Texture-modified foods taste and aesthetic presentation

This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

INDEED: "Innovative tools for diets oriented to education and health improvement in dysphagia condition" - Project N: 2020-1-ES01-KA204-083288

Co-funded by the Erasmus+ Programme of the European Union

Goals of the module

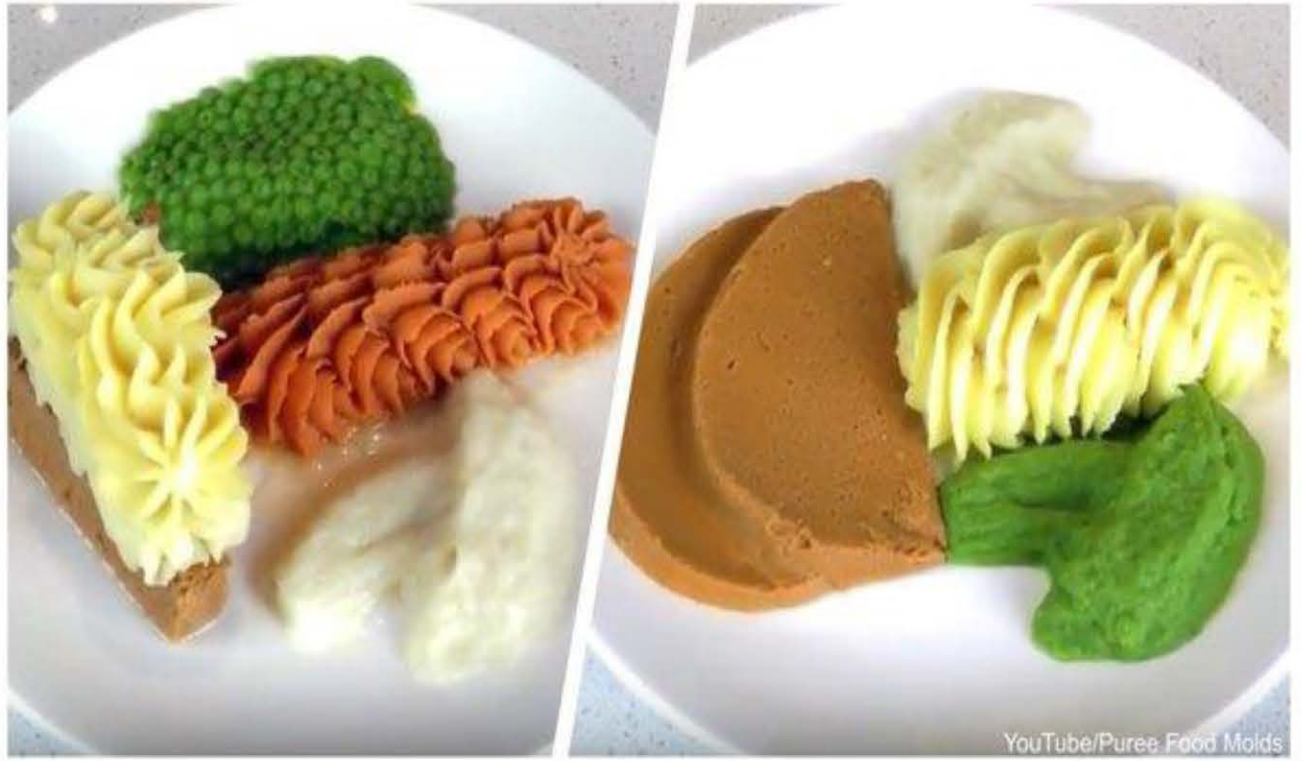
The aim of this module is to learn about presentation tips of texture-modified foods for dysphagia diets

INDEED: "Innovative tools for diets oriented to education and health improvement in dysphagia condition" - Project N: 2020-1-ES01-KA204-083288

Co-funded by the Erasmus+ Programme of the European Union

Learning outcomes

- To understand the benefits of the good taste and aesthetic presentation of texture-modified foods;
- To get acquainted with methods to make pureed dishes more appetizing.



INDEED: "Innovative tools for diets oriented to education and health improvement in dysphagia condition"
Project N: 2020-1-ES01-KA204-083288

Co-funded by the Erasmus+ Programme of the European Union

Ice Breaker

Have everyone share three statements about themselves, two true and one false, and have the group guess which is the lie.

INDEED: "Innovative tools for diets oriented to education and health improvement in dysphagia condition"

Project N: 2020-1-ES01-KA204-083288

Co-funded by the Erasmus+ Programme of the European Union

Texture-modified diet

- **It is important that pureed food looks, tastes and smells good so that it is appetising to eat**. For an adult, shapeless, dull colored food is unappealing. Almost as significant is the fact that nursing attendants, feeding residents pureed food, often project a negative attitude about unattractive food.
- This compounds the problem, resulting in frequent low percent of food consumed by residents on the Pureed Diet.
- The more attractive the food, the better it is received by residents and care givers alike. The **goal is to serve the most attractive** food to all residents, including those needing the Pureed Diet.
- The **smell and appealing appearance of food can help to increase appetite** as we eat with our eyes, and our noses!
- How can smooth, moist pureed food have an enhanced image?

INDEED: "Innovative tools for diets oriented to education and health improvement in dysphagia condition"
Project N: 2020-1-ES01-KA204-083288

Co-funded by the Erasmus+ Programme of the European Union

Texture-modified diet: Opportunities

Comprehensive REVIEWS in Food Science and Food Safety

Texture Modification Technologies and Their Opportunities for the Production of Dysphagia Foods: A Review

Sirada Sungsinchai, Chalida Niamnuy, Pattra Wattanapan, Manop Charoenchaitrakool, and Sakamon Devahastin

Abstract: Dysphagia or swallowing difficulty is a common morbidity experienced by those who have suffered a stroke or those undergone such treatments as head and neck surgeries. Dysphagic patients require special foods that are easier to swallow. Various technologies, including high-pressure processing, high-hydrodynamic pressure processing, pulsed electric field treatment, plasma processing, ultrasound-assisted processing, and irradiation have been applied to modify food texture to make it more suitable for such patients. This review surveys the applications of these technologies for food texture modification of products made of meat, rice, starch, and carbohydrates, as well as fruits and vegetables. The review also attempts to categorize, via the use of such key characteristics as hardness and viscosity, texture-modified foods into various dysphagia diet levels. Current and future trends of dysphagia food production, including the use of three-dimensional food printing to reduce the design and fabrication time, to enhance the sensory characteristics, as well as to create visually attractive foods, are also mentioned.

Keywords: carbohydrates, fruits and vegetables, meat, nonthermal processing, three-dimensional printing, swallowing

This article reviews the latest applications and improvement opportunities for the production of textured foods for dysphagia.

It gives an up-to-date **overview of the latest technologies for producing texturized foods while maintaining their sensory properties and creating appealing products for the consumer.**

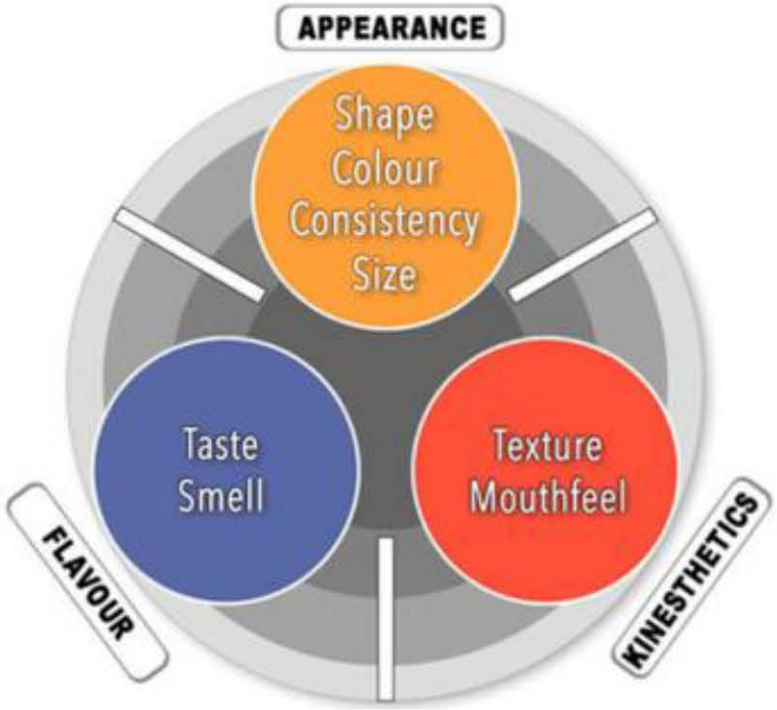
To learn more, please read it:
https://ift.onlinelibrary.wiley.com/doi/abs/10.1111/1541-4337.12495

INDEED: "Innovative tools for diets oriented to education and health improvement in dysphagia condition"
Project N: 2020-1-ES01-KA204-083288

Co-funded by the Erasmus+ Programme of the European Union

Sensory Properties of Texture-modified diet

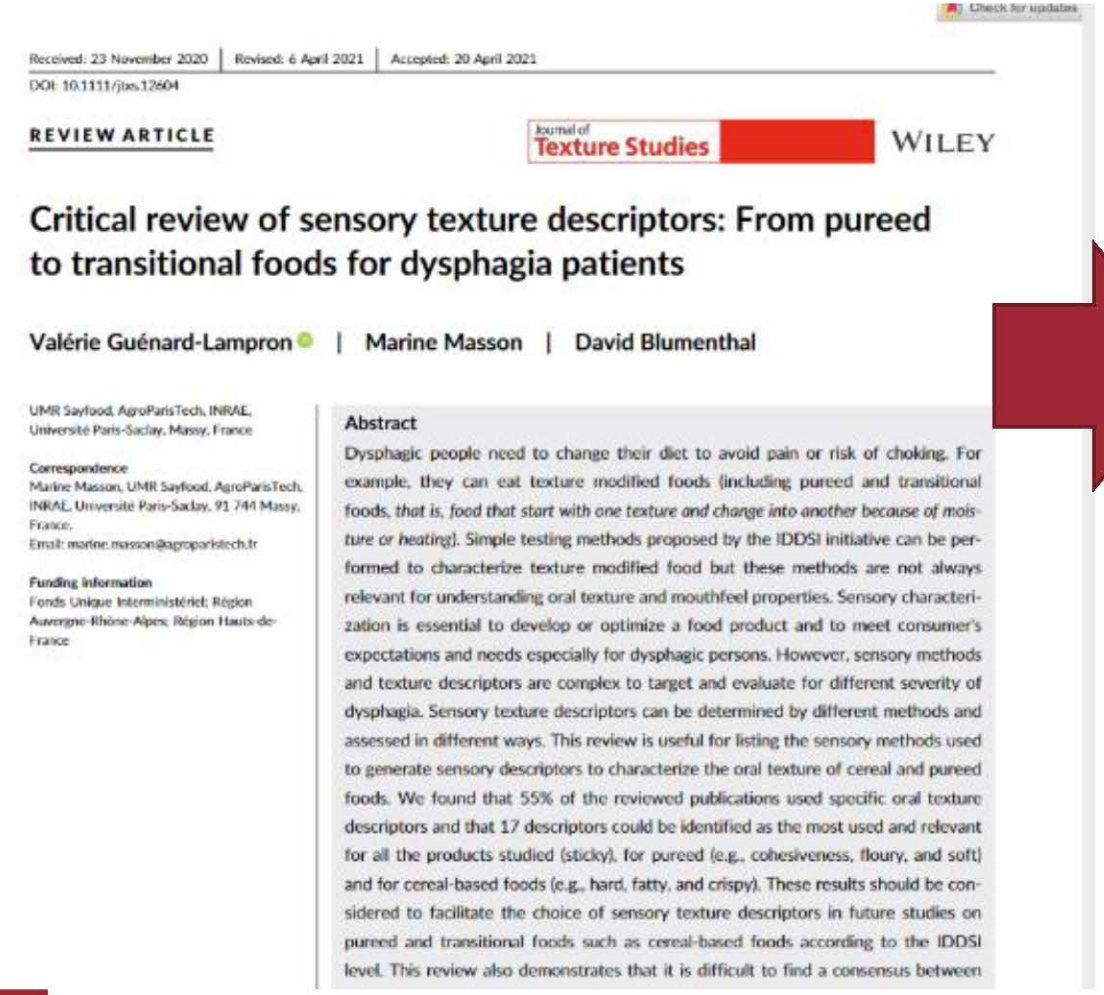
- ✓ Texture: According to IDDSI evaluation
- ✓ Optimization:
  - ✓ Appearance
  - ✓ Flavour
  - ✓ Kinesthetiscs
- ✓ Importance of using good descriptors



INDEED: "Innovative tools for diets oriented to education and health improvement in dysphagia condition"
Project N: 2020-1-ES01-KA204-083288

Co-funded by the Erasmus+ Programme of the European Union

Texture-modified diet: Sensory Attributes (1)



Received: 23 November 2020 | Revised: 6 April 2021 | Accepted: 20 April 2021
DOI: 10.1111/jtxs.12604

REVIEW ARTICLE

Journal of Texture Studies WILEY

Critical review of sensory texture descriptors: From pureed to transitional foods for dysphagia patients

Valérie Guénard-Lampron | Marine Masson | David Blumenthal

UMR Sayfood, AgroParisTech, INRAE, Université Paris-Saclay, Massy, France

Correspondence
Marine Masson, UMR Sayfood, AgroParisTech, INRAE, Université Paris-Saclay, 91 744 Massy, France.
Email: marine.masson@agroparistech.fr

Funding information
Fonds Unique Interministériel; Région Auvergne-Rhône-Alpes; Région Hauts-de-France

Abstract

Dysphagic people need to change their diet to avoid pain or risk of choking. For example, they can eat texture modified foods (including pureed and transitional foods, *that is, food that start with one texture and change into another because of moisture or heating*). Simple testing methods proposed by the IDDSI initiative can be performed to characterize texture modified food but these methods are not always relevant for understanding oral texture and mouthfeel properties. Sensory characterization is essential to develop or optimize a food product and to meet consumer's expectations and needs especially for dysphagic persons. However, sensory methods and texture descriptors are complex to target and evaluate for different severity of dysphagia. Sensory texture descriptors can be determined by different methods and assessed in different ways. This review is useful for listing the sensory methods used to generate sensory descriptors to characterize the oral texture of cereal and pureed foods. We found that 55% of the reviewed publications used specific oral texture descriptors and that 17 descriptors could be identified as the most used and relevant for all the products studied (sticky), for pureed (e.g., cohesiveness, floury, and soft) and for cereal-based foods (e.g., hard, fatty, and crispy). These results should be considered to facilitate the choice of sensory texture descriptors in future studies on pureed and transitional foods such as cereal-based foods according to the IDDSI level. This review also demonstrates that it is difficult to find a consensus between

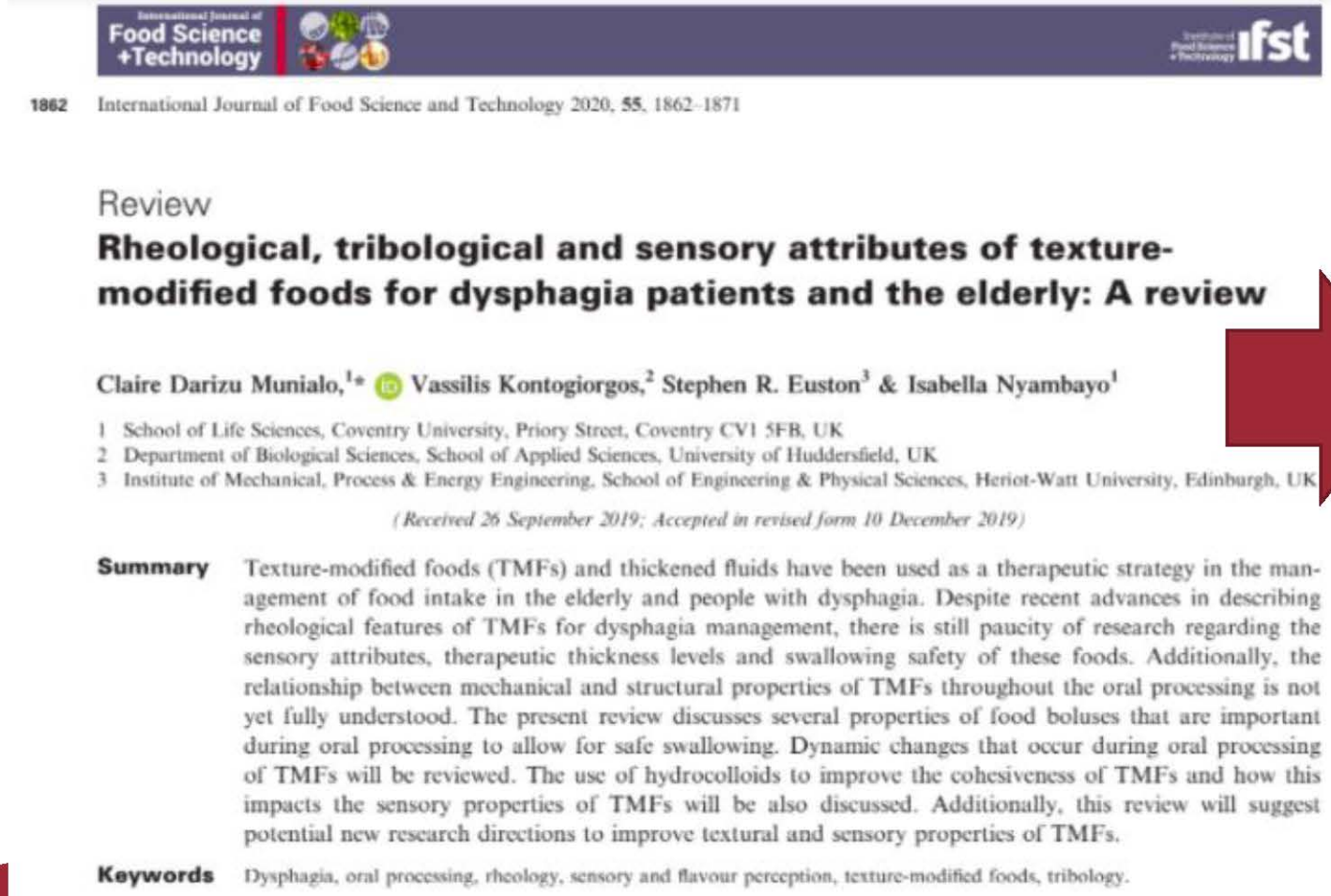
It is widely observed that pureed diets lack sensory or taste appeal and can lead to food refusal and reduced intake. **Many elderly people suffer from a loss of taste and smell in addition to stimuli, which has a negative impact on their enjoyment of meals and dietary habits**. This provides a challenge to design TMFs that have attractive sensory properties. **Vision and auditory perception are reported to be the dominant features in human perception of food**. The appearance of a meal in terms of the colour, taste and smell, all perceived by the orbitofrontal cortex involved in processing pleasant stimuli, and **how it is served is shown to play an important role in the evaluation of foods among the elderly and dysphagics.**

To learn more, please read it:
https://ifst.onlinelibrary.wiley.com/doi/abs/10.1111/ijfs.14483

INDEED: "Innovative tools for diets oriented to education and health improvement in dysphagia condition"
Project N: 2020-1-ES01-KA204-083288

Co-funded by the Erasmus+ Programme of the European Union

Texture-modified diet: Sensory Attributes (2)



International Journal of Food Science +Technology

1862 International Journal of Food Science and Technology 2020, 55, 1862–1871

Review

Rheological, tribological and sensory attributes of texture-modified foods for dysphagia patients and the elderly: A review

Claire Darizu Munialo,[1]* Vassilis Kontogiorgos,[2] Stephen R. Euston[3] & Isabella Nyambayo[1]

1 School of Life Sciences, Coventry University, Priory Street, Coventry CV1 5FB, UK
2 Department of Biological Sciences, School of Applied Sciences, University of Huddersfield, UK
3 Institute of Mechanical, Process & Energy Engineering, School of Engineering & Physical Sciences, Heriot-Watt University, Edinburgh, UK

(Received 26 September 2019; Accepted in revised form 10 December 2019)

Summary Texture-modified foods (TMFs) and thickened fluids have been used as a therapeutic strategy in the management of food intake in the elderly and people with dysphagia. Despite recent advances in describing rheological features of TMFs for dysphagia management, there is still paucity of research regarding the sensory attributes, therapeutic thickness levels and swallowing safety of these foods. Additionally, the relationship between mechanical and structural properties of TMFs throughout the oral processing is not yet fully understood. The present review discusses several properties of food boluses that are important during oral processing to allow for safe swallowing. Dynamic changes that occur during oral processing of TMFs will be reviewed. The use of hydrocolloids to improve the cohesiveness of TMFs and how this impacts the sensory properties of TMFs will be also discussed. Additionally, this review will suggest potential new research directions to improve textural and sensory properties of TMFs.

Keywords Dysphagia, oral processing, rheology, sensory and flavour perception, texture-modified foods, tribology.

Even though manipulation of texture remains to be a common strategy in dysphagia management, pureed diets are reported to lack sensory or taste appeal which can result in food refusal and reduced intake TMFs.

To formulate TMFs that give pleasurable meal experiences, **varying ingredients and processing conditions can be used improve taste, aroma and visual aspects of these foods.** As such, sensory modified foods may be formulated and used to improve swallowing in dysphagics whilst maintaining palatability.

To learn more, please read it: https://ifst.onlinelibrary.wiley.com/doi/abs/10.1111/ijfs.14483

INDEED: "Innovative tools for diets oriented to education and health improvement in dysphagia condition"

Project N: 2020-1-ES01-KA204-083288

Co-funded by the Erasmus+ Programme of the European Union

Tips for improving the acceptability of puréed foods

- The **taste of puréed foods needs to be more intense** than for regular texture foods. This is because the act of chewing a food releases flavors in the mouth. Once a food is puréed, it does not require chewing. It can be simply swallowed without much time for the flavor of the food to be tasted.
- Increasing the **flavor of puréed foods helps with flavor recognition**.
- By adding a sauce or gravy to puréed meat will not only make it look more appetizing but also **add extra flavour and moisture.**

Lepore, J. R., & Dahl, W. J. (2013). Sensory Acceptability of Puréed Foods: FSHN1213/FS206, 11/2012. EDIS, 2013(1).


UF IFAS Extension UNIVERSITY of FLORIDA

FSHN12-13

Sensory Acceptability of Puréed Foods[1]

Jamila R. Lepore and Wendy J. Dahl[2]

Tips for improving the acceptability of puréed foods (2)

- When preparing puréed foods, try **using flavorful liquids instead of water**. For instance, use broth or gravy in puréed meats, and fruit juice or dairy products in desserts.
- **Spices and ground herbs** can also be added to puréed foods to add variety and **increase acceptability** can make a meal look and taste delicious as well. However, these alter the natural flavors of food and may make it harder to identify puréed foods.

(Source: https://stock.adobe.com)

Lepore, J. R., & Dahl, W. J. (2013). Sensory Acceptability of Puréed Foods: FSHN1213/FS206, 11/2012. EDIS, 2013(1).

INDEED: "Innovative tools for diets oriented to education and health improvement in dysphagia condition"
Project N: 2020-1-ES01-KA204-083288

Co-funded by the Erasmus+ Programme of the European Union

Tips for texture-modified diet

- It is important that pureed food looks, **tastes and smells good** so that it is appetising to eat.
- To do this, blend each type of food separately to keep its individual colour and flavour.
- Present the foods on a plate so you can see each type separately.
- **Avoid blending a whole meal together** as this makes food look unattractive and reduces the flavour in the mouth.
- **Pureed food can be shaped** on the plate to look attractive to eat using spoons, an ice-cream coop, the ridges of a fork, special food moulds or by using the nozzles on a piping bag.
- Using garnishes such as fruit and herbs helps make food look attractive, but you should not eat these if they need to be chewed.

INDEED: "Innovative tools for diets oriented to education and health improvement in dysphagia condition"
Project N: 2020-1-ES01-KA204-083288

Co-funded by the Erasmus+ Programme of the European Union

Presentation tips

- **Using moulds** aids meal presentation and helps to make meals recognisable to the diner. They can also reduce preparation time and wastage for kitchen staff.
- **Piping bags** will give you the ability to make interesting shapes and designs on the plate. Using different nozzles will allow you to vary the presentation.
- Unless preparing a complete dish make sure that individual components are separated on the plate.
- **Make an interesting shape on the plate** with a quenelle — the purée is formed into an oval shape with the use of two spoons to mould the mixture. Use **different shaped and coloured plates** for each dish.

(Source: https://stock.adobe.com)

INDEED: "Innovative tools for diets oriented to education and health improvement in dysphagia condition"
Project N: 2020-1-ES01-KA204-083288

Co-funded by the Erasmus+ Programme of the European Union

Spacing and shaping (1)

- Kind of goes hand-in-hand with consistency. If you're not working with an already divided plate, spacing food groups appropriately on the plate can affect puree how appetizing a meal looks.
- Especially if the preparation of pureed foods does not involve molds or piping, you may just be using a scoop to put foods on the plate.
- In which case, make sure foods are not piled one on top of the other and are neatly scooped on to the plate.
- Adding thickener to smooth pureed food creates body and a soft scoopable mashed potato shape.

(Source: https://stock.adobe.com)

INDEED: "Innovative tools for diets oriented to education and health improvement in dysphagia condition"
Project N: 2020-1-ES01-KA204-083288

Co-funded by the Erasmus+ Programme of the European Union

Spacing and shaping (2)

- Thickened food allows pureed food to be served on the regular dinner plate, instead of a deep divided dish containing liquefied food. The dinner plate is a home-like normal way to serve food, thus adding to a resident's dignity and quality of life.
- Food can be thickened and pureed separately, layered into pans and baked. This technique allows for an entree like lasagna, to be served in a most attractive rectangle of colorful layers.

(Source: https://stock.adobe.com)

INDEED: "Innovative tools for diets oriented to education and health improvement in dysphagia condition"
Project N: 2020-1-ES01-KA204-083288

Co-funded by the Erasmus+ Programme of the European Union

Spacing and Color (1)

- Make the color on the plate pop! For some who may have difficulty seeing, using a colored plate instead of a white one may help make foods stand out better and therefore make it easier for them to eat.
- Create as much natural looking color contrast as possible for the pureed diet.
- Prepare frozen vegetables over canned when ever possible.
- Omit vegetables that make a sauce dull.
- If mushrooms are on the menu, combine them with the pureed meat for taste, rather than pureeing them into a white sauce. Or, puree mushrooms in a rich dark brown sauce, for excellent color and taste.

(Source: https://stock.adobe.com)

INDEED: "Innovative tools for diets oriented to education and health improvement in dysphagia condition"
Project N: 2020-1-ES01-KA204-083288

Co-funded by the Erasmus+ Programme of the European Union

Spacing and Color (2)

- Use amounts of kitchen bouquet to create chocolate colored brown sauce.
- Heat smooth BB-Q sauce for a quick, tasty, colorful sauce for chicken, pork or beef.
- Have white sauce made up in advance to serve over pureed meat and further garnish with powdered parsley. Sour cream provides excellent color contrast when served over dark green spinach or red beets.
- Purchase jellied cranberry sauce in cans, for easy slices of a popular red garnish.
- Have a small bowl of shredded cheddar cheese, set out at room temperature during serving, for a sprinkle of gold color over cauliflower, mashed potatoes or fish.

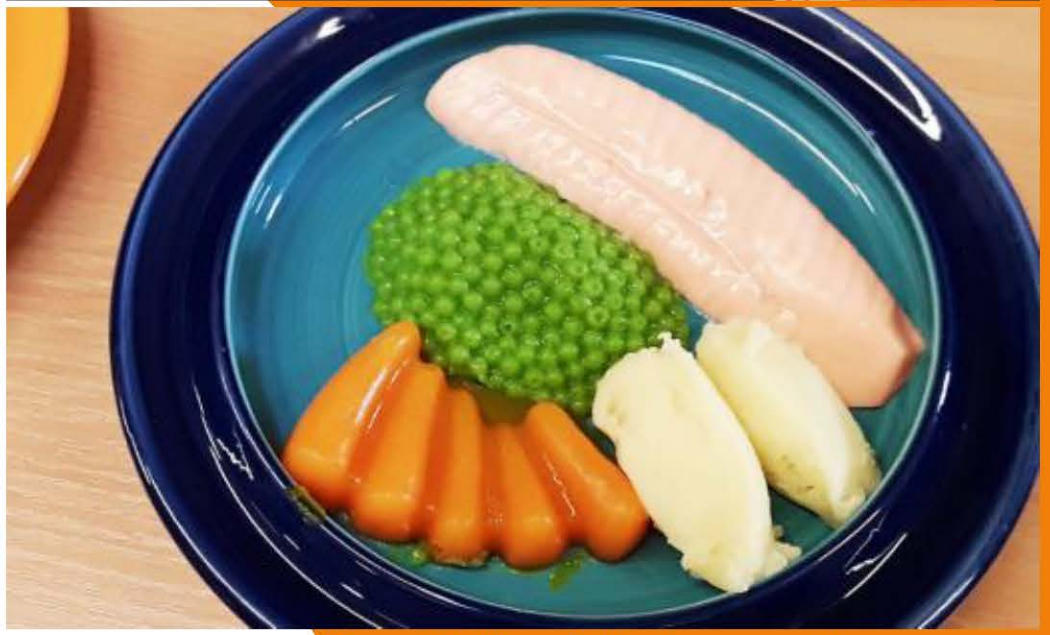
(Source: https://stock.adobe.com)

INDEED: "Innovative tools for diets oriented to education and health improvement in dysphagia condition"
Project N: 2020-1-ES01-KA204-083288

Co-funded by the Erasmus+ Programme of the European Union

Moulded puréed food

- Food moulds allow those on a puréed diet to enjoy a visual variety of foods on their plate.
- Molds are awesome ways to help make pureed foods look natural again, add interest, and really improve plate presentation!
- Molds can be used to turn the pureed food back into its original shape.
- For instance, roast beef can be pureed and poured into plastic molds, which are then frozen, and when ready to prepare a meal the purees can be defrosted, heated, and pressed onto the plate.



(Source: https://www.foodserviceexpress.com)

INDEED: "Innovative tools for diets oriented to education and health improvement in dysphagia condition"
Project N: 2020-1-ES01-KA204-083288

Co-funded by the Erasmus+ Programme of the European Union

Food moulds

- Food-shaped templates used to form pureed food into a natural product for a more attractive appearance
- Molds filled with thickened pureed mixture and frozen for approx. 2 hrs
- Food is then removed from mold and stored individually until further use
- Most molds are shaped into portion sizes of 3-4 oz. (1/2 cup)
- Research indicates food molds may help increase the acceptance of pureed foods

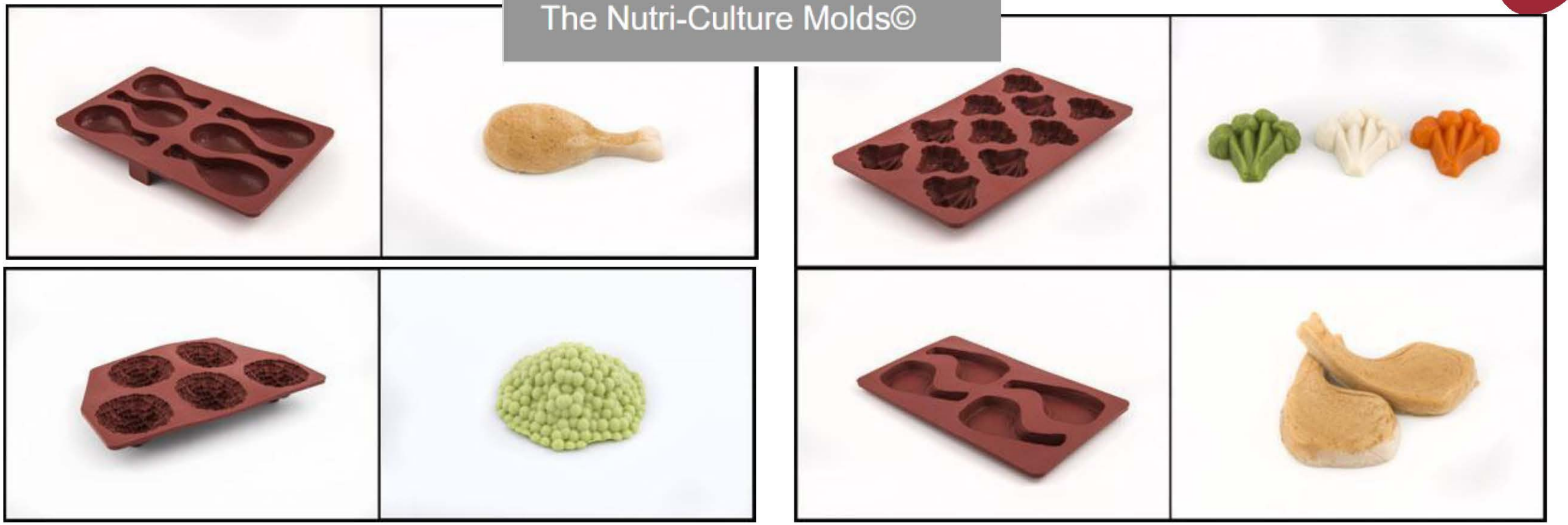
(Source: https://www.foodserviceexpress.com)

INDEED: "Innovative tools for diets oriented to education and health improvement in dysphagia condition"
Project N: 2020-1-ES01-KA204-083288

Co-funded by the Erasmus+ Programme of the European Union

Presentation tips: molds

The Nutri-Culture Molds©



(Source: https://www.emotionfood.ch/the-molds/)

Co-funded by the Erasmus+ Programme of the European Union

Pastry bag and tips

Pastry bag and tips can create attractive effects with pureed foods

Piping can be used as well to add unique characteristics to pureed foods that would be found in certain foods naturally, such as the stems on carrots.

Examples:

Flat tip to make pureed roast beef slices, bacon, or turkey slices

Round tip to make spaghetti or other pasta shapes

Be creative!!

INDEED: "Innovative tools for diets oriented to education and health improvement in dysphagia condition"

Project N: 2020-1-ES01-KA204-083288

Co-funded by the Erasmus+ Programme of the European Union

Piping

- Piping is as simple as adding the pureed mixture into a plastic piping bag and adding the appropriately shaped tip to create a beautiful plate.
- Few garnishes are as pretty as a star of whipped topping from a pastry bag.
- Pureed food, such as green beans, can be put into large pastry bags to create a variety of shapes using a tube tip.
- Mashed potatoes, so often served as a scoop, can be piped on the dinner plate creating an interesting wave or zigzag.
- Peas can be pureed and piped using a leaf cake decorating tip.
- These green leaves can be frozen and added later as garnishes to dinner meals lacking a green vegetable.
- To make garnishing with a pastry bag easier, roll wax paper into a cone, add tip, fill cone with topping, sour cream, mayonnaise even pureed peas, etc., garnish item and toss the wax paper out for fast clean up.

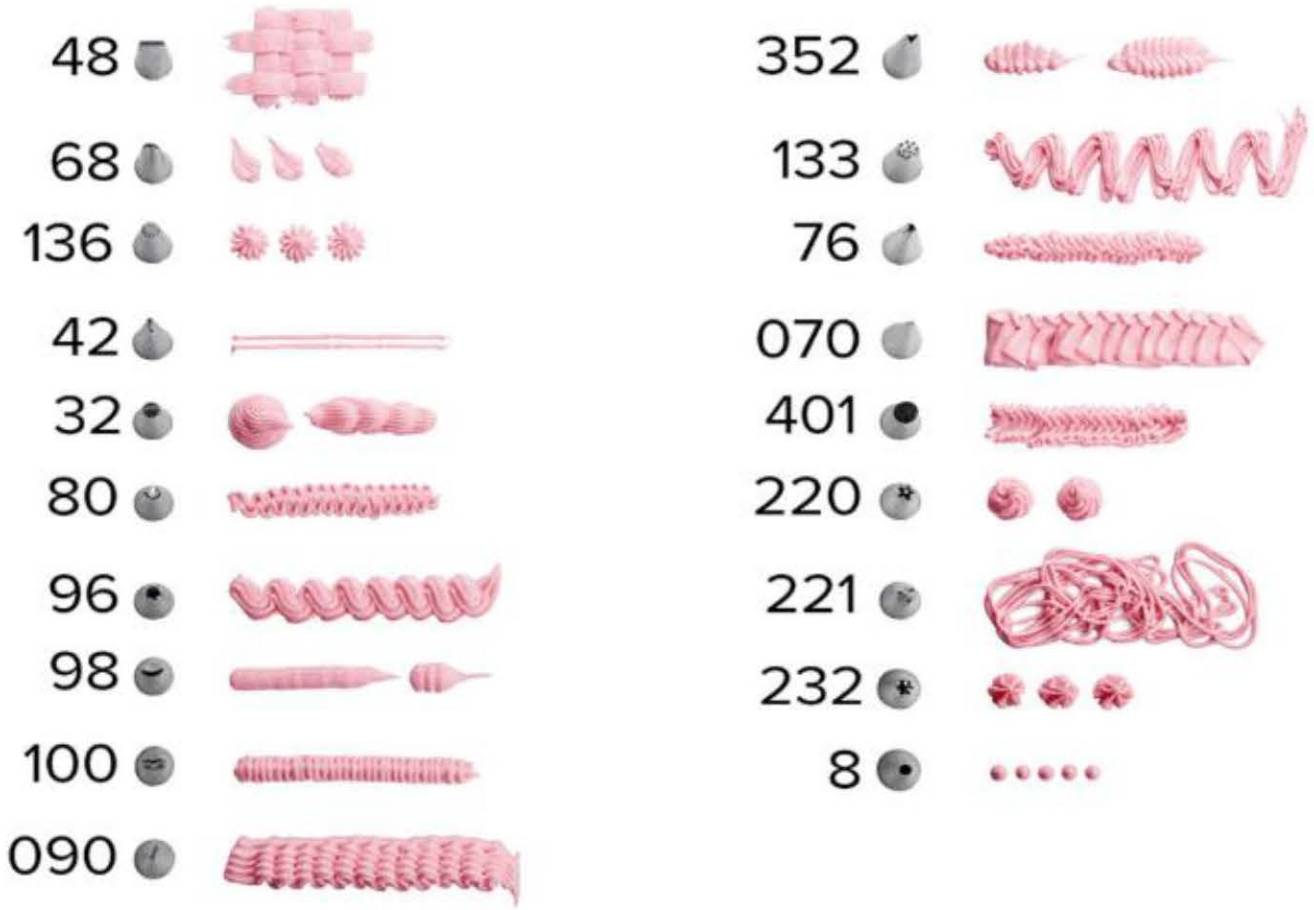
(Source: https://www.webstaurantstore.com)

INDEED: "Innovative tools for diets oriented to education and health improvement in dysphagia condition"
Project N: 2020-1-ES01-KA204-083288

Co-funded by the Erasmus+ Programme of the European Union

Pastry Tip Sizes and Shapes

- Decorating tips are assigned different numbers based on the shape and size of their openings.
- There is a graphic that shows some of the most common pastry tip numbers and what the result of using them is.



(Source: https://www.webstaurantstore.com)

INDEED: "Innovative tools for diets oriented to education and health improvement in dysphagia condition"
Project N: 2020-1-ES01-KA204-083288

Co-funded by the Erasmus+ Programme of the European Union

Plating and serving

- Whenever possible, serving the table to the patients with dysphagia follows common principles.
- Extras: colorful napkins; parfait cups; battery-operated candles; dinner music.
- Dining table accessories are essential. Plates, cutlery and glasses are but some among other table accessories that can be chosen with care and attention in order to unleash your creativity and complete the space furniture.
- Accessories for the dining table are available in a multitude of colors, materials and shapes, range from a classic to a modern style and are designed to meet any furnishing requirement.

(Source: https://stock.adobe.com)

INDEED: "Innovative tools for diets oriented to education and health improvement in dysphagia condition"
Project N: 2020-1-ES01-KA204-083288

Co-funded by the Erasmus+ Programme of the European Union

Samples of puréed food

INDEED: "Innovative tools for diets oriented to education and health improvement in dysphagia condition"

Project N: 2020-1-ES01-KA204-083288

Co-funded by the Erasmus+ Programme of the European Union

To Know More

1. Guénard-Lampron, V., Masson, M., & Blumenthal, D. (2021). Critical review of sensory texture descriptors: From pureed to transitional foods for dysphagia patients. Journal of Texture Studies, 52(5-6), 665-678.
2. Lepore, J. R., & Dahl, W. J. (2013). Sensory Acceptability of Puréed Foods: FSHN1213/FS206, 11/2012. EDIS, 2013(1).
3. Munialo, C. D., Kontogiorgos, V., Euston, S. R., & Nyambayo, I. (2020). Rheological, tribological and sensory attributes of texture-modified foods for dysphagia patients and the elderly: A review. International Journal of Food Science & Technology, 55(5), 1862-1871.
4. Sungsinchai, S., Niamnuy, C., Wattanapan, P., Charoenchaitrakool, M., & Devahastin, S. (2019). Texture modification technologies and their opportunities for the production of dysphagia foods: A review. Comprehensive reviews in food science and food safety, 18(6), 1898-1912.
5. https://www.emotionfood.ch/the-molds/
6. https://www.webstaurantstore.com/guide/583/types-of-pastry-bags-and-tips.html

Co-funded by the Erasmus+ Programme of the European Union

Table for activity

- The activity take 30 minutes
- Goals of the activity – to apply methods to make pureed dishes more appetising
- Theoretical lecture and practical activity
- We need food products, equipment, plates, moulds and piping bags
- Online or live

INDEED: "Innovative tools for diets oriented to education and health improvement in dysphagia condition" - Project N: 2020-1-ES01-KA204-083288

Co-funded by the Erasmus+ Programme of the European Union

Time for discussion

Any questions?

INDEED: "Innovative tools for diets oriented to education and health improvement in dysphagia condition"
Project N: 2020-1-ES01-KA204-083288

Co-funded by the Erasmus+ Programme of the European Union

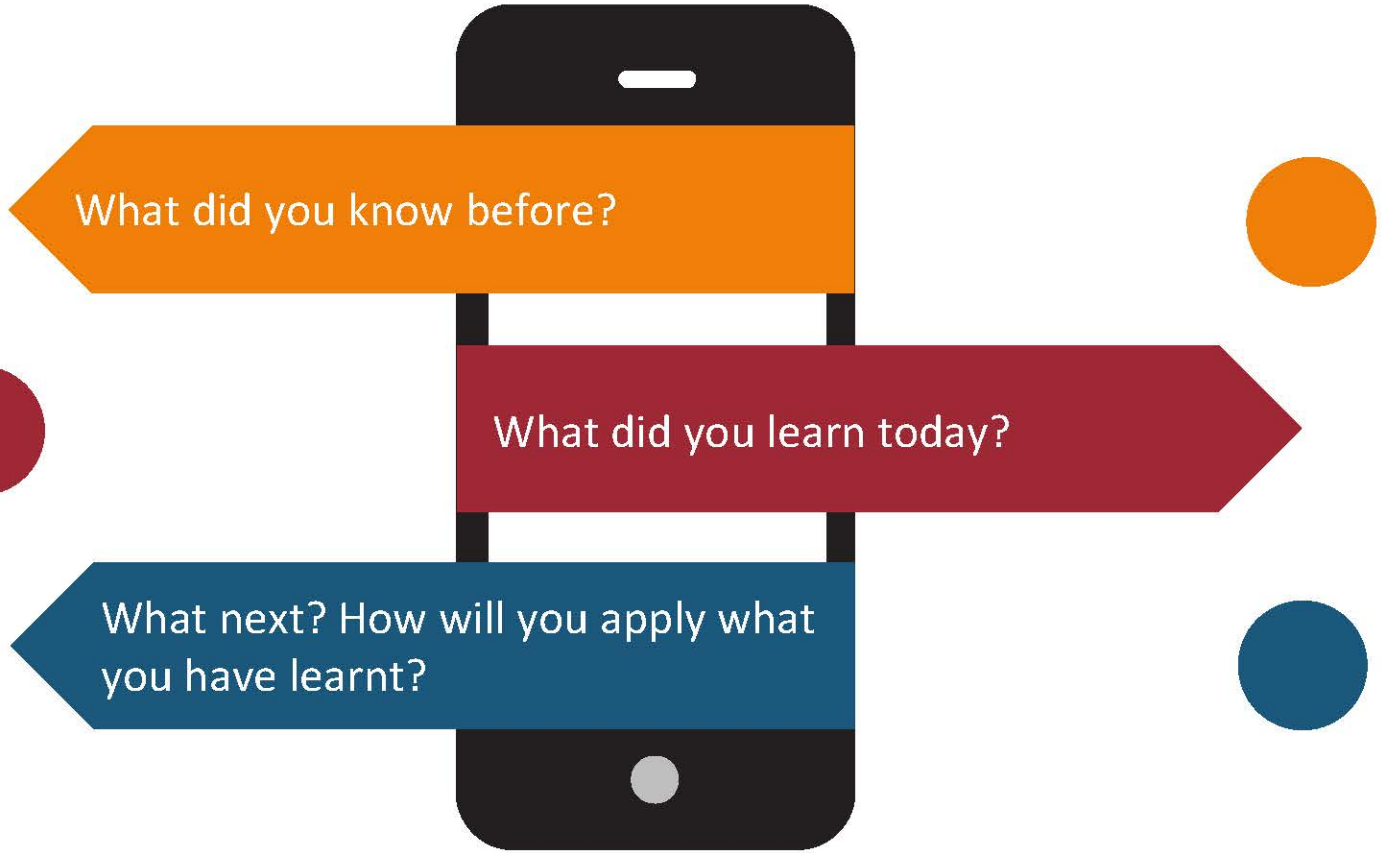
Review

INDEED: "Innovative tools for diets oriented to education and health improvement in dysphagia condition"

Project N: 2020-1-ES01-KA204-083288

Co-funded by the Erasmus+ Programme of the European Union

Reflect on the session



INDEED: "Innovative tools for diets oriented to education and health improvement in dysphagia condition"
Project N: 2020-1-ES01-KA204-083288

Co-funded by the Erasmus+ Programme of the European Union

Feedback

How many stars would you give this workshop (1 to 5)?

What reasonable change would you recommend?

What did you like the MOST?

What did you like the LEAST?

INDEED: "Innovative tools for diets oriented to education and health improvement in dysphagia condition"
Project N: 2020-1-ES01-KA204-083288

Co-funded by the Erasmus+ Programme of the European Union

Indeed partners

https://indeed-project.org/

INDEED: "Innovative tools for diets oriented to education and health improvement in dysphagia condition"
Project N: 2020-1-ES01-KA204-083288

Co-funded by the Erasmus+ Programme of the European Union