Contents

The features marked with a star (*) are based entirely on material taken straight from standard research (and other Official and Therefore Always Correct) literature. Many of the other articles are genuine, too, but we don't know which ones.

The Improbable Research podcast is back!

https://www.improbable.com/category/the-weekly-improbable-research-podcast/

Where There's More

There's always new improbable — it's not what you expect! — stuff on the **Improbable Research blog** at IMPROBABLE.COM

ANNALS OF IMPROBABLE RESEARCH

On the Front Cover

The upraised big toe—the Babinski sign—evident in a child, in a Renaissance painting. See page 11 and page 22.

On the Back Cover

An unidentified man stands inside a spiracle on a lava field near Laxamyri Iceland,1893.

Some Coming Events

The Covid-19 pandemic has introduced excitingly boundless uncertainty as to whether, when, where, and how various public activities will happen in the near future. In 2021 some will happen teledistantly.

See IMPROBABLE.COM for details of these and other events:

September 9, 2021
The 31st First Annual Ig Nobel Prize Ceremony and Webcast

September 10-November 3, 2021
Ig Nobel Museum Exhibition, Fukuoka, Japan

September–November 2021
Ig Informal Lectures [online]

October 19, 2021
New York City, USA

January 14, 2022
Arisia, Boston, USA

January 20, 2022
Improbable Conversation series premiere (online)

Spring 2022
2022 Ig Nobel Euro (and Brexitannia) Tour [if the pandemic allows]

Children Chewing

Explorations of mastication by minors

compiled by Ludmila Czez, Improbable Research staff

Using Chewing Gum to Train Young Children

"Masticatory Training with Chewing Gum on Young Children," Y. Ono, Y. F. Lin, H. Iijima, Z. Miwa, and M. Shibata, *Kokubyo Gakkai zasshi. The Journal of the Stomatological Society, Japan*, vol. 59, no. 2, 1992, pp. 512-517. The authors, at Tokyo Medical and Dental University, report:

> Mastication is a developmental function. It matures through learning experiences. The biting force is one of the components of masticatory function. The biting force increases with age. During the developmental stage, it is believed feasible to enhance the maturation of the masticatory function by increasing the biting force.
>
> The previous results of masticatory training for adults and school children had revealed 20% to 30% increase of the biting force.
>
> In this study, masticatory training with specially fabricated chewing gum for young preschool children was performed. The subjects were 5 males and 5 females from 3 years old to 5 years old. These children were instructed to bite on the chewing gum for 5 minutes, 2 times a day, for 3 months. The results show that there was a 94% average increase of biting force after 3 months of training. It was also noted that the rate of the increase of the biting force was remarkable during the first month of training.

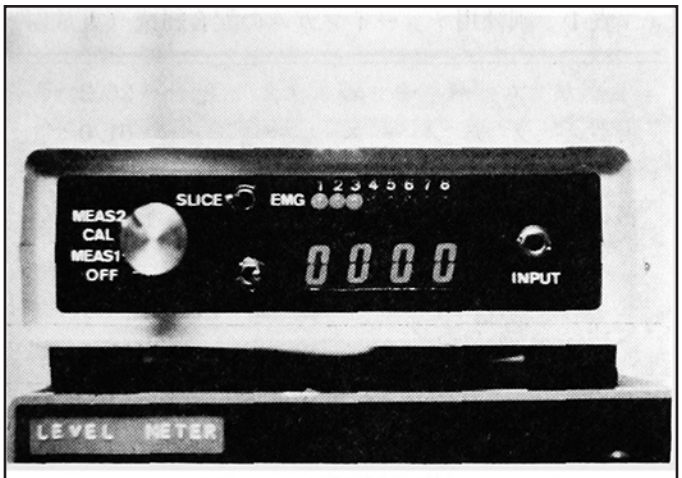


図1　咀嚼訓練機前面

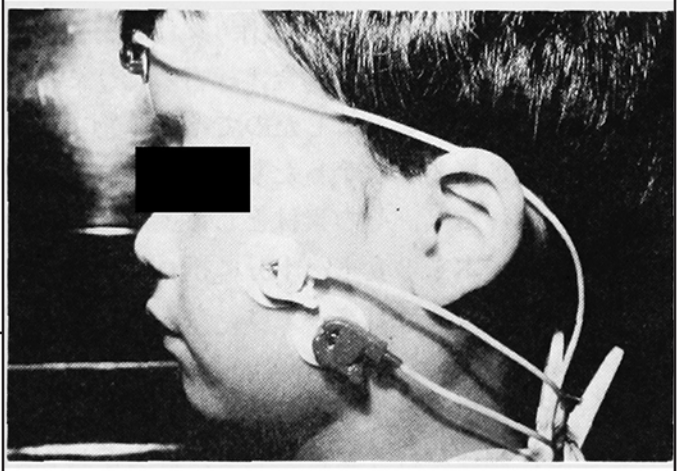


図2　噛み締め硬さの確認

小野芳明　林　于昉　飯島英世
三輪全三　柴田征樹*

東京医科歯科大学歯学部小児歯科学教室（指導：小野博志教授）
* ロッテ中央研究所

（1992年3月18日 受付）

Masticatory Training with Chewing Gum on Young Children

Yoshiaki Ono, Yu-Faang Lin, Hideo Iijima
Zenzo Miwa and Masaki Shibata*

Department of Pedodontics, School of Dentistry, Tokyo Medical and Dental University
(Director : Prof. Hiroshi Ono)
* Lotte Central Laboratory Co., LTD.

Mastication is a developmental function. It matures through learning experiences. The biting force is one of the components of masticatory function. The biting force increases with age. During the developmental stage, it is believed feasible to enhance the maturation of the masticatory function by increasing the biting force.

The previous results of masticatory training for adults and school children had revealed 20% to 30% increase of the biting force.

Detail from the study "Masticatory Training with Chewing Gum on Young Children."

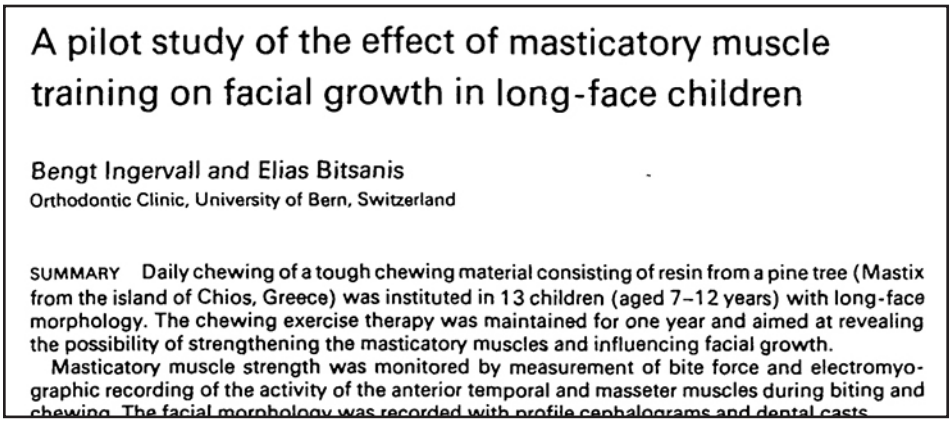
continued >

Children Chewing [continued]

Chewing and Long Faces

"A Pilot Study of the Effect of Masticatory Muscle Training on Facial Growth in Long-Face Children," Bengt Ingervall and Elias Bitsanis, *European Journal of Orthodontics*, vol. 9, 1987, pp. 15-23. The authors, at the University of Bern, Switzerland, report:

> Daily chewing of a tough chewing material consisting of resin from a pine tree (Mastix from the island of Chios, Greece) was instituted in 13 children (aged 7-12 years) with long-face morphology. The chewing exercise therapy was maintained for one year and aimed at revealing the possibility of strengthening the masticatory muscles and influencing facial growth. Masticatory muscle strength was monitored by measurement of bite force and electromyographic recording of the activity of the anterior temporal and masseter muscles during biting and chewing. The facial morphology was recorded with profile cephalograms and dental casts. During the one-year experimental period…. [the] facial growth was characterized by anterior mandibular rotation in 9 of 12 cases while a posterior rotation occurred in 2 cases. The anterior rotation was, on average, 2.5 degrees and thus considerably greater than would be expected during normal growth.



A pilot study of the effect of masticatory muscle training on facial growth in long-face children

Bengt Ingervall and Elias Bitsanis
Orthodontic Clinic, University of Bern, Switzerland

SUMMARY Daily chewing of a tough chewing material consisting of resin from a pine tree (Mastix from the island of Chios, Greece) was instituted in 13 children (aged 7–12 years) with long-face morphology. The chewing exercise therapy was maintained for one year and aimed at revealing the possibility of strengthening the masticatory muscles and influencing facial growth.

Masticatory muscle strength was monitored by measurement of bite force and electromyographic recording of the activity of the anterior temporal and masseter muscles during biting and chewing. The facial morphology was recorded with profile cephalograms and dental casts

Chewing Gum Bezoars

"Chewing Gum Bezoars of the Gastrointestinal Tract," David E. Milov, Joel M. Andres, Nora A. Erhart, and David J. Bailey, *Pediatrics*, vol. 102, no. 2, August 1998, p. e22. The authors, at Nemours Children's Clinic, Orlando, Florida, report:

> Children have chewed gum since the Stone Age. Black lumps of prehistoric tar with human tooth impressions have been found in Northern Europe dating from ~7000 BC (Middle Stone Age) to 2000 BC (Bronze Age).... In the present report, we briefly review gum-chewing complications and describe three children who developed intestinal tract and esophageal obstruction as a consequence of swallowing gum.... In summary, chewing gum should not be swallowed and not given to children who cannot understand this point.

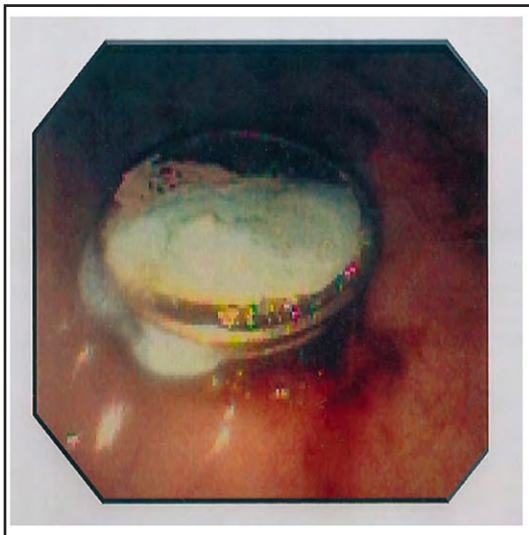


Fig 1. Four coins stuck in gum lodged in esophagus.

TABLE 1. Complications From Additives to Chewing Gum

Symptoms	Cause
Diarrhea, flatulence, borborygmi	Sorbitol
Mouth ulcers	Cinnamon flavoring
Perioral dermatitis	Gum oils
Diffuse cutaneous urticaria	Chlorophylla, menthol, butylhydroxytoluene
Dental caries	Concentrated sweetener, corn syrup
Hypertension, hypokalemia	Licorice (glycyrrhetinic acid)

TABLE 2. Adverse Mechanical Effects of Chewing Gum

Extrusion of dental work
Temporomandibular joint syndrome
Hypertrophy of masticatory muscle
Increased serum mercury level
Increased air swallowing
Occlusion of endotracheal tube
Esophageal or colonic bezoar

Detail from the study "Chewing Gum Bezoars of the Gastrointestinal Tract."