

Screening, Diagnosis and Prevention of Oral Hypofunction



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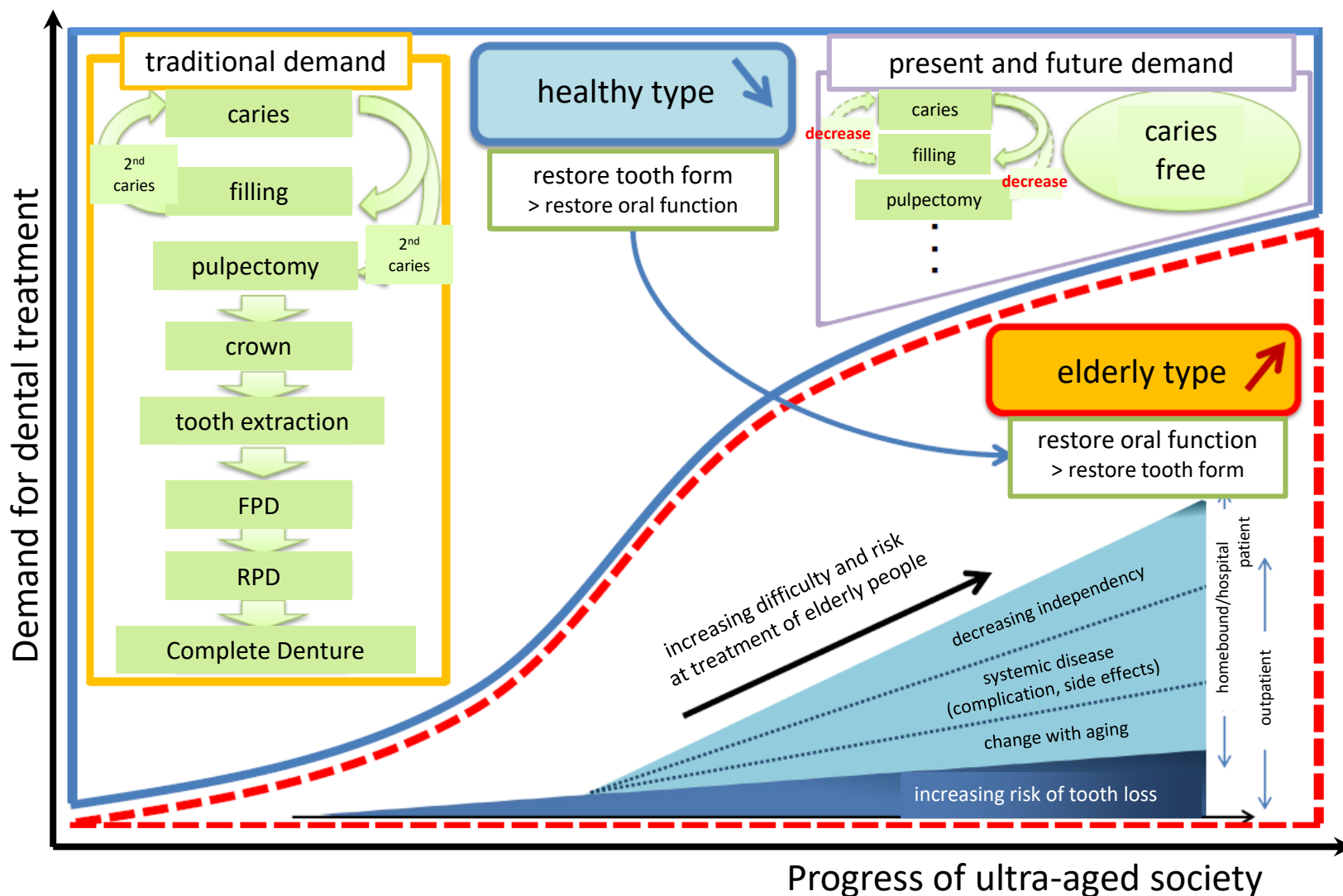
Graduate School of Biomedical and Health Sciences

Hiroshima University

Japan

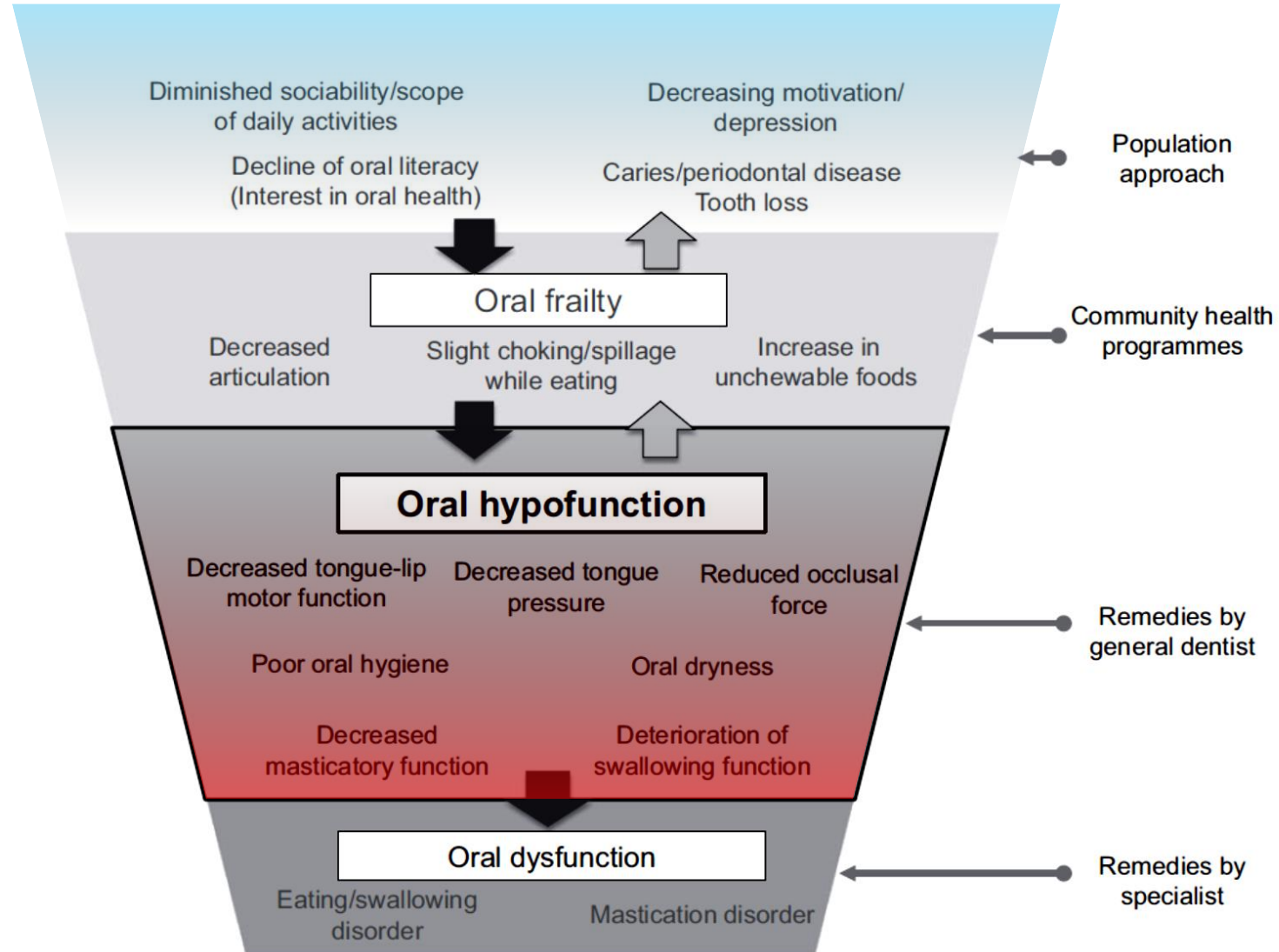
Oral Hypofunction?

Forecast of demand for oral care service (conceptual scheme)



Oral hypofunction with age

in position paper of Japanese Society of Gerodontology

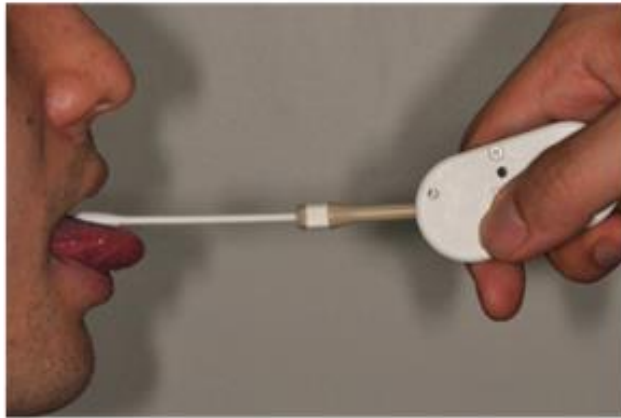


Screening?

Poor oral hygiene

The total number of microorganisms (CFU/mL) is $10^{6.5}$ or more.

(a)



(b)



(c)



Takeshi Kikutani 1, Fumiyo Tamura,
Yukihiro Takahashi, Kiyoshi Konishi
and Ryo Hamada:

'A novel rapid oral bacteria detection
apparatus for effective oral care to
prevent pneumonia', Gerodontology
2011; doi: 10.1111/j.
1742-2358.2011.00517.x

Oral dryness

The measured value obtained by a recommended moisture checker is less than 27.0.



https://www.yoshida-dental.co.jp/wp-content/uploads/2014/12/mucus_img_01.jpg



<http://www.life-qol.net/gazou/sokuteihouhou2.png>



<http://www.life-qol.net/douga/shoukai.mp4>

Reduced occlusal force

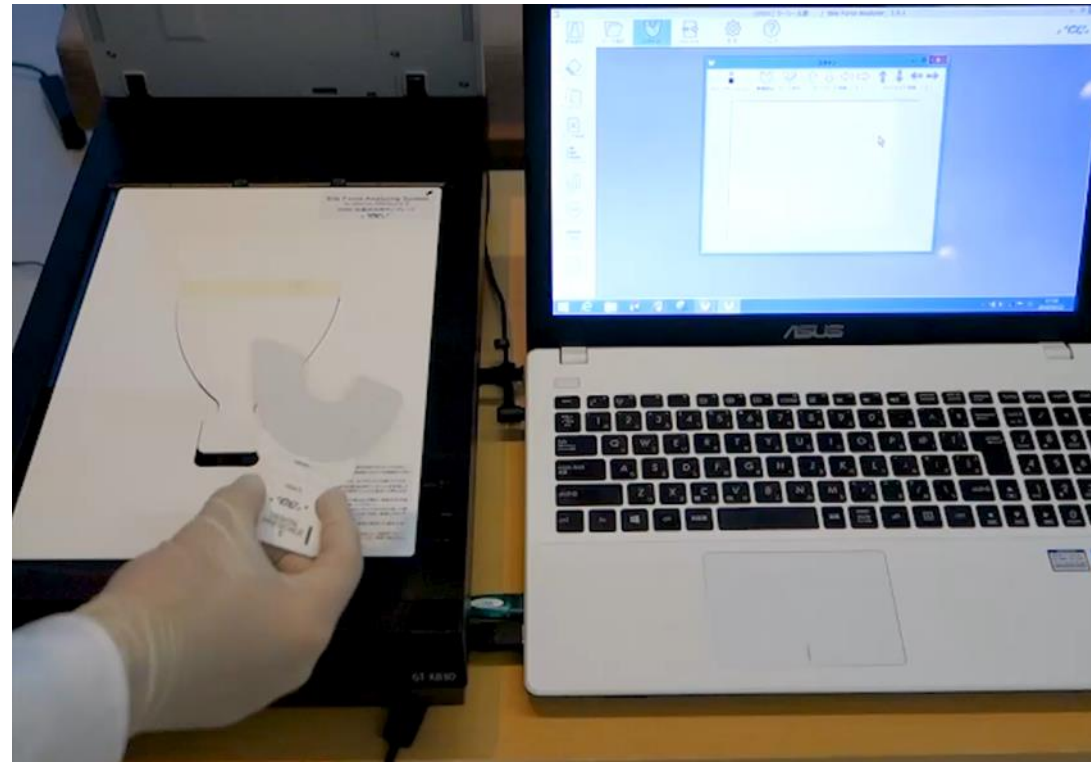


The occlusal force is less than 500 N.

https://www.gcdental.co.jp/product/videos/prescale2/2min_new.jpg



https://www.gcdental.co.jp/product/videos/prescale2/3min_new.jpg



Decreased tongue-lip motor function

The number of any counts of /pa/, /ta/ or /ka/ produced per second is less than 6.

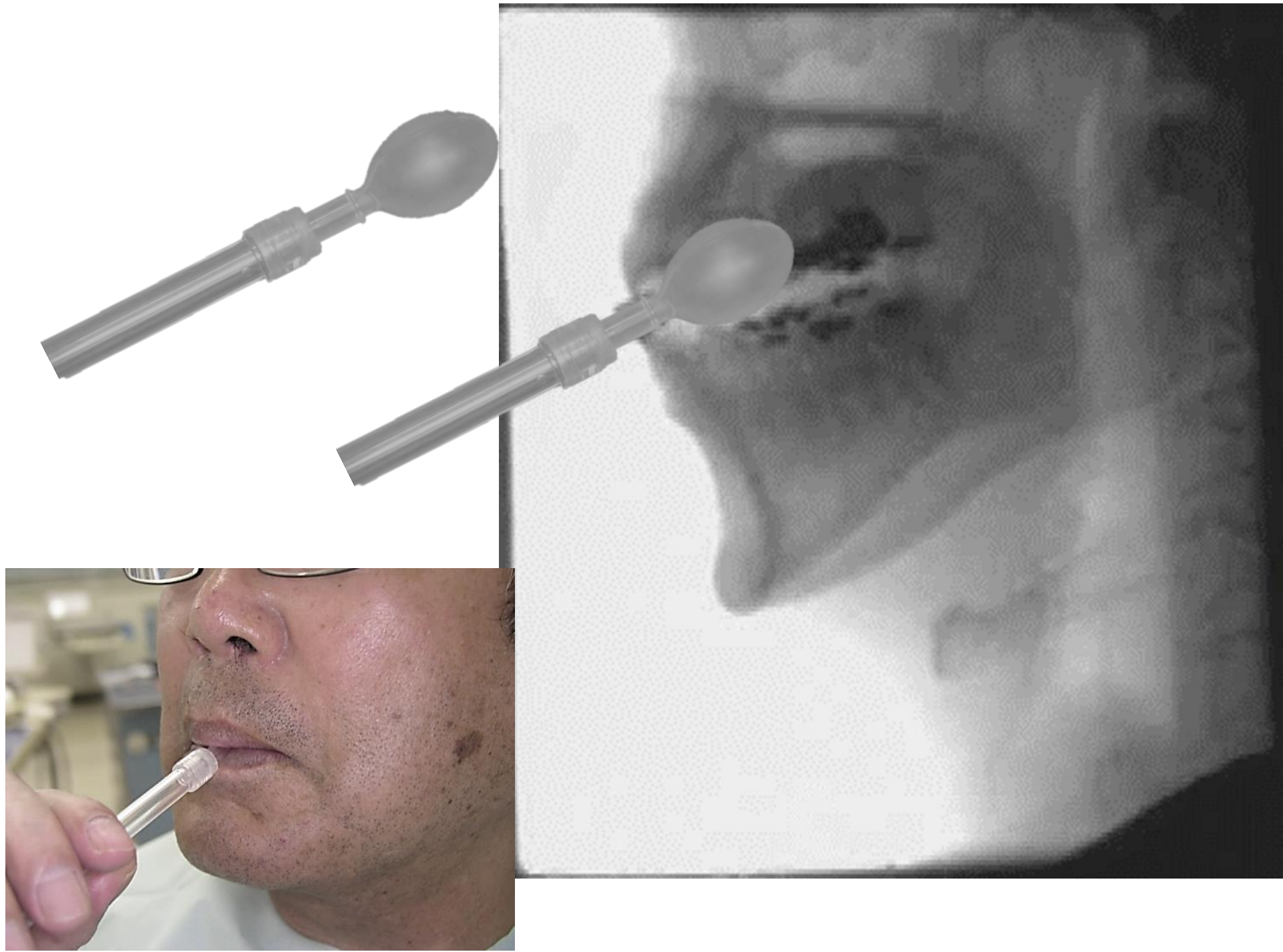


https://www.dentalsupply.co.jp/files/photo_kenkou_handy.jpg

Decreased tongue pressure



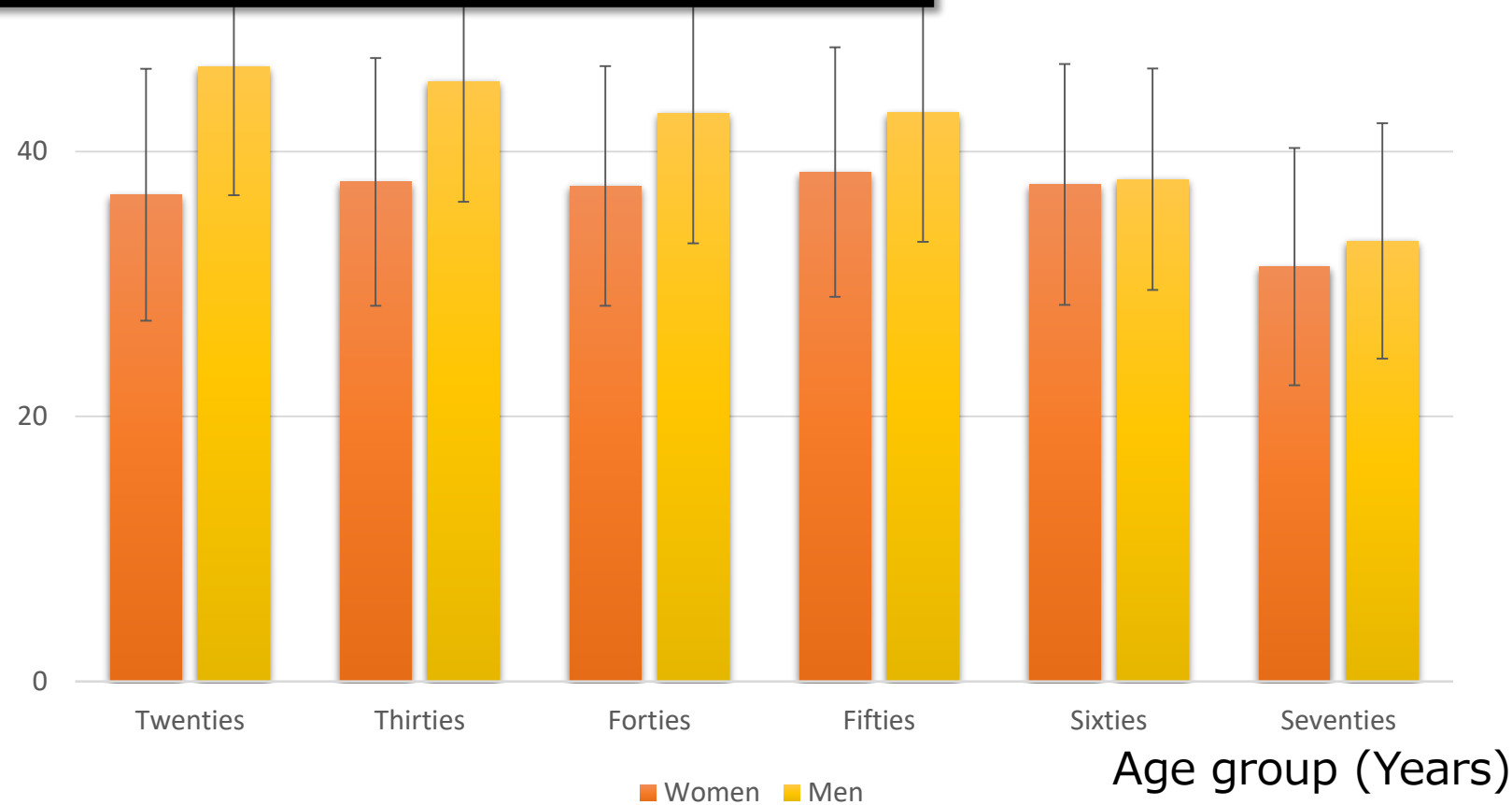
Tongue Pressure Meter (TPM-01, JMS)



Maximum Tongue Pressure

The maximum tongue pressure is less than 30 kPa.

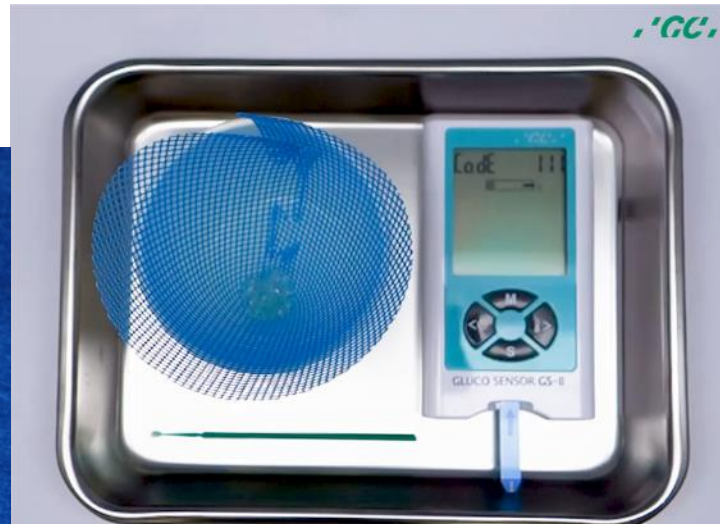
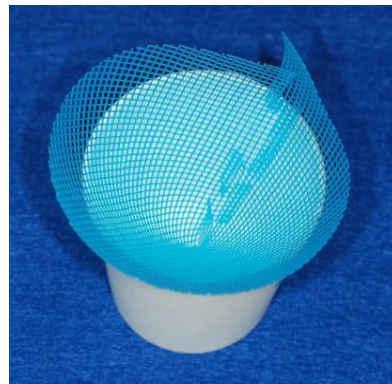
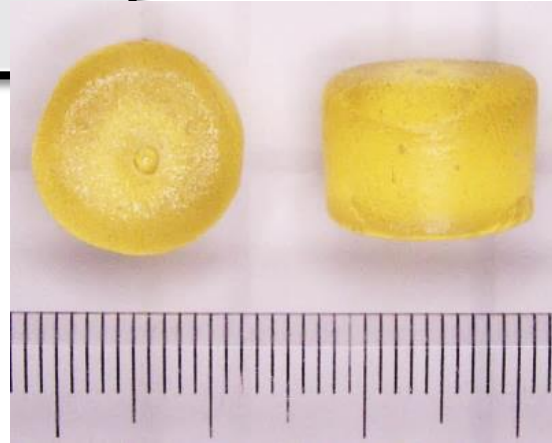
($n = 853$)



Utanohara Y, Hayashi R, Yoshikawa M, Yoshida M, Tsuga K, Akagawa Y. Standard values of maximum tongue pressure taken using newly developed disposable tongue pressure measurement device. Dysphagia 2008 Sep;23(3):286-90.

Decreased masticatory function

The glucose concentration obtained by chewing gelatin gummies is less than 100 mg/dL.



Deterioration of swallowing function

EAT-10:

A Swallowing Screening Tool

Nestlé
NutritionInstitute

LAST NAME

FIRST NAME

SEX

AGE

DATE

OBJECTIVE:

EAT-10 helps to measure swallowing difficulties.

It may be important for you to talk with your physician about treatment options for symptoms.

A. INSTRUCTIONS:

Answer each question by writing the number of points in the boxes.

To what extent do you experience the following problems?

1 My swallowing problem has caused me to lose weight.

0 = no problem

1

2

3

4 = severe problem

6 Swallowing is painful.

0 = no problem

1

2

3

4 = severe problem

2 My swallowing problem interferes with my ability to go out for meals.

0 = no problem

1

2

3

4 = severe problem

7 The pleasure of eating is affected by my swallowing.

0 = no problem

1

2

3

4 = severe problem

Deterioration of swallowing function

The total score of EAT-10 is 3 or higher.

3 Swallowing liquids takes extra effort.

0 = no problem

1

2

3

4 = severe problem

8 When I swallow food sticks in my throat.

0 = no problem

1

2

3

4 = severe problem

4 Swallowing solids takes extra effort.

0 = no problem

1

2

3

4 = severe problem

9 I cough when I eat.

0 = no problem

1

2

3

4 = severe problem

5 Swallowing solids takes extra effort.

0 = no problem

1

2

3

4 = severe problem

10 Swallowing is stressful.

0 = no problem

1

2

3

4 = severe problem

B. SCORING:

Add up the number of points and write your total score in the boxes.

Total Score (max. 40 points)

Diagnosis?

Clinical Signs		Measurements
Poor oral hygiene	✓	The total number of microorganisms (CFU/mL) is $10^{6.5}$ or more.
Oral dryness		The measured value obtained by a recommended moisture checker is less than 27.0.
Reduced occlusal force	✓	The occlusal force is less than 200 N.
Decreased tongue-lip motor function		The number of any counts of/pa/,/ta/or/ka/ produced per second is less than 6.
Decreased tongue pressure	✓	The maximum tongue pressure is less than 30 kPa.
Decreased masticatory function		The glucose concentration obtained by chewing gelatin gummies is less than 100 mg/dL.
Deterioration of swallowing function		The total score of EAT-10 is 3 or higher.

If
Clinical Signs ≥ 3 ,
then
Oral hypofunction✓

Prevention?

Tongue Training Device

"Peko-Panda"



10kPa



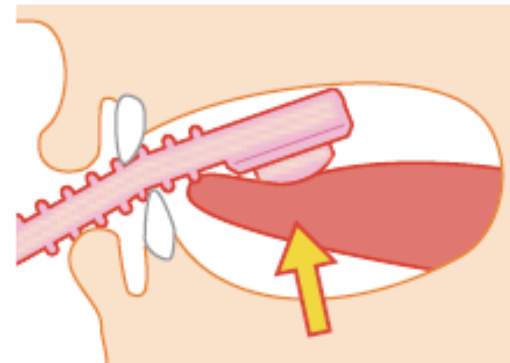
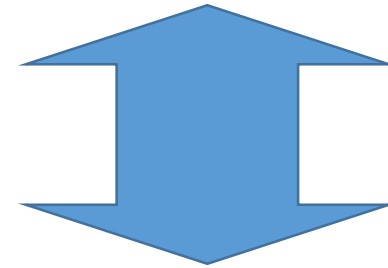
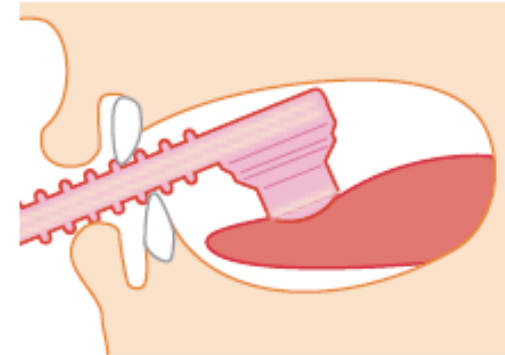
15kPa



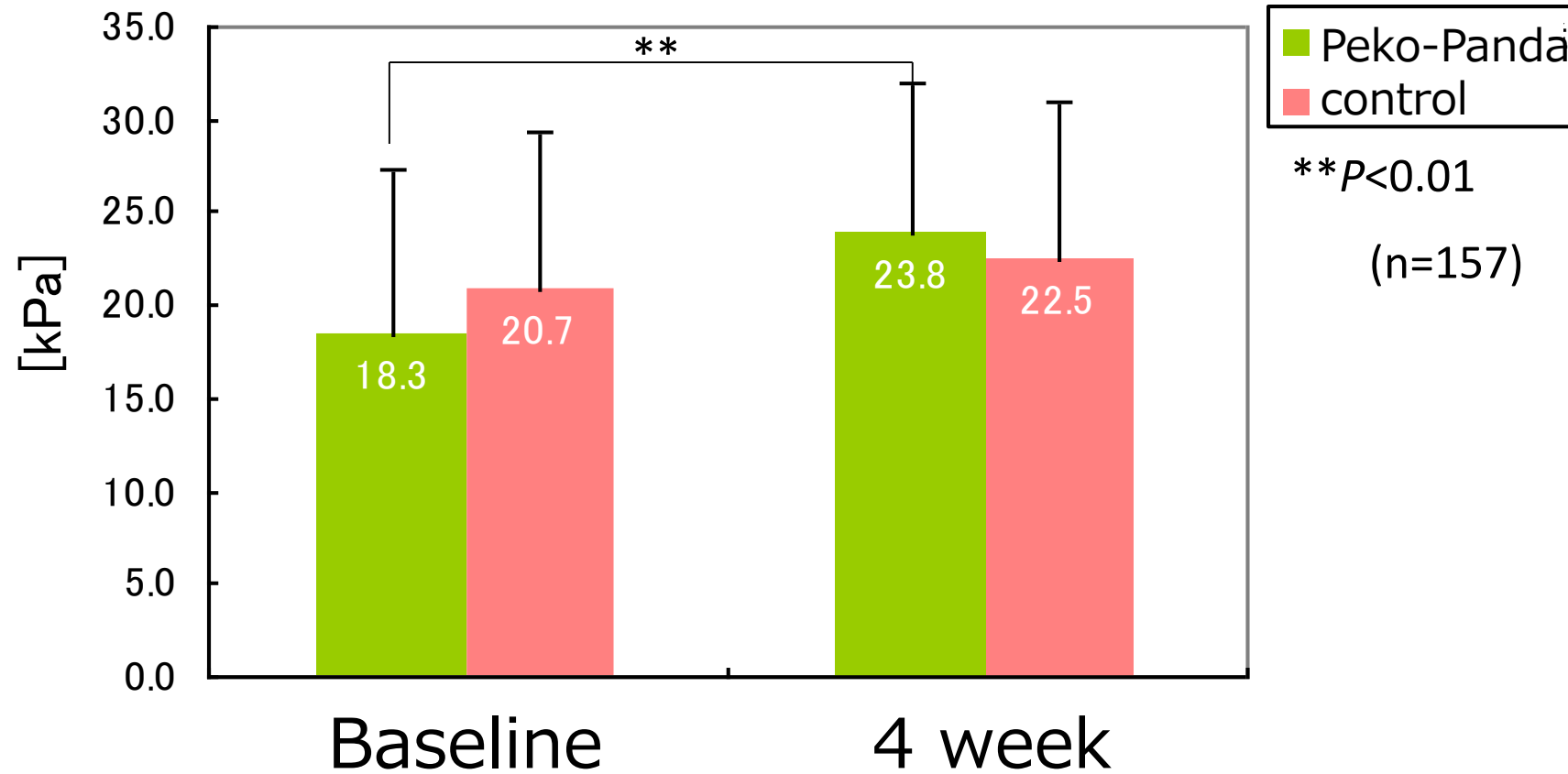
20kPa



30kPa



Maximum Tongue Pressure improved by Peko-Panda Training



With emerging tools,



Oral Hypofunction

must be screened, diagnosed, and prevented
by oral health care providers
for good QoL of people around the world!