Lung+

Lung function in patients with chronic obstructive pulmonary disease and other lung diseases gradually increases, and most patients ignore exercise and exercise for lung function. Breathing problems become more serious. Pulmonary therapy can improve lung function, but patients lack a plan to do pulmonary therapy at home and it is difficult to stick to it

Product Design
Sevice Design
Interface Design

Problem

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Process

In the interview, in patients with chronic pulmonary resistance will find their usual use some simple breathing training apparatus, but they don't know how effective, professional physical therapy curriculum penetration and low, and most people can't insist for a long time, so the idea is to design a smart pulmonary physiotherapy instrument, help people with chronic lung disease exercise lung for a long time; improve lung function, reduce symptom severity and improve quality of life.

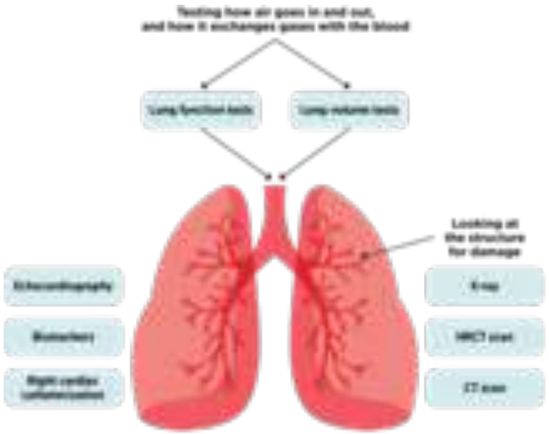
Proposal

This product can firstly test lung function, and artificial intelligence can make a suitable lung function training plan according to the data. Different accessories correspond to different training courses, and patients can keep exercising their lung function at home for a long time

Background

What is COPD?

Chronic obstructive pulmonary disease, or COPD, refers to a group of diseases that cause airflow blockage and breathing-related problems. It includes emphysema and chronic bronchitis. COPD makes breathing difficult for the 16 million Americans who have this disease.



My Experience

My grandfather was diagnosed with COPD in 2013. I have personally witnessed the pain suffered by my grandfather during the treatment. Through this illness, I learned that people do not understand and pay attention to early stage diagnosis, early detection of chronic lung disease and system treatment.

I hope that through my design, more people can have a long-term, affordable and useful lung function exercise and testing program. Using big data helps doctors to give advice more easily and patients to understand and follow.

Current Situation

Long term treatment

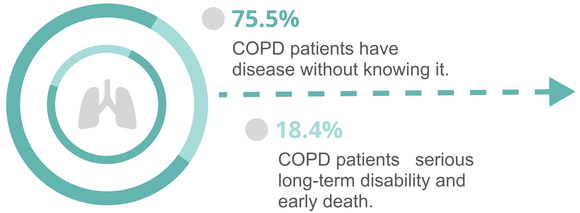
Chronic lung disease need long term treatment even through whole life.

No systematic training

People with COPD to not have a system traning to follow.

No data support

Without patients breath data, doctor hard to determine the treatment.



Through medications, oxygen therapy, pulmonary rehabilitation and social support, many people are able to live with their disease for many years.

COPD causes serious long-term disability and early death.

but millions more may have the disease without even knowing it.

More than **12.5 million** people have been diagnosed with COPD,

At this time there is no cure, and the number of people dying from COPD is growing.

Research

How it works

Basic information survey

The physical examination program will recommed different plan according the user's age, bad habits, family medical history and other personal charaterists in order to exclude the diseases that these people are susceptible to.

Formal medical examination

Ultrasound	Department	Physiochemical	Radiology
Heart, blood vessels, etc.	Internal medicine, Spirometry	Biochemical, routine	Heart, urinary, blood vessels,etc.

Get medical report

37.3% people surveyed felt that lack of medical knowledge would cause people to panic about some abormal data in the medical report

Therapy

Through medications, oxygen therapy, pulmonary rehabilitation and social support, many people are able to live with their disease for many years.

Goal

- Reduce hospitalization
- Reduce respiratory symptoms
- Reduce anxiety

→

- Improve exercise capacity
- Improve quality of life
- Minimize muscle wasting from prolonged corticosteroids treatment
- Assist return to work and leisure activities

What's wrong?

I collected a lot of people's feedback on treatment online.

Stages	Before		Pre-Investigation		During the process		After	
Steps	Decide whether to do	Choose hospital or institution	Preliminary infformation survey	Decide the medical items	Wating for project inspection	Formal medical examination	Get medical report	Referral and treatment
Emotions	Struggling	confusion	nervous	reassuring	nervous	impatient	angrey	reassuing	confused	fear	troublesome
Key words	"I do not think I need treatment" "Too many unnessnary project"	"Hospital's services is too poor" "The institution's reputation is very poor"	"Is it useful to check these physical indicators" "Can I not do this "	"Too many people in the hospital" "No one is checking that medical item, why don't you ask me to do"	"Where is this department" "Which medical items should be fasted?"	"I dare not read the medical report" "What does this indicator mean"	"Too much trouble" "I have to repeat the process again"
Scenes								

Interview

Mrs.Zhang
Age: 79

"I have chronic lung disease 6 years,the breath getting more diffcult"

Mr.Li
Age: 34

"I just found breath getting diffcult, it's first time of my treatment"

Mr.Wu
Age: 54

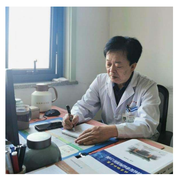
"I have chronic lung disease 6 years,the breath getting more diffcult"

Mr.Wang
Age: 88

"I got lung disease for many years due to the smoking, and lunf disease lead to other dieases"

Doctor. Yang
Age: 37

"Lots of patients do not pay attention to their lung function, even their lung function is very weak."



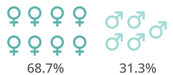
Doctor. Zhang
Age: 45

"Some patients do not tell truth about their life habits, hard to get their lung daily data. COPD patients are advised to record their lung function."

Questionnaire

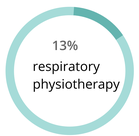
After the field research, I sent out a questionnaire to investigate the lung function disease to understand more about their needs. A total 234 questionnaires are collected.

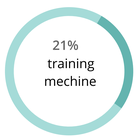
Basic Information



Lung status

About treatment





Reason of give up treatment

Opportunity cards

Card 1

More people have become aware of the dangers of bad habits to their lung funciton

Card 2

Need to system training more than simple product machine

Card 3

It's hard for people to follow the training for a long time

Card 4

People do not like go to hospital cause expansive and waste lots of time

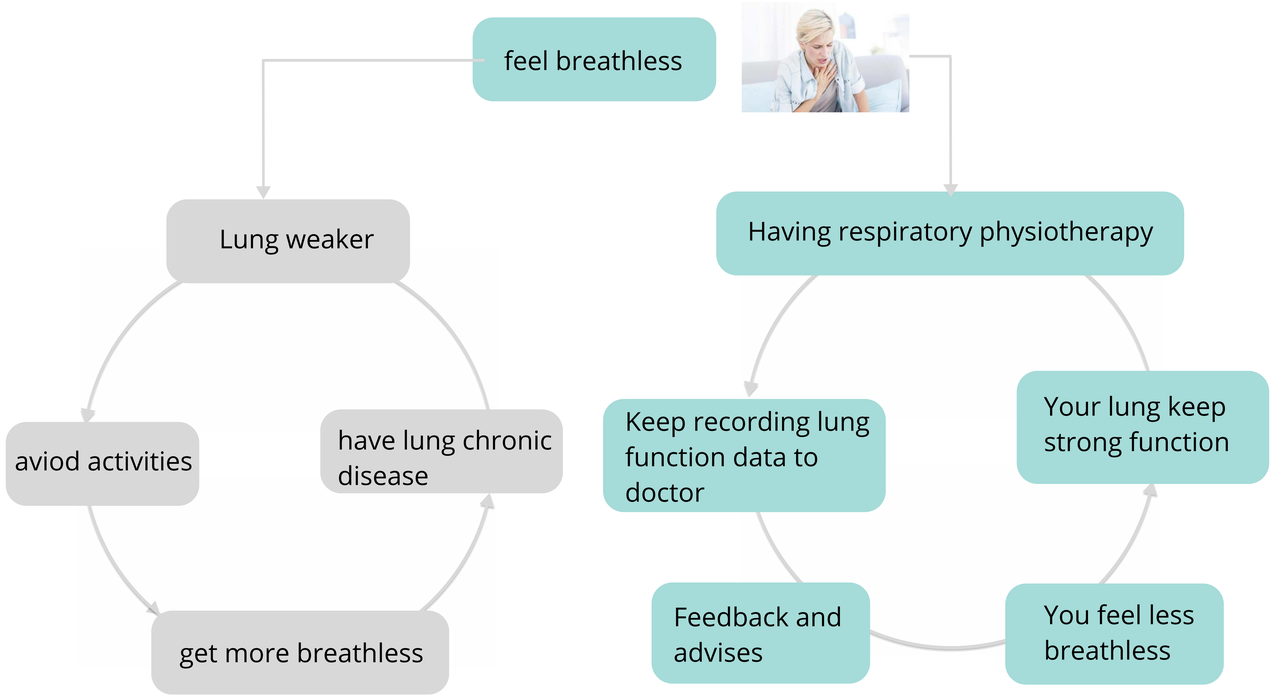
Card 5

Doctor wish patients could follow the training for a long time

Card 6

Doctor would like more data of patients breath information

Pain Point



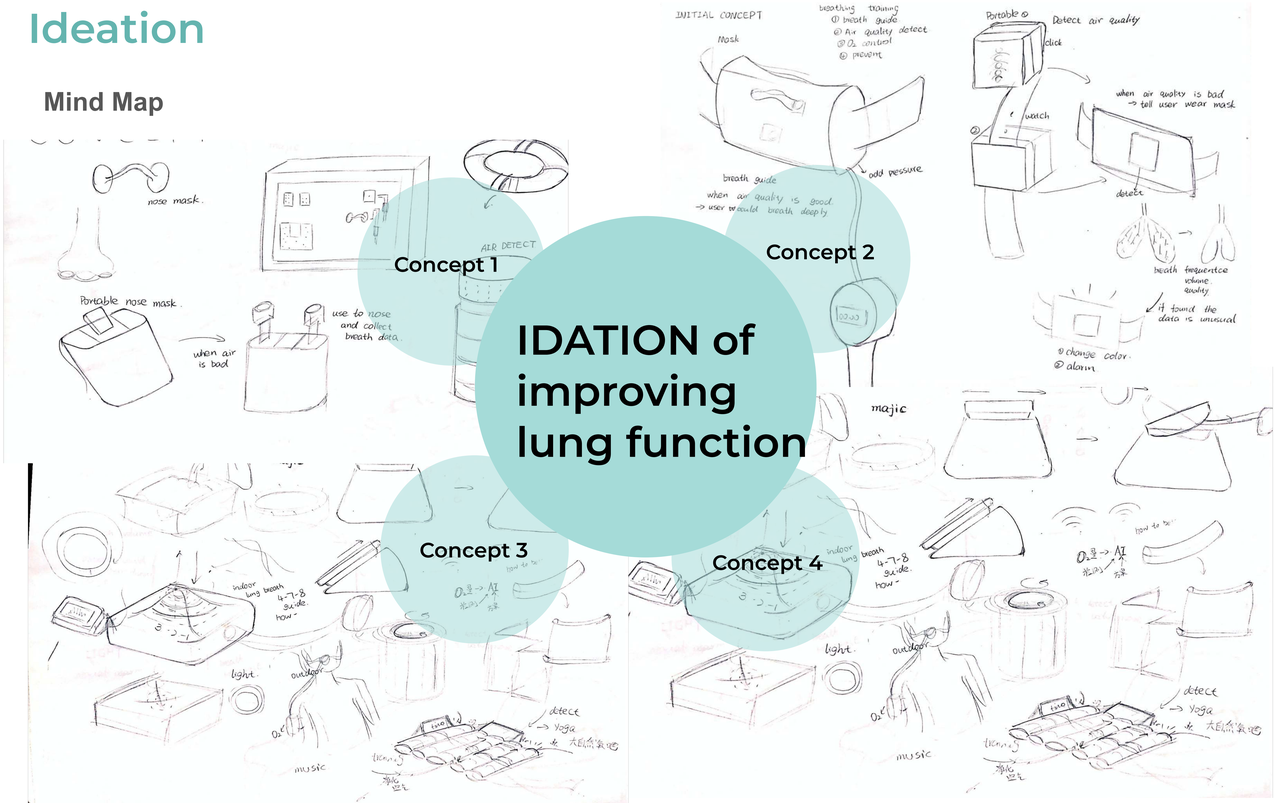
Market Reaesrch

Competitive Products

Product			
Profile	Simple function Home-use No feedback	Simple function For mild symptoms Widely use	Hospital use Multiple fuction Professional test and feedback
Function			
Portable	😄	😄	😟
Guidance	😟	😄	😄
Monitor	😟	😟	😄
Feedback	😟	😟	😄
Suggestive	😟	😟	😄
Prons	Portable Cheap	Simple to use Cheap	Not accurate Not system
Cons	Not accurate Not system No feedback	Not accurate Not system No Monitor	No feedback Expansive Complex to use

Ideation

Mind Map



User Flow

Go for a medical examination

Returning home doing exercise

Follow the guide test lung function

Follow the guide doing exercise game

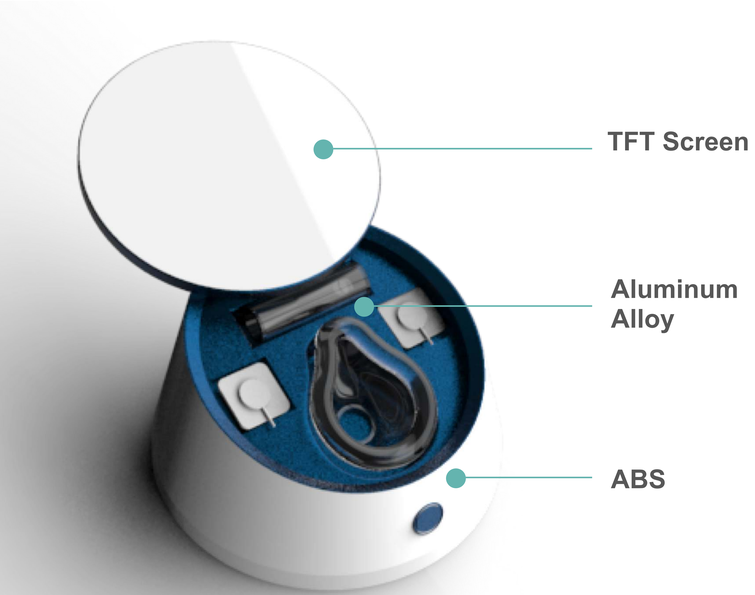
AI give feedback accoring to the test

Data report send to hospital

Doctor give guidence

Final Design

Material



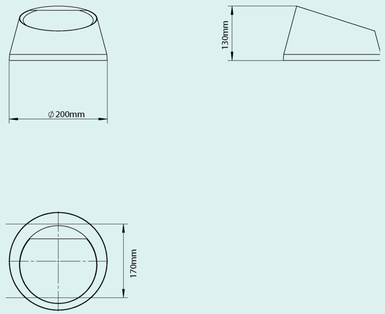
Device Struchture

Lung Test
Test lung function and collect data

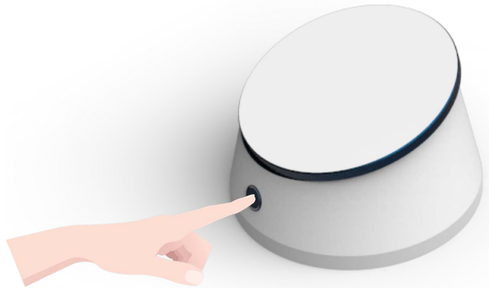
Training game
Screen with voice guide

Management
AI collect data and predict your training plan

Device Struchture



How to use



1. Turn it on

2. Swipe to open screen

3. Follow guide choose the function

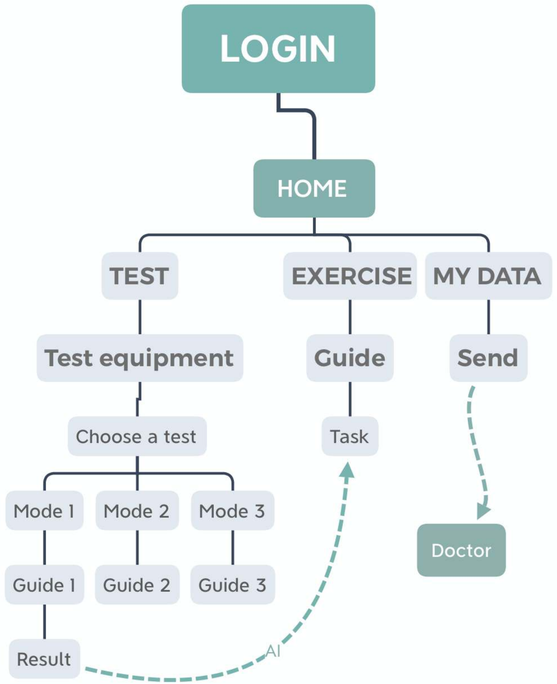
Mask

Tube

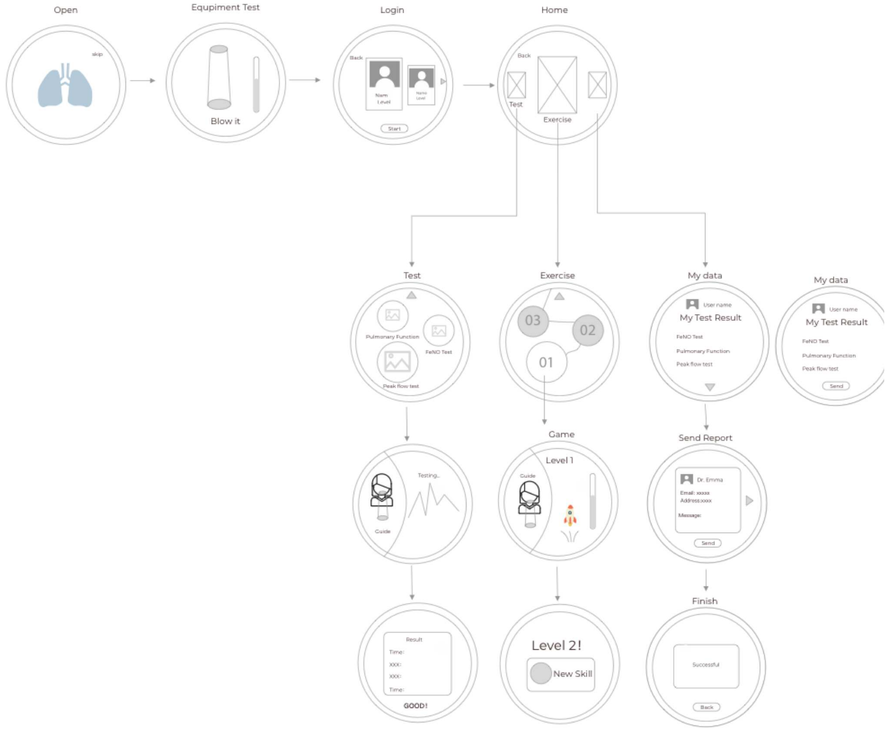
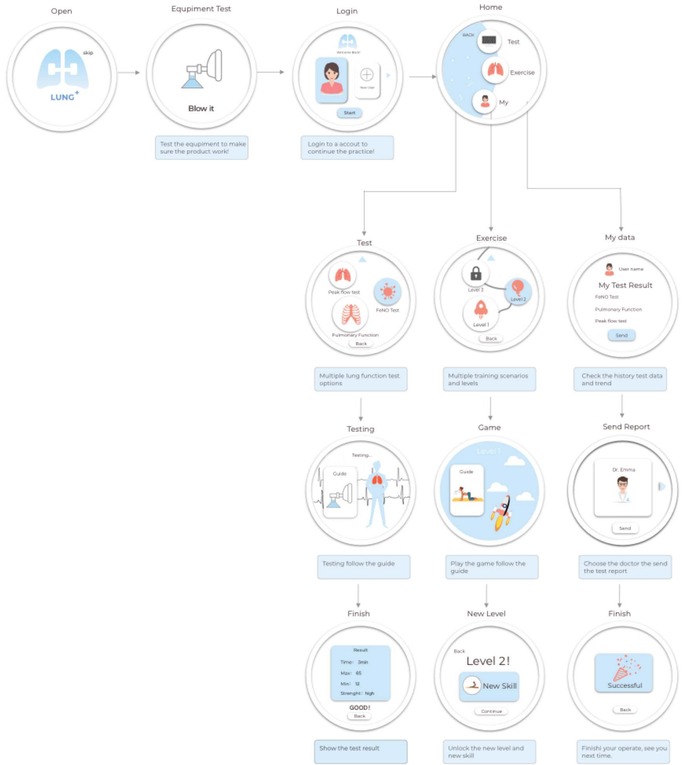
Detector

Interface

Structure



Wireframe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