expanded in the future

Composition of breathing exercise program

Stretching (20 min)	Breathing exercises (20 min)	Strength training
Neck stretch	Diaphragmatic breathing	Side band
Arm stretch		Squat
Torso stretch	IMT usage training	Side lunge
		High knee
Leg stretch	Breathing gymnastics (shoulders, chest, torso)	Crunch
		Bridge
		Donkey kick
		Push up
		Squat jumping Jack

Photo of the program site



Article

Newspaper: Busan Ilbo 2019-04-18

Public health center, respiratory rehabilitation program operation



사상구 보건소(소장 이소라)는 만성폐색성 폐질환(COPD) 고위험군인 사상구민을 위하여 '호흡재활운동 프로그램'을 운영한다고 밝혔다.

부산대학교병원 전문의료진(부산대학교병원 호흡기센터 연계)이 보건소를 방문하여

만성폐색성 폐질환(COPD) 고위험군 주민에게 체계적인 호흡운동 및 근력 운동법을 교육한다. 고품질의 호흡재활기구와 운동도구(세라밴드)를 사용하여 전문적인 호흡재활운동을 진행하고, 교육 후 자가에서도 꾸준히 건강을 관리할 수 있는 운동법을 안내하여 호흡곤란 증상을 완화시켜 병원 진료율을 감소시키는 데 목적이 있다. 프로그램은 4개월(4월, 6월, 9월, 11월)간 운영하며, 월별 4주 과정으로 매주 화요일 오후 4시부터 5시 반까지 진행된다. 호흡재활운동 프로그램 및 폐기능 검사는 전화로 문의 및 신청이 가능하다.

Hospitals, public health centers, sanatoriums, government offices, fire departments, football clubs, Korean National Sports University, college physical education departments, etc.

Pusan National University Regional Respiratory Disease Center IMT training video provided



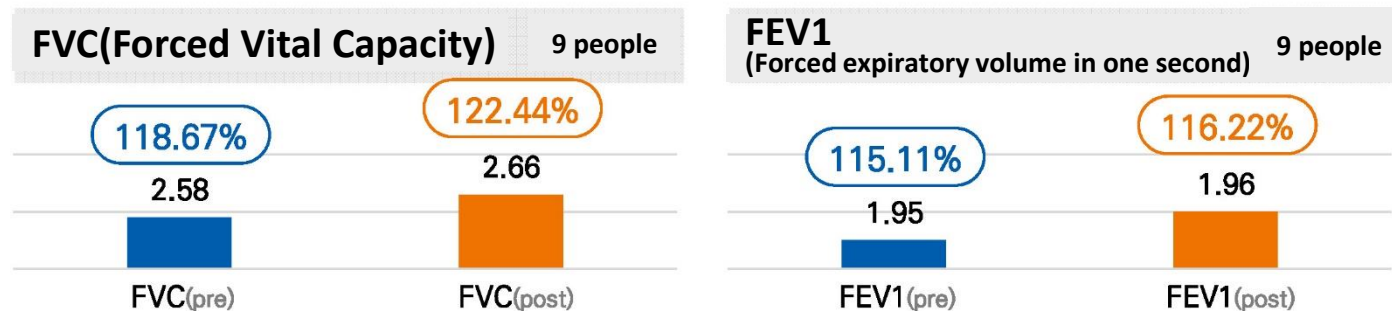
[Big breathe] clinical trial



[Big breathe] How to use video: Provided by public hospitals

Program result Breathing ability

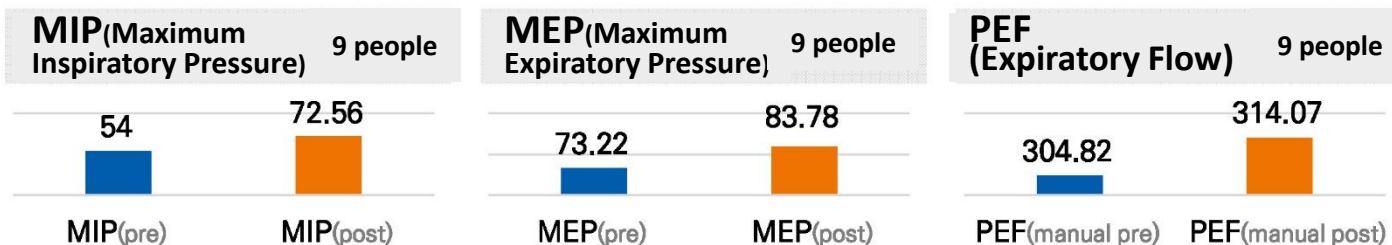
Measure 3 times and use the average value



Conclusion

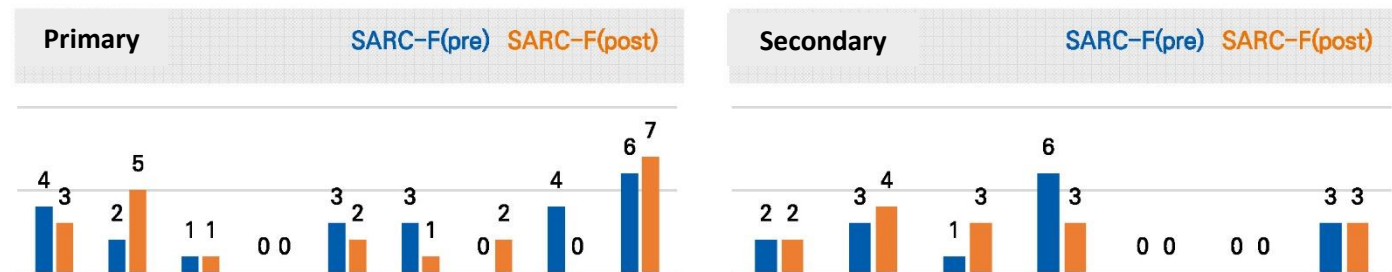
FVC, FEV1, MIP, MEP, PEF Increase

→ Improving breathing ability



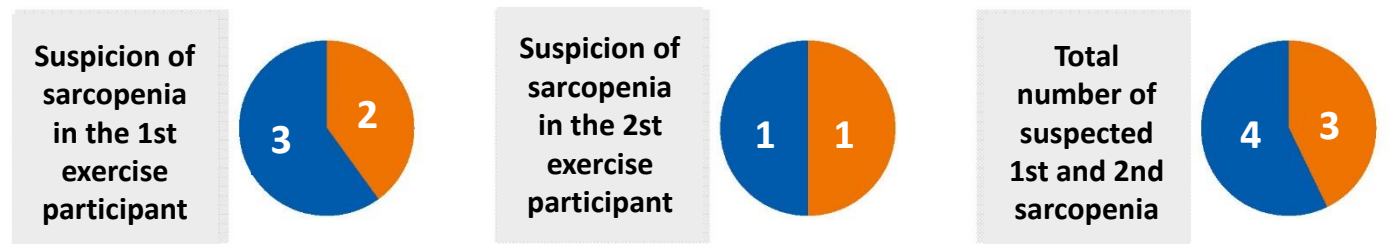
Program result

Number of suspected sarcopenia



Conclusion

Reduced number of suspected sarcopenia



Small respiratory muscle strengthening device [S-IMT]

S-IMT is the world's smallest pressure-resistant respiratory training device that you can use on an inspiratory muscle exercise. Training with this device can increase athletic performance and relieve shortness of breath.



※ Pressure Tolerance : $\pm 5\text{cmH}_2\text{O}$ or $\pm 10\%$

Use effect

Sports Training



Male and female diet



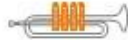
Increased lung capacity



Respiratory muscle exercises



Vocal Music/ Trumpet



S-IMT Pressure Control Range

10~99cmH₂O

Pressure Control Range (cmH ₂ O)								
1Lev	2Lev	3Lev	4Lev	5Lev	6Lev	7Lev	8Lev	9Lev
10	17	27	37	46	57	69	86	99

Compare similar products



P Company



Flow resistive



Big breathe

The efficacy of Threshold resistive exercise and Flow resistive exercise

Rev Bras Med Esporte – Vol. 24, No 3 – Mai/Jun, 2018

Threshold resistive exercise group		Variables	Flow resistive exercise group	
PRE	POST		PRE	POST
100±14	122±26	MVV(% prev)	102±13	100±25
Respiratory muscle strength				
160±4	207±11	MIP _(cmH₂O)	157±20	155±10
151±44	200±10	MEP _(cmH₂O)	153±20	153±35
YoYo Test				
660±45	750±21	DP _(meters)	645±26	642±21

MVV 22%, MIP29%, MEP 32% YOYO Test 14%
 Major Respiratory Muscle Ability's Improvement (14 ~ 32%)
 Improvement of respiratory muscles, etc. (continual maintenance, not temporary)

The efficacy of Threshold resistive exercise and Flow resistive exercise

Breathing Method	Flow resistive	Breathing Method	Flow resistive	Breathing Method	Threshold resistive
Exercise Effect	Less	Exercise Effect	Less	Exercise Effect	Effective
Product Weight	40g	Product Weight	44g	Product Weight	29g

All-in-one VPEP-IMT

It is a device that helps to expel mucus deposits in the lungs while strengthening the inspiratory muscles. Inspiratory muscle strengthening + manual chest wall vibrator

V-PEP Number of oscillations

6Hz

IMT Pressure Range

10~99cmH₂O

※IMT pressure setting: 30% or more of MIP (maximum intake pressure) recommended

※ Range : ±5cmH₂O or ± 10%



Features and advantages

Technology innovation

A product that can simultaneously exercise the inhaling

Convenient laundry

Easy to separate and combine, making it easy to clean.

Use effect

Sports Training



Respiratory muscle exercises



Discharge of sputum



Discharge of sputum



Compare similar products



C company



Simple flow path



Big breathe V-PRP-IMT

Breathing method	Exhalation vibration type	Breathing method	Threshold resistive	Breathing method	Threshold resistive exhalation vibration type
Exercise effect	Chest wall vibration	Exercise effect	Strengthening the respiratory muscles	Exercise effect	Strengthening the respiratory muscles/ Chest wall vibration
Way of exercise	One-way	Way of exercise	One-way	Way of exercise	Bidirectional

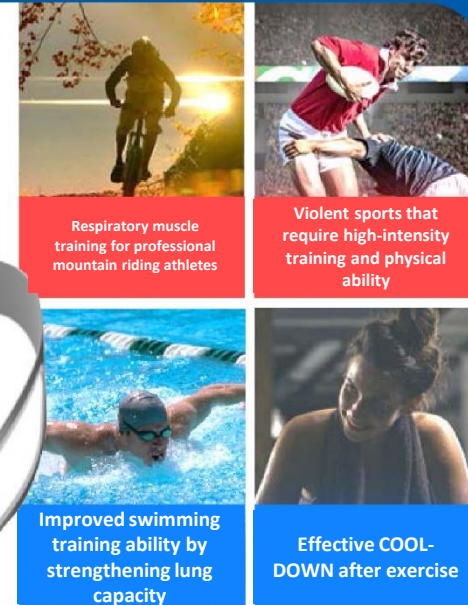
Smart training mask

Threshold resistive training mask

- Increased exercise effect compared to flow control
- The pressure control is wide and the respiratory muscles are strengthened.

Breathing exercise monitoring

- Exercise monitoring applying ICT
- Check breathing pattern, calorie consumption, etc. with the app.



Respiratory muscle training for professional mountain riding athletes

Violent sports that require high-intensity training and physical ability

Improved swimming training ability by strengthening lung capacity

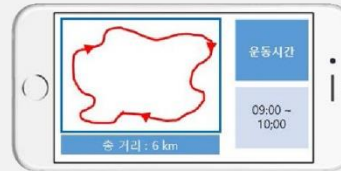
Effective COOL-DOWN after exercise



Calorie consumption



Breathing pattern



GPS Tracking



Advantages of Threshold resistive training mask

Rev Bras Med Esporte
- Vol. 24, No 3 - Mai/Jun, 2018

Threshold resistive		Variables	Flow resistive	
PRE	POST		PRE	POST
100 ± 14	122 ± 26	MVV(% prev)	102 ± 13	100 ± 25
		Respiratory muscle strength		
160 ± 4	207 ± 11	MIP(cmH ₂ O)	157 ± 20	155 ± 10
151 ± 44	200 ± 10	MEP(cmH ₂ O)	153 ± 20	153 ± 35
		YoYo Test		
660 ± 45	750 ± 21	DP(meters)	645 ± 26	642 ± 21

Threshold resistive

MVV 22%, MIP 29%, MEP 32%, YOYO Test 14%
Major respiratory muscle tropism (14-32%)
-> Improvement of respiratory muscles, etc.
(continuous maintenance rather than temporary)

Flow resistive
No significant effect on strengthening breathing



Smart training mask

Breathing Method	Threshold resistive
Exercise Effect	Effective
Monitoring	Possible
Pressure range	100cmH ₂ O



T company

Breathing Method	Flow resistive
Exercise Effect	Less
Monitoring	Impossible
Pressure range	10cmH ₂ O

With a wide pressure range, breathing exercises are effective

Manual spirometer capable of bidirectional training

- By helping to breathe slowly and deeply, recovery of weakened lung function in patients with surgery and lung disease
- Patients themselves can properly perform and monitor breathing exercises without the help of medical personnel

MODE 01

Strengthens the diaphragm by inducing abdominal breathing when inhaling
-> Increases lung capacity, delays the secretion of lactic acid to improve exercise capacity

IMT

MODE 02

Strengthening the exhalation muscles to drain sputum from the lungs and airways

PEP

MODE 03

Simultaneous use of breathing and exhalation is possible

IMT

+
PEP



Features and advantages

Technology innovation:
Existing other companies' products were only capable of inhalation, but **this product is capable of bidirectional movement between inhalation and exhalation.**

Compatible with ICT-based respiratory measuring device (MIP/MEP) modules

Target of use

- For restoration of respiratory function after lung surgery
- Pneumonia patients, COPD patients
- Cystic fibrosis, sickle cell anemia, asthma, atelectasis
- Long-term hospitalization patients, long-term care patients

Use effect

Strengthening lung function



Breakdown of secretions that accumulate in the lungs



Reduced chance of lung infection



Prevention of complications such as pneumonia



ICT-based respiration measuring device [MIP/MEP]

Self-diagnosis with MIP/MEP
Developed for diagnosis of
medical staff (medical fee is
applied)

Breathing exercise
as a game

Respiratory function
improvement check by
recording breathing
exercise.



Hardware

Single layer PC connection available



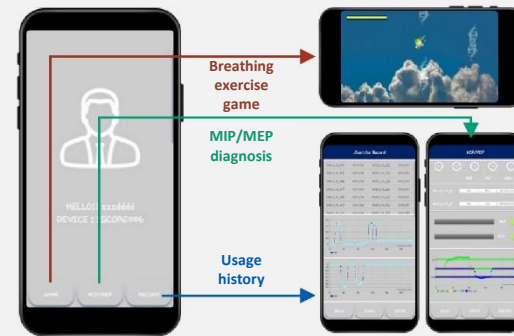
Shape and function

Wearable type in the form of a fixed
euro necklace



Pressure precision

± 5%



Breathing exercise module
Record via app game

MIP MEP diagnosis
MIP/MEP measurement,
diagnosis
PC, APP program

Target of use

Children, those who need breathing
exercises, the elderly, general hospitals,
small and medium sized hospitals,
rehabilitation centers, etc.



Company M

Connection method	Wired/wireless connection
Product size	Large
Breathing exercise	Impossible



MIP / MEP

Connection method	Wireless connection
Product size	Compact
Breathing Exercise	Possible (All age)



Company J

Connection method	Wired connection
Product size	Large
Breathing exercise	Possible (for infants)

Electronic spirometer

COVID-19

Non-contact self-monitoring of lung function Portable lung function meter

Self lung function diagnosis device

Early screening of patients with chronic respiratory tract weakness, inducing early hospital care

Self-pulmonary function monitoring

- Early screening of deterioration in the waiting patient group before lung transplant surgery
- Induce reduction in treatment costs and mortality

Diagnosis device for patients with muscle disease

Build a self-monitoring system for the respiratory function of patients with muscle disease

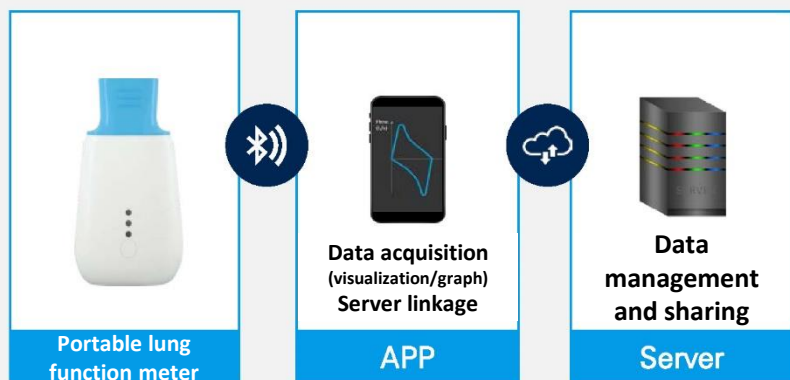
Features

Flow and pressure measurements in the same module

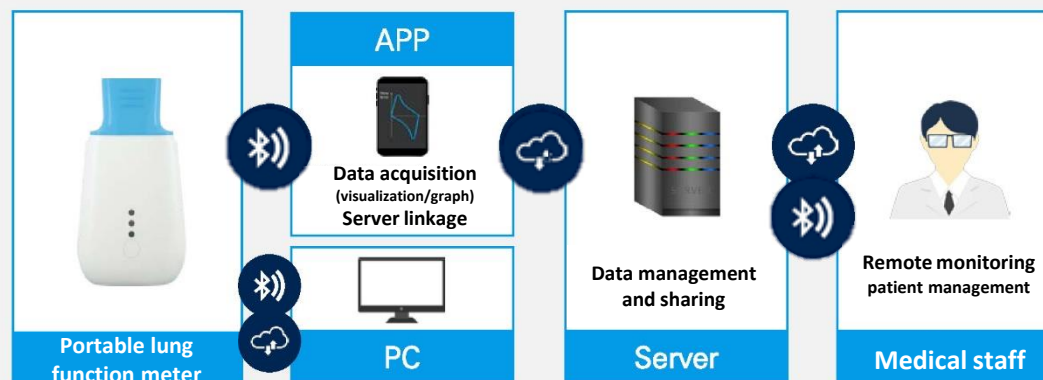
Wearable portability and high spirometer



Personal function



Hospital function



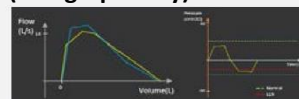
App function/Display

Number of users
10 people

Output limit

Sensor	Output
Flow	FVC(L)
	FEV1(L)
	FEV1/FVC(%)
	PEF(L/s)
Pressure	MIP(cmH ₂ O)
	MEP(cmH ₂ O)

Graph limit (FVC graph only)



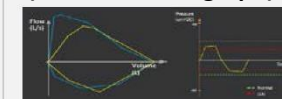
App function/Display

Number of users
Unlimited

Output Additional offer

Sensor	Output
Flow	FVC(L)
	FEV1(L)
	FEV1/FVC(%)
	PEF(L/s)
	FEF2575(L/s)
	FEV3(L)
	PIF(L/s)
Pressure	MIP(cmH ₂ O)
	MEP(cmH ₂ O)

Graph offer (FVC, MIP/MEP graph)

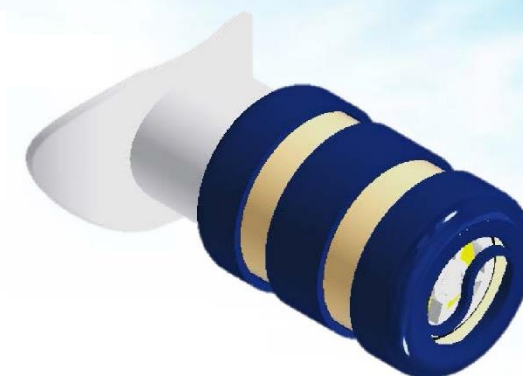


PC program



Small integrated respiratory muscle strengthening device [S-IMT/PEP]

It is a respiratory muscle exercise and respiratory rehabilitation medical device for patients with respiratory diseases and the elderly. Minimized weight and size compared to existing products, compact product (mouthpiece material: silicone)



IMT Pressure unit	PEP Pressure unit
5~100cmH ₂ O	5~100cmH ₂ O

※ IMT pressure setting: 30% or more of MIP (maximum intake pressure) recommended

※ Range : ±5cmH₂O or ± 10%

Features and advantages

Technology innovation

A product that can simultaneously exercise the inhaling and exhaling muscles

Convenient laundry

Easy to separate and combine, making it easy to clean.

Use effect

Strengthening the respiratory muscles



Increased diaphragm thickness



Pelvic basal muscle enhancement



Increased cardiac output



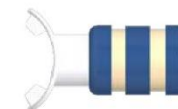
Compare similar products



P Company



Big breathe IMT/PEP



Big breathe S-IMTPEP

Breathing method	Threshold resistive	Breathing method	Threshold resistive	Breathing method	Threshold resistive
Exercise effect	Effective	Exercise effect	Effective	Exercise effect	Effective
Way of exercise	One-way	Way of exercise	Bidirectional	Way of exercise	Bidirectional
Weight	60g	Weight	80g	Weight	45g