



Breathe2Play

A game for spirometry tests

Made for ages 5 to 8



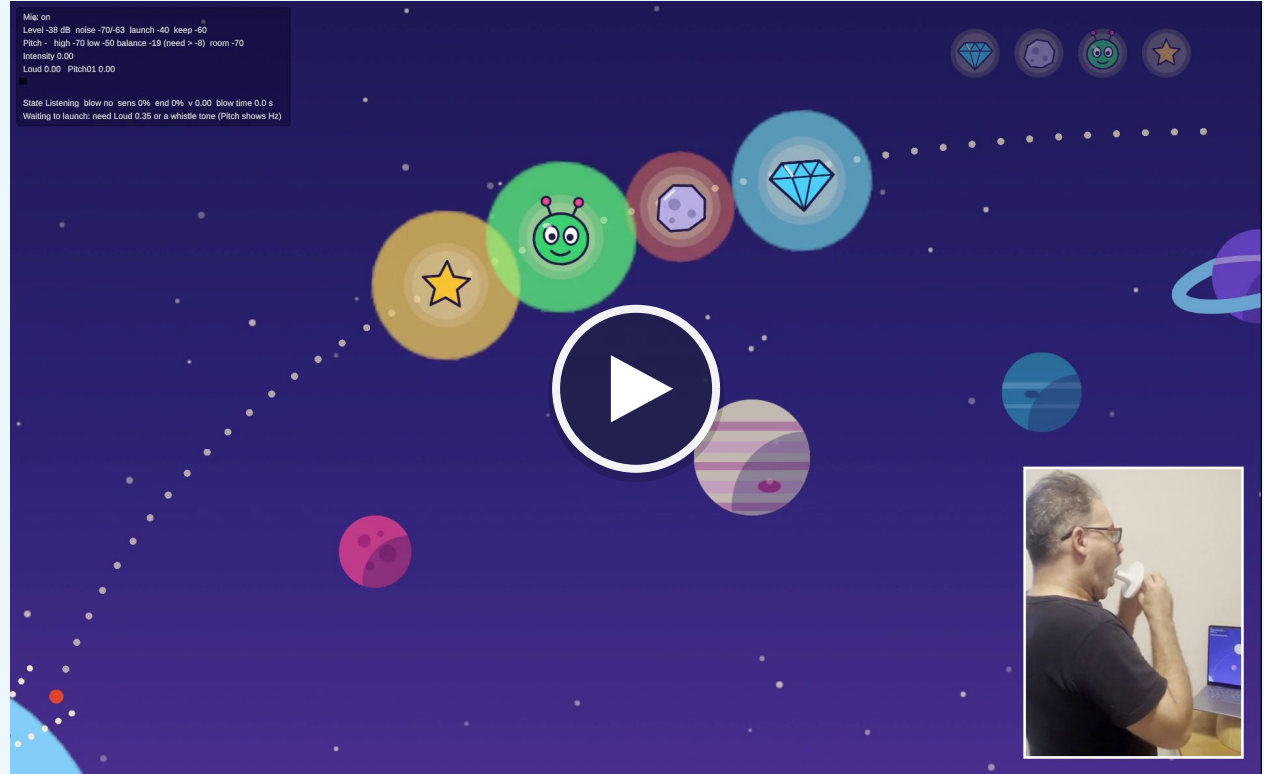
► Play now: zofi.itch.io/breathe2play



Short summary

Breathe2Play

The spirometry game



[Link to video](#)

The test

Spirometry at Sheba Medical Center



The test

A spirometry test needs 3 steps done right

Breathe in fully

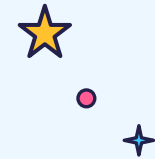
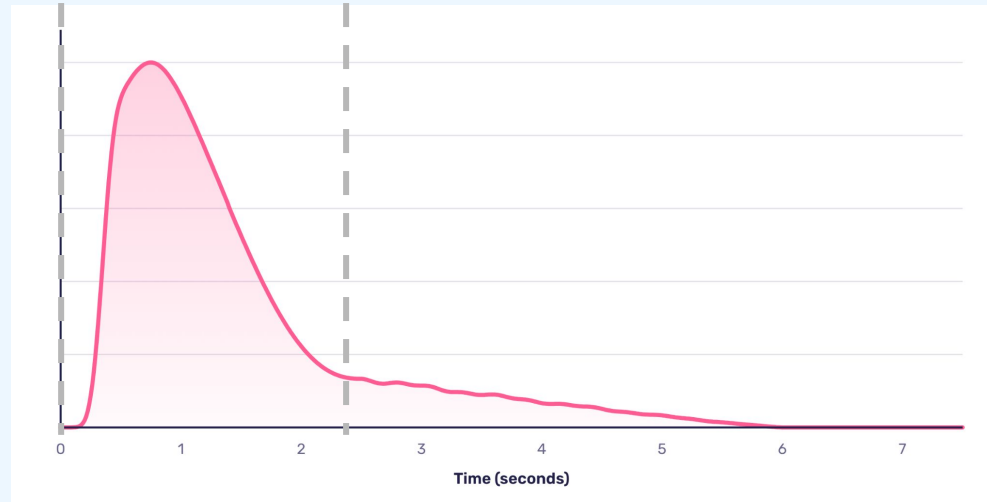
Fill the lungs with as much air as possible

“Blast”

Exhale as hard and as fast as possible

Keep exhaling

Don't stop until the air runs out (about 6 seconds in total)



For a 5-year-old, these are three different instructions within a few seconds, facing a device and people he doesn't know.

So why another game?

Existing game drawbacks:

1

A missed try ends in failure

A child who gets no reward often loses motivation to try again.

2

Poor feedback after the “blast”

The hardest part, keeping on exhaling for 6 seconds, gets little or no response.

3

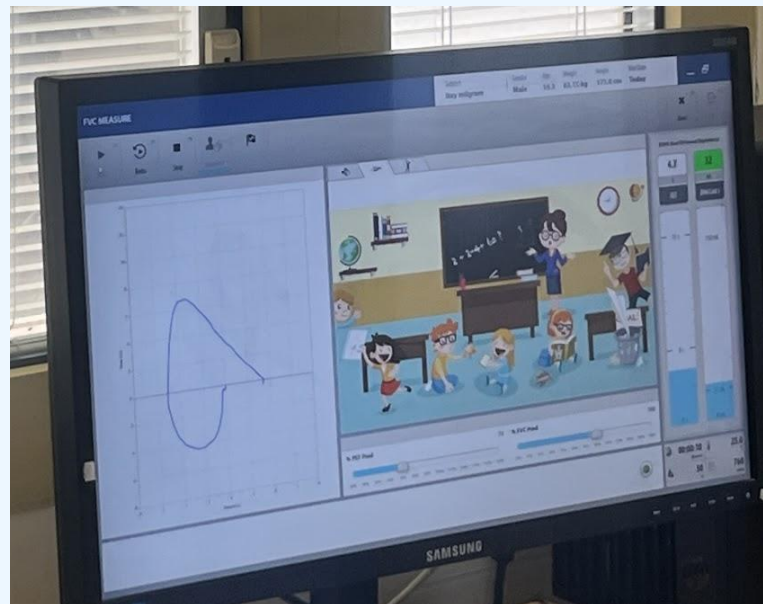
The comparison is to a norm

Instead of comparing the child to their own previous results.

4

No home training

At home, patients practice with the filter and a balloon, unlike the hospital test.



Three principles: compete with yourself, succeed on every try, blow to the end



1

Reward on every try

Even unsuccessful spirometry attempts provide rewards.

2

Feedback even after the “blast”

Continuing to exhale provides extra feedback, right when it's hardest.

3

Compete only with yourself

A flag marks the child's previous best. No norm and no comparison with other children.

Who it's for

Yoav, 5.5 years old, comes for his first test

What he can do

- Understands one instruction at a time
- Counts to 10, doesn't read yet

What he likes

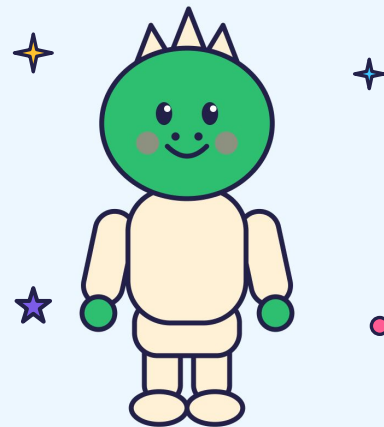
- A character who talks to him
- Collecting and dressing up
- Big buttons, bold colors

What worries him

- New places and strangers
- Not understanding what to do
- Trying again after a miss

What helps him

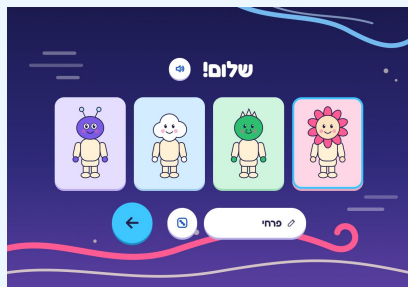
- Seeing first what will happen
- A friend who does it with him
- Hearing he did well



The friend he picks:
Dino

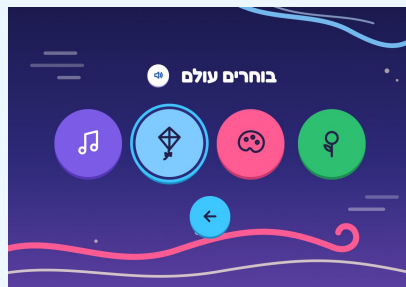
The solution

The game guides the child from picking a friend to the prize



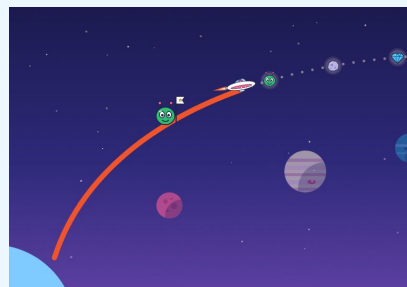
1 Pick a friend

The friend stays with the child through the whole test



2 Pick a world

Each world gives the blow a different story



3 Exhale

A strong whistle launches the ship, and continuing to exhale collects items along the way



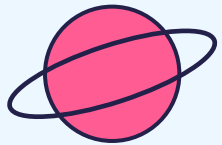
4 Get a prize

A new outfit piece for the friend after each stage



The solution

Before playing: an instructional video



[Link to video](#)

The hardware

A 3D-printed whistle to train at home



A standard spirometry filter

The same disposable filter and mouthpiece the child meets in the real spirometry test, and takes home to train for the next one.

A 3D-printed whistle inside

A small whistle we printed (the black part) fits into the mouthpiece and sounds when the child blows. Printed at MakeLab.



The tablet listens

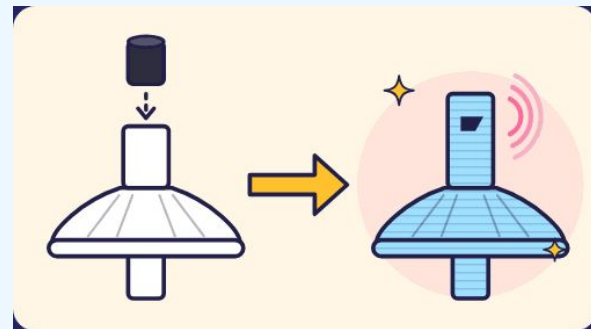
The microphone hears the whistle, and the game turns the sound into feedback. External sounds (e.g., talking) are filtered out.

Future

Where Breathe2Play goes next

One printed piece for training at home

3D-print a whistle shaped like the spirometry filter, as one unit.
No assembly, easy to clean (no filter paper).



Connected to the hospital spirometer

Sync the game with the spirometry device's software.

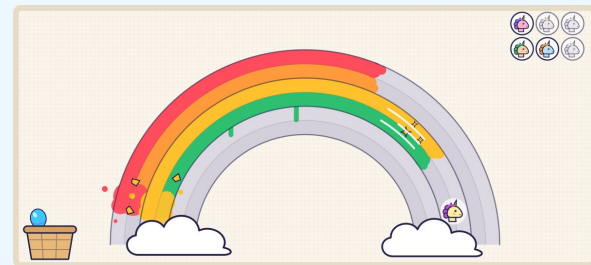
More games on the same platform

The platform is versatile: one engine, many worlds.



Research

Evaluation of the impact of the game on spirometry performance.



Sheba Medical Center professionals who guided our research



Dr. Uri Tolchinsky

Pediatrics resident

**Dr. Anatoly
Shenker**

Pediatrician

**Angela Appelman
Margalit Golbary**

Spirometry lab
technicians

Special thanks to **Dr. Shuli Gilutz** for her advice, and **Noa Mirom** for Unity assistance.

Thank you for the time and knowledge you shared with us.



The team



Barak Keren



Ruth Alon



Omer Behar



Oren Auster



**Zofia
Einhorn**

► **Play the game: zofi.itch.io/breathe2play**

Contact us: