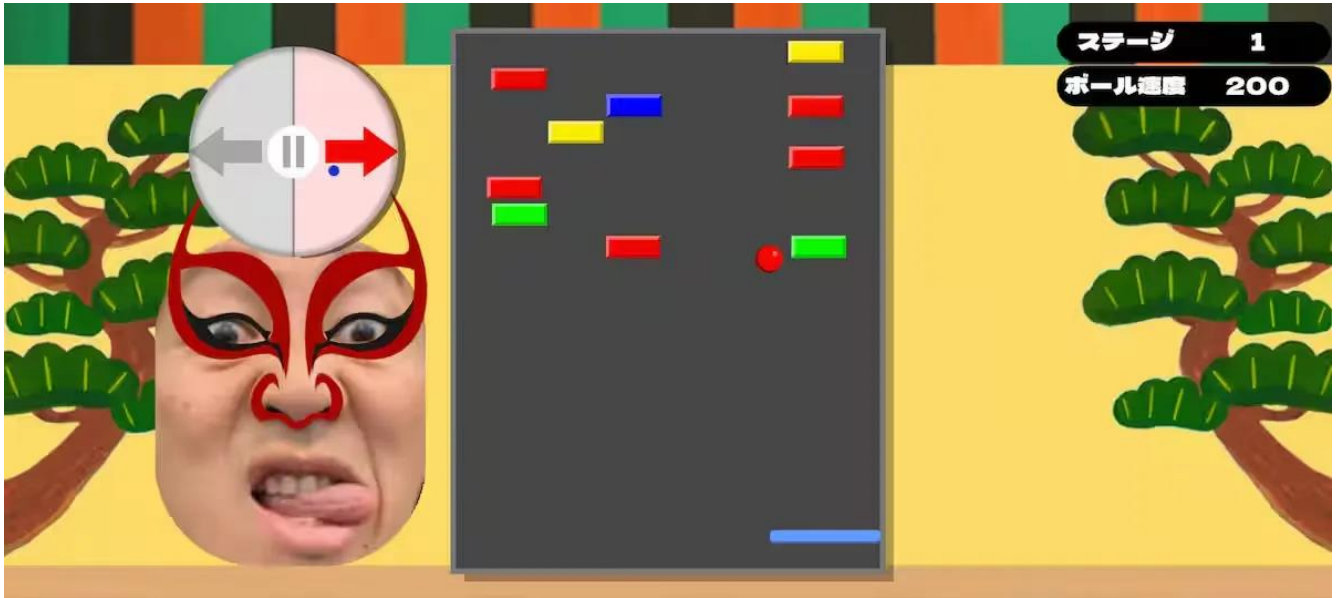


# The Tongue Breaker Game That Fights Oral Frailty

スマートフォンのゲームと聞くと、画面をタップして操作するものを思い浮かべる人が多いのではないでしょうか。では、舌だけで操作するスマホアプリ「Tongue Breaker」があったら、どんな使い方をしてみたいと思いますか。少し不思議でおもしろいこの発想は、遊び方や日常の過ごし方を変えるきっかけになるのかもしれません。



## 1. Article

Read the following article aloud.

A startup out of Osaka University's School of Dentistry has created a smartphone game controlled entirely by the tongue. Called "Tongue Breaker," the game is designed to combat oral frailty — a condition in which declining oral functions like swallowing and speaking gradually lead to broader physical and mental deterioration.

The game targets tongue pressure, the muscular strength behind chewing and swallowing. By building that strength, the developers hope to lower the risk of aspiration and help older adults stay healthier for longer. The company believes it is the first game of its kind in the world.

The game was developed by iCAT, a dental medical device manufacturer founded in 2003 as an Osaka University spinoff. "Frailty" describes the vulnerable zone between good health and needing

Continued on next page.

Source: The Tongue Breaker Game That Fights Oral Frailty

Japan Forward

本教材は、一般社団法人ジャパンフォワード推進機構、株式会社産経デジタルより許諾を得て、産経ヒューマンラーニング株式会社が編集しています。テキストの無断転載・無断使用を固く禁じます。

# 1. Article

full-time care — a state in which aging erodes muscle strength and both physical and mental [function](#). The company notes that people with oral frailty are 2.4 times more likely to eventually [require](#) nursing care.

Oral functions such as eating and swallowing are deeply tied to overall health. Yet once they begin to [decline](#), there are no drugs or treatments that can reverse the damage. That has made [prevention](#) and maintenance increasingly urgent priorities.

Clinicians typically screen for declining oral function by asking patients to rapidly repeat the syllables "pa," "ta," "ka," and "ra" — for example, "pa-pa-pa..." or "ta-ta-ta...". If a person cannot repeat a syllable at least six times per second, it may indicate oral hypofunction.

Nursing homes and other care facilities often use these same sounds in a routine known as "Pa-Ta-Ka-Ra exercises" to help [maintain](#) oral function. The challenge, however, is that the exercises are repetitive, making them difficult for many people to continue.

The idea for the game came from iCAT CEO Masaya Saigan and CTO Motofumi Sogo, a specially appointed professor at Osaka University, who wanted to make the tedious Pa-Ta-Ka-Ra routine actually enjoyable.

Their first attempt was "Patakarush," a smartphone game in which players repeat "pa-pa-pa..." into the microphone to rack up points. But the voice-based format excluded people with speech or hearing impairments, pushing the team to find an approach that did not require speaking at all.

The result is Tongue Breaker. Using the phone's front camera to track the mouth, the game reads tongue movements and lets players control the screen hands-free. Sliding the tongue left and right moves a paddle in a block-breaker-style game, deflecting a ball back toward the blocks. Stages are themed around kabuki, traditional fukuwarai face puzzles, masquerade balls and circuses, each featuring a mask design with an opening at the mouth.

Players advance through stages as they improve, giving them a reason to keep coming back. The repetitive grind of oral exercises becomes, in effect, a game worth playing.

"When people retire, they often speak far less, and their oral function declines," Sogo says. "Many seniors exercise or go walking, but the tongue is also a muscle — it needs training too."

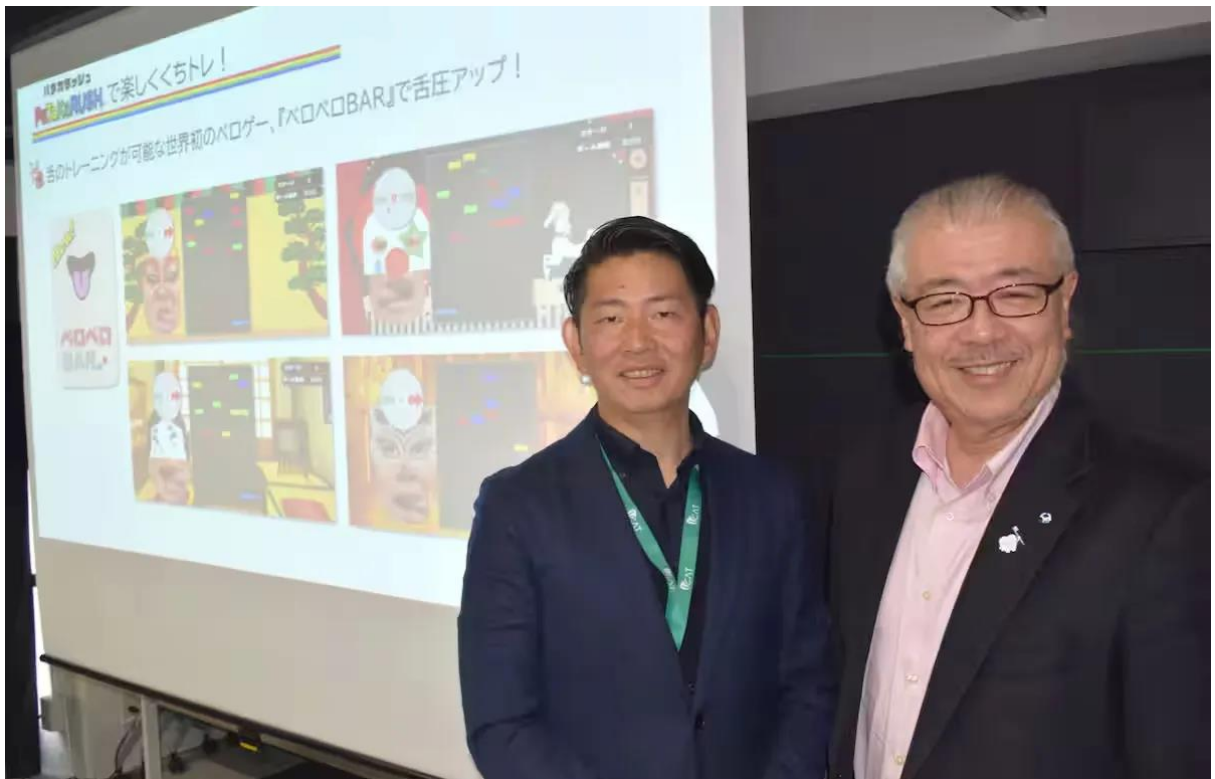
# 1. Article

Oral decline is not just an aging issue. In recent years, younger people have also shown signs of weakening oral function — including a growing number of children who habitually keep their mouths open. Left unaddressed, the habit can dry out the mouth, raising the risk of cavities and gum disease, and may also affect pronunciation and eating.

Saigan sees the game's potential reaching well beyond clinical settings.

"Grandparents could play online together with their grandchildren," he says. "It could also serve as a way to check in on elderly parents living far away. There is even room to build in reward systems where players collect points through gameplay."

Tongue Breaker can be downloaded through the Patakarush app, which is also free.



Source: The Tongue Breaker Game That Fights Oral Frailty

## 2. Key phrases and vocabulary

First repeat after your tutor and then read aloud by yourself.

### 1. function 機能

The printer has a special **function** for cleaning the print heads.

### 2. require 必要とする

Being a company manager **requires** strong communication skills.

### 3. decline 低下する

The number of visitors to the science museum began to **decline** after the storm.

### 4. prevention 予防

Regular exercise and eating well are important for disease **prevention**.

### 5. maintain 維持する

Vicki works hard every day to **maintain** her fitness.

## 3. Questions

Read the questions aloud and answer them.

1. How does the game help improve oral health?
2. What is oral frailty?
3. Why are Pa-Ta-Ka-Ra exercises difficult for many people?
4. How could this game help families stay connected?
5. Do you think games can be useful for health training? Why or why not?

## 4. 世界初？舌鍛える「ベロゲー」 阪大発ベンチャー企業が開発、高齢者の口腔機能低下を防止

飲み込んだり、話したりする口の機能が衰えて心身が弱まる「オーラルフレイル」予防を目指し、大阪大学歯学部発のベンチャー企業が、舌を動かすことでスマートフォンを操作するゲーム「ベロベロBAR」を開発した。世界的にも例がないという「ベロゲー」で咀嚼（そしゃく）や嚥下（えんげ）の際に必要な舌の筋力「舌圧（ぜつあつ）」を鍛えて誤嚥防止など高齢者の健康寿命に役立てたいとしている。

開発したのは平成15年に設立された同大発のベンチャー企業で、歯科医療機器メーカーの「アイキヤット」（大阪市淀川区）。「フレイル」とは加齢で筋力や心身の機能が低下し、健康と要介護の間の「虚弱」な状態を示す。同社によると口腔（こうくう）機能が衰える「オーラルフレイル」の人は要介護になるリスクが2・4倍という。食べたり、飲み込んだりする口腔機能は全身の健康と密接に関係しているが、低下しても薬や治療法はなく鍛え方や機能維持が注目されている。

口腔機能の検査では「パ」「タ」「カ」「ラ」の文字を「パパパパ...」「タタタタ...」と発話し、1秒間に6回未満なら「口腔機能低下症」が疑われる。高齢者施設などでは機能向上に向けて「パ」「タ」「カ」「ラ」と発話する「パタカラ体操」が実施されているが、単調で継続が難しいのが課題だった。

同社CEO（最高経営責任者）の西願（さいがん）雅也さん（47）と同大特任教授で同社CTO（最高技術責任者）の十河（そごう）基文さん（63）は「面白味（おもしろみ）のないものを面白く」とパタカラ体操をゲーム化するアイデアを思いつく。スマホに向かって「パパパパ...」と声を出すことで得点を競うゲーム「パタカラッシュ」を開発。しかし、発声や聴覚に障害のある人には使えないため、声を出さなくても遊べるゲームの開発に乗り出した。

舌の画像認識などの工夫を重ねて開発したのが「ベロベロBAR」だ。スマホのインカメラで口元を撮影、舌を動かすことでスマホに触れることなく画面を操作できる。舌を左右にすると動きに応じて「ブロック崩し」のバーが動き、ボールをはじき返す。歌舞伎、福笑い、仮面舞踏会、サーカスのステージがあり、それぞれ口元の空いたお面が用意されている。

次頁に続く

出典：世界初？舌鍛える「ベロゲー」 阪大発ベンチャー企業が開発、高齢者の口腔機能低下を防止  
[Japan Forward](#)

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上達するとステージが進み、成果が見えるため継続しやすくなる。単調だった口腔機能トレーニングをエンターテインメント化することで楽しみながら鍛えることができるようになった。十河さんは「退職すると急に会話が減って口腔機能が衰えてしまう。運動やウォーキングをする高齢者は多いが、舌も筋肉なので鍛える必要がある」と話す。

一方、昨今は若年層の口腔機能低下も問題になっているという。無意識のうちに口が開いたままとなる「お口ポカン」の子供が増加しており、口腔内の乾燥などで虫歯や歯周病のリスクが高まったり、発音や食事への影響も懸念されたりしている。このため、西願さんは「高齢者が孫と一緒にオンラインで遊ぶこともでき、離れて暮らす親の安否確認など見守り機能にもつながる。またゲームでポイントを集めるポイ活の可能性もある」と今後の展開を見据えている。

いずれのゲームもスマホにアプリをダウンロードすれば無料で楽しめる。