



# Creative Therapy



## Squeezi

Motivational Therapy for Upper Body Rehabilitation.

Squeezi is a pressure- and movement-sensitive ball that helps improve therapy outcomes by enhancing motivation through gamification.



# Move through motivation

Enhance therapy results by gamification<sup>•</sup>

## Increase patient motivation

Transform therapy into a motivating experience. With Squeezi, **gamified exercises** challenge patients and boost motivation, turning rehabilitation into an engaging journey toward recovery.

## Get therapeutic data insights

Gain **valuable insights** into patient progress. Squeezi collects and analyses therapeutic data, offering therapists a **comprehensive view** of patient performance for informed decision-making and progress monitoring.

## Exercise movement & pressure

Experience therapy with unmatched precision. Squeezi's **pressure-sensitive technology**, coupled with movement sensors, offers comprehensive insights into upper body & hand strength and movement for targeted interventions.

## Personalise interventions

Tailor therapy sessions with precision. Squeezi allows physiotherapists and occupational therapists to **create personalised therapy plans** based on individual patient needs, ensuring targeted and effective interventions.

Move rehabilitation to the next level.

# Rehabilitation science

## Motivation affects therapy results.

Motivating patients during rehabilitation is often the biggest and most challenging task, resulting in the largest portion of therapists' time allocation. Repeated exercises and staying focused can pose challenges for patients of all ages, hindering their ability to persist and execute exercises efficiently.

Our motivation largely determines our behavior. Within the context of a rehabilitation process, therapists claim, to some extent, at an adjustment in health behaviors. Because of this, motivation plays an important role within therapy. Consequently, several studies showed that motivated patients show better results at the end of their rehabilitation program.

But what factors determine an individual's motivation and what makes an activity just more motivating or demotivating? And how can therapists make the best use of this knowledge in their practice?

### Self-Determination Theory

Within the scientific literature, there are several frameworks of thought that attempt to define the fundamental building blocks of motivation. Self-determination theory is an important example of such a theoretical framework. This theory is still evolving and has extensive applications within various fields of research. The core theory states that a person's optimal functioning, growth and learning are optimally supported when three basic psychological needs are adequately met. These basic needs are sometimes referred to as "the ABC of motivation".

#### Autonomy

This indicates a general sense of freedom, independence and self-determination. Feeling in control is highly motivating.

#### Bonding & Connectedness

This indicates people's need to interact with others, and the feeling that as an individual you are part of a larger whole.

#### Competence

By competence is understood a sense of skill and growth. It is important for an individual to feel that he/she can do something, and that a skill being practiced is actually improving.

To meet these basic needs, self-determination theory also distinguishes based on the source of motivation:

### Intrinsic motivation

This form of motivation stems primarily from the individual pursuit of pleasure and lies entirely within the individual.



### Extrinsic motivation

This type of motivation has its origin from the individual's environment. Something or someone provides an external goal toward which the individual wants/needs to act.

A good form of autonomous and continuous motivation can be obtained when a proper balance is achieved between these two types of motivation. A patient who has sufficient intrinsic motivation and a well internalized extrinsic motivation (e.g., knowledge regarding pathology) will generally be much more motivated and evolve faster throughout therapy.

### Flow

Another important concept that may be applicable within rehabilitation is the concept of Flow. This term refers to a specific mental state in which an individual is completely absorbed in a particular activity. Activities that put us in "flow" are almost always experienced as enjoyable and will be repeated more often. The flow state is achieved when there is an optimal balance between the difficulty of an activity and the skill of the performer.

If the difficulty level is too high, frustration or anxiety will occur in the performer, while if the difficulty level is low, boredom may result. Thus, to make an activity engaging, it is important to adjust the challenge according to the skill of the practitioner.



# Gamification

## Using succes elements of game design.

In recent years, there has been an enormous growth in digital applications that take their inspiration from video games. This is described as 'gamification' and has already been extensively studied and described in various fields (education, business, medicine, etc.).

Within the literature, Gamification is often defined as "the use of game design elements in a non-game context".

Here, game design refers to the construction of concrete goals, challenges and rules. This structured and goal-oriented way of designing differentiates games from a rather free form of 'play'.

However, a 'gamified' application is not the same as a full-fledged game, but should rather be seen as a system in which some motivating game aspects are interwoven.

'Gamification is the use of game design elements in a non-game context'

Game design includes elements to level up motivation:

- A clear goals & objectives
- Rules
- Surprises
- Challenges
- Rewards
- Storylines
- Sound design
- Characters
- ...

All elements are a successful result of lots of psychological & behaviour research. Based on the outcome of the researches game designers understood that each player gets motivated by different triggers.

Game designing went to that level that games use 'Game mechanics per player type' (Marczewski, A. (2015) User Types). Adjusting games to their players keeps them motivated to play.

# 6

Well done!



# Next level

## Best of both worlds need to meet.

### Lots of facts in a row

- ✔ Gamification engages people at an emotional level, which is far more powerful than typical engagement strategies.
- ✔ Gamification breaks larger goals into smaller practical challenges, encouraging patients as they progress through levels, and engages them emotionally to achieve their very best.
- ✔ Intrinsic rewards can sustain engagement, whereas extrinsic rewards have a less durable impact and may even serv to discourage players.
- ✔ People are motivated by maintaining a sense of autonomy, progressing towards mastery, and engaging with a purpose larger than themselves.
- ✔ Patient-centric design starts with an understanding of the patients' goals and ambitions and strives for an experience that engages patients at an emotional level to help them achieve a goal that is meaningful to them.
- ✔ If the patient's goals are aligned with the therapist's goals, then the therapy goals will be realized as a consequence of the patient achieving her goals.
- ✔ Gamification can play an important role in implementing change by defining a clear transformation path with simple steps and encouragement along the way. Gamification uses goal setting, triggers, and baby steps to help people change behaviors.





# Squeezi

## Shoulder. Hand. Grip. Strength.

Squeezi is a pressure- and movement-sensitive ball that helps improve therapy outcomes by enhancing motivation through gamification.

### Pressure and motion sensors

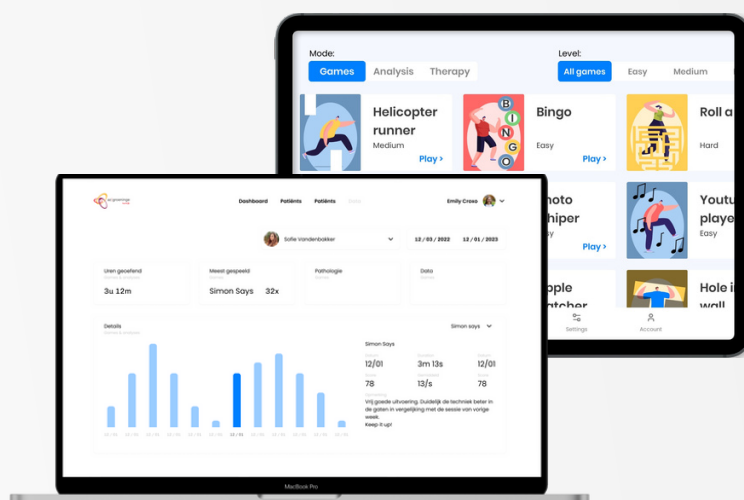
Squeezi uses accelero, angular sensor and geomagnetic sensors to capture upper body movements. Both for gross and fine motor skills. Pressure sensors can be used to practice pinch strength.

### Wide range of therapy exercises

in the Squeezi app you can find a wide range of exercises, which is regularly updated with new games. The difficulty of all games are fully customizable to your patient's needs.

### Tracking progress with the CT Platform

The platform enables visualization and analysis of the patient's progress during therapy. This enables healthcare providers to adjust and optimize therapy for the patient's individual needs.



# Squeezi

## Technical specifications.

Certification	Medical CE 1
Dimensions	70x70x70mm
Material	PU foam (CE certified)
Sensors	1 pressure sensitive sensor, 1 IMU
Sensor Measurements	50hz
LED	Multicolor communication LED
Connection to tablet	BLE - Bluetooth
Power-supply	USB-C
Accessories	Hand strap, inflatable cube



# Squeezi

wins for therapists



**Increased income  
with 40%**

Ability to serve more patients in the same working hours delivers higher income with qualitative therapy results.



**Save 3 working  
hours a week**

Using Squeezi allows combined therapy sessions. This saves time, maintains the number of patients, and preserves therapy quality.



**2,5x more  
therapy completion**

Same exercises with higher motivation. Which is key for succesful therapy results.



# Squeezi Rehabilitation Games & Exercises.

Easy



## Bingo

Make rotating movements with the Squeezi to spin the Bingo wheel. The winning numbers will roll out effortlessly.

This game focuses on functional activities, targeting activation and movement stimulation of rotational movements (in the arms and shoulders), as well as upward and downward movements. Also good for training number recognition and/or short term memory.



TIP

The game is perfect for group activities. Bingo!

Can be played with



## Photo wiper

Discover the hidden photo beneath the parchment. By making movements with the Squeezi, pieces of the photo will emerge. Guess the picture!

The game combines movement and cognition. Memory training and inspiring movement based on curiosity are the cornerstones of this game.



TIP

Add personalized photos of the patient to the gallery to evoke memories or to aid in recognizing family members.

Can be played with



## Youtube Player

By keeping Squeezi in motion, the music keeps playing. When you stop moving, the music stops. Move. Sing. Enjoy.

The game is designed to motivate movement with the hand, arm, or shoulder. You'll be working on abduction & adduction (including horizontal), anteflexion & retroflexion of the shoulder, and flexion & extension of the elbow.



TIP

Direct the patient towards the specific movement you want to work on and maintain control over the accuracy of the exercises.

Can be played with



# Squeezi

## Rehabilitation Games & Exercises.

### Medium



#### Helicopter Runner

Squeeze or rotate with Squeezi and navigate through obstacles with the helicopter (sphere). Dodging obstacles adds excitement. Up we go!

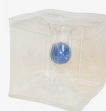
Analytical Exercise: This game facilitates controlled movement and strength regulation of the hand, arm, and upper body. It stimulates dorsiflexion and palmar flexion, pronation, supination, and tactile information processing.



TIP

By using Squeezi in combination with the cube, you can utilize the game for shoulder exercises or even as a challenging workout for the adductors of the lower limbs.

Can be played with



#### Balloon popper

Balloons are flying around. Pop as many as you can by moving with the Squeezi. Let's pop them!

The Balloon Popper is a functional exercise focused on activation. With the game, you work on abduction and adduction (including horizontally), ante- and retroflexion of the shoulder, and the full range of motion of the elbow.



TIP

Guide the patient in the specific movement you want to practice and ensure accuracy in execution. The Squeezi does not measure positioning. Only acceleration. The objective is to move as much as possible and see how you pop all balloons.

Can be played with



#### Apple Catcher

The apples are falling from the trees! Catch them in the crate by squeezing or moving with Squeezi. But watch out for the fish! You'll lose points and spoil the delicious apples in the basket.

The game is an analytical exercise that focuses on controlled and slow movement, promoting proprioception, and grip strength of the hand and wrist.



TIP

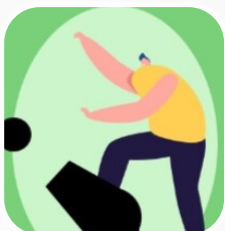
Use the cube to incorporate the game into shoulder exercises (e.g., anteflexion, horizontal abduction & adduction against resistance).

Can be played with



# Squeezi Rehabilitation Games & Exercises.

Hard



## Angry Cannon

Aim the cannon at the targets by rotating with the Squeezi. The cannon fires automatically to hit the target.

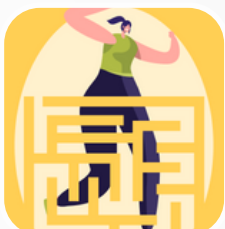
Angry Cannon is a more challenging analytical exercise for rotation and in-hand manipulation.



TIP

Keep the ball in the same position each time to aim accurately, e.g., logo facing upwards.

Can be played with



## Roll a ball

Guide the ball through the maze to the hole by rotating Squeezi in different directions. And goal! Objective achieved.

The game serves as a cognitive exercise that encourages controlled and slow movements. It involves rotation, dorsiflexion, palmar flexion of the wrist, and in-hand manipulation through the fingers.

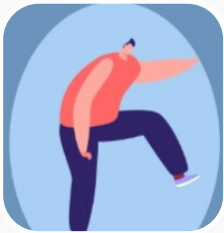
Can be played with



# Squeezi

## Rehabilitation Games & Exercises.

### Extra Games



#### Word Games

Tap the letters in the correct order on the tablet screen. Or solve entire crossword puzzles.

Word games are cognitive puzzles that can be played without using Squeezi, for example, while waiting.



#### Sheep-Catcher

The sheep have escaped! Bring them back to their pasture by swiping on the touchscreen with your finger or using a stylus pen.

Sheep-catcher is a dexterity game. Squeezi doesn't even have to be present for this. The goal of this game is to familiarize everyone with the use of digital techniques (swiping, drag & drop, touchscreen usage, etc.).

# CT Platform Analyses & Reporting.

CT Platform records your patients' progress during therapy in the practice or remotely. The Online Creative Therapy Platform connects to both Matti and Squeezi.

## **Improve communication**

The platform provides a central location for therapy insights, allowing healthcare providers to communicate and collaborate quickly and easily.

## **Visualize progress**

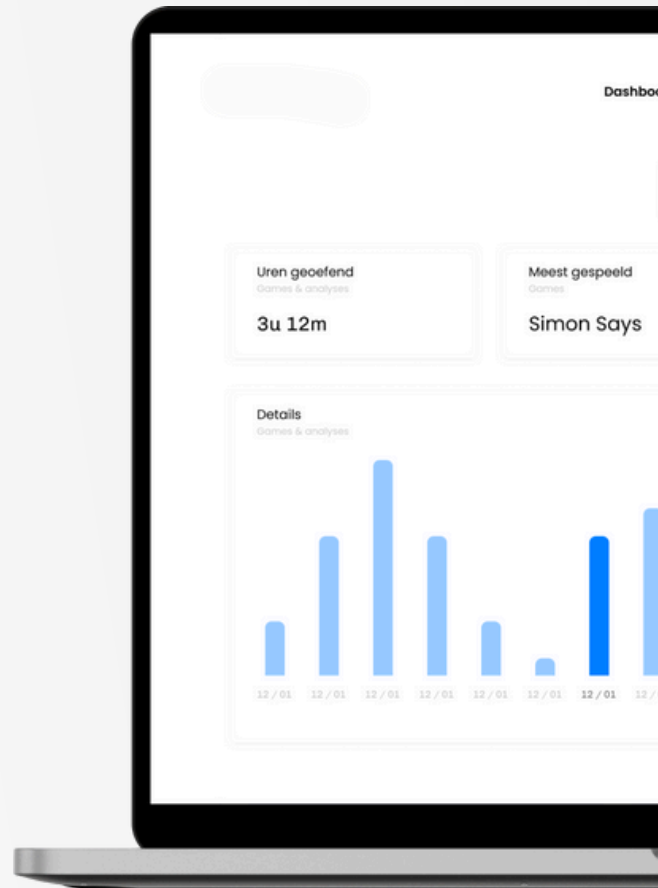
The platform enables visualization and analysis of the patient's progress during therapy. This enables healthcare providers to adjust and optimize therapy for the patient's individual needs.

## **Accelerated therapy results**

Since providers can adapt therapy more quickly to the patient's evolutions, this has a positive effect on therapy outcomes.

## **Set clear goals**

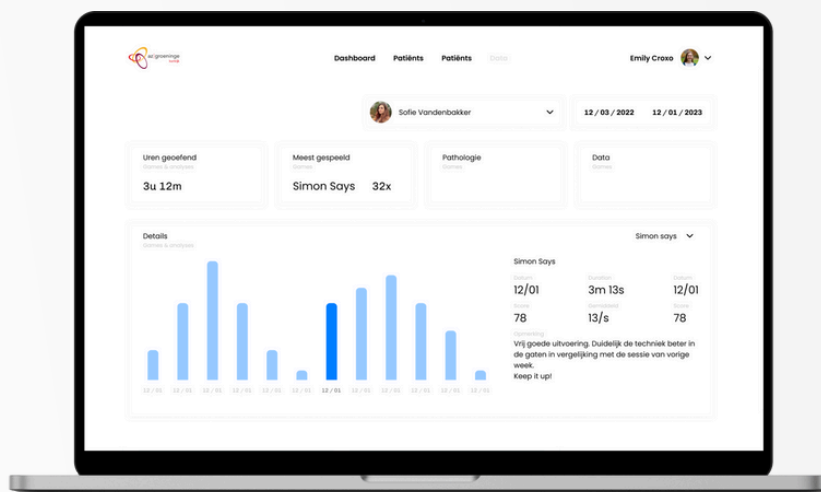
Together with the patient, the physiotherapists can set clear goals and also visualize the results. This visualized evolution motivates the patient.



# CT Platform

## Technical specifications.

Analysis parameters	Active time, games played, targets reached
Data processing	Real-time
Export data	PDF + ability to import in EPD
6 languages	EN, NL, DE, FR, IT, RU
Intuitive	User-friendly interface and easy to use
Compatible devices	Smartphone, tablet, computer & smartboard
Security & Privacy	GDPR compliant, highly confidential, https secured
Software updates	Regular automatic updates with new features





# A new era

## Humanify for better results.

During research about DCD and mild neuromotor disorders, Prof. Dr. H. Van Waelvelde Revaki UGhent experienced negative effects on the mental state of mind of younger children (in cases of longterm rehabilitation).

The self esteem and self-image of the children went down and had a big impact on the therapy results and their social life. Not able to practice hobbies, to do activities with friends because of their intensive rehabilitation program.

Prof. Dr. H. Van Waelvelde asked us to develop a tool to help these kids and to help therapists by solving 2 issues:



Motivation, one of the key drivers of the success of rehabilitation. Keeping patients motivated to do recurring exercises is the most difficult and most time consuming part of rehabilitation.



Less time for personal guidance in therapy sessions. Therapists have to divide their time into administration, reporting, preparing therapy sessions, guiding during therapy & motivating patients.



Can we measure progress?

Within medical physical therapy, there is a growing interest in using Evidence-Based Practice (EBP). A key component to this is the use of standardized measurement tools to monitor patient progress (Law & MacDermid, 2014).

Objectifying progress still remains a difficult task within the rehabilitation sciences where there are often no standardized measurement tools that researchers can link to therapy goals (Jette, Halbert, Iverson, Miceli, & Shah, 2009).

Creative Therapy also helps with this.

Together with professors in rehabilitation, physical therapists and doctors in rehabilitation we developed intuitive tools to solve these issues. The beginning of Creative Therapy.



### Em. Prof. Dr. H. Van Waelvelde Revaki UGhent

- Research in DCD and neuromotor disorders
- Pediatric Physical Therapist.
- Teacher at University Ghent

Developing rehabilitation tools to:

- motivate patients to exercise
- make rehabilitation more entertaining
- define objectives together with patients more easily
- follow up & do data tracking in no time
- create instant, automated & comprehensible reports per patient.



Creative Therapy is a spin off of Ghent University.

As a spin-off of Ghent University, Creative Therapy places a high value on scientific evidence. But adding an important layer of humanity for better therapy results from patient's and therapist's perspective.



# Motivation & gamification

## Scientific research sources.

### Motivation & Self-determination theory

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