



PROPOSED POTOCOL FOR THE GSTP (GYMSEN SENSORY TRAINING PROGRAM): SENSORY GYMNASTICS FOR THE ELDERLY GYMSEN PROJECT

Recommended to: PEOPLE WITH ALZHEIMER'S DISEASE or: OLDER ADULTS WITH MILD TO MODERATE DEMENTIA

24 sessions: twice a week for 12 weeks: 1 to 1.5 hours

SESSION 1 & 2: INTRODUCTION TO THE GYMSEN PROJECT AND INITIAL TESTS

ACTIVITY 1. Explanation of the program - caregivers:

- Objective
- Introduction to the sensory tasks
- Explanation of the chronogram and the main activities they have to perform

ACTIVITY 2. Evaluation questionnaires

- MNA[®] questionnaire
- TNA questionnaire
- a Diary in Excel format
- the Blanford Scale
- OCT: Odour intensity and identity capability questionnaire
4 different odors were chosen:
 1. Tomato
 2. Orange
 3. Cheese
 4. Chocolate

Tomato and cheese belong to the SALTY category, while orange and chocolate to the SWEET one. Tomato and orange are considered "basic/raw" food while cheese and chocolate "elaborated products".

Tomato has been chosen for its strong link to the agricultural tradition of the area. Orange has been chosen for its versatility and availability in different forms and products (juice, marmalade etc). Cheese, in particular, feta cheese has also been chosen for its strong link to the agricultural tradition of the area. Chocolate has also been chosen because elders are usually willing to eat it.

The samples were at room temperature when the test was carried out (The samples' temperature has a great influence on the odour strength and the facility to recognize the smells). The samples were always be presented in the order from 1 (first) to 12 (last).

- The following tools were specifically used to validate the cognitive function in this particular population:
 - Mini Mental State Examination (MMSE): The MMSE is the most commonly used instrument for screening cognitive function.
 - Clock Drawing Test (CDT): The CDT is used to quickly assess visuospatial and praxis abilities, and may determine the presence of both attention and executive dysfunction.



SESSION 3: DISCUSSION AND IDENTIFICATION - RECOGNITION OF TOMATO AND CHOCOLATE (60 min)

ACTIVITY 1. Cognitive enhancement and reminiscence activities (40min)

- *Participants have to **work in groups** (2 subgroups of 8 and 7 people). Each participant expresses his/her opinion.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

As most of these products belong to the local tradition or are somehow linked to elders' past experience. They were particularly indicated to easily arise personal memories (i.e. for people who lived food shortage during the post-war period, chocolate has a special meaning).

Discussion has been made about seasons (i.e. summer for tomatoes and Easter for chocolate) and local tradition.

We talked about the areas where there is rich tomato cultivation. What is the best month to transplant tomatoes? And to harvest them? Different kind of tomatoes. Which are the nutritional values of tomatoes? How they prepare tomato sauce? In which food do we use tomatoes?

We talked about the history of chocolate. When do they taste chocolate for the first time in their life? Different kind of chocolate. Which food contains chocolate? What are the advantages and disadvantages of eating chocolate? How they prepare hot chocolate?

Finally the group was asked about what memories arouse by smelling tomato and chocolate.

ACTIVITY 2. Recognition of tomato and chocolate by olfaction (20min)

- *Participants have to **work individually**. Each participant receives a set of samples.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

TOMATO

Bottle with tomato odour:

Take the bottle you have in front of you and **smell** it for a while.

- How strong do you consider the odour of this sample is?
- Could you perceive/recognize any odour? Which is the main odour you can perceive?
- Are there different odours you are able to perceive?



- Which one of the following odours do you think is the main one?
Tomato or chocolate

CHOCOLATE

Bottle with chocolate odour:

Now, take this bottle, and **smell** it for a while.

- How strong do you consider the odour of this sample is?
- Could you perceive/recognize any odour? Which is the main odour you can perceive?
- Are there different odours you are able to perceive?
- Which one of the following odours do you think is the main one?
Tomato or chocolate

* The majority of the group had difficulty to detect the aroma of tomato.



SESSION 4: DISCUSSION AND IDENTIFICATION - RECOGNITION OF ORANGE AND CHEESE (60 min)

ACTIVITY 1. Cognitive enhancement and reminiscence activities (40min)

- *Participants have to **work in groups** (2 subgroups of 8 and 7 people). Each participant expresses his/her opinion.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*



Discussion has been made about seasons (i.e. autumn and winter for oranges) and local tradition.

We talked about the areas where there is rich orange cultivation. Which are the best months to harvest oranges? Different kind of oranges. Which are the other citrus trees? Why oranges are good for human health? Which are the benefits of oranges in our health? What can we do with an orange? Orange juice, jam, fresh fruit, cake. How they prepare orange juice? In which food can we use oranges?

We talked about the history of cheese and about the areas where the production of cheese is bigger. Different kind of cheese. The procedure of making cheese. How do we make cheese from milk? In which food can we use cheese? What are the advantages and disadvantages of eating cheese? Why is good for the health?

Which are the best kind of cheese for our health? How they make cheese pie?

Finally the group was asked about what memories arouse by smelling orange and cheese.

ACTIVITY 2. Recognition of orange and cheese by olfaction (20min)

- *Participants have to **work individually**. Each participant receives a set of samples.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

ORANGE

Bottle with orange odour:

Take the bottle you have in front of you and **smell** it for a while.

- How strong do you consider the odour of this sample is?
- Could you perceive/recognize any odour? Which is the main odour you can perceive?
- Are there different odours you are able to perceive?
- Which one of the following odours do you think is the main one?
Orange or cheese

CHEESE

Bottle with cheese odour:

Now, take this bottle, and **smell** it for a while.

- How strong do you consider the odour of this sample is?



- Could you perceive/recognize any odour? Which is the main odour you can perceive?
- Are there different odours you are able to perceive?
- Which one of the following odours do you think is the main one?
Orange or cheese

* The majority of the group found the aroma of cheese strong enough





SESSION 5: IDENTIFICATION - RECOGNITION OF TOMATO AND CHOCOLATE AND WORKSHOPS (60 min)

ACTIVITY 1. Recognition of tomato and chocolate by olfaction (20min)

- *Participants have to **work individually**. Each participant receives a set of samples.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

TOMATO

Bottle with tomato odour:

Take the bottle you have in front of you and **smell** it for a while.

- How strong do you consider the odour of this sample is?
- Could you perceive/recognize any odour? Which is the main odour you can perceive?
- Are there different odours you are able to perceive?
- Which one of the following odours do you think is the main one?
Tomato or chocolate

CHOCOLATE

Bottle with chocolate odour:

Now, take this bottle, and **smell** it for a while.

- How strong do you consider the odour of this sample is?
- Could you perceive/recognize any odour? Which is the main odour you can perceive?
- Are there different odours you are able to perceive?
- Which one of the following odours do you think is the main one?
Tomato or chocolate



ACTIVITY 2. Occupational therapy approach (40min)

- Participants have to **work in groups** (2 subgroups of 8 and 7 people). Each participant makes his own drawing.
- Recommendations: involve two or more people for assistance during the session, if possible.

Participants were helped to find and cut some pictures of tomatoes, chocolate and their products on magazines to prepare a poster showing what they told during the previous sessions. They also paint their own drawings and then cut them in order to create a collage.





SESSION 6: IDENTIFICATION - RECOGNITION OF ORANGE AND CHEESE AND WORKSHOPS (60 min)

ACTIVITY 1. Recognition of orange and cheese by olfaction (20min)

- *Participants have to **work individually**. Each participant receives a set of samples.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

ORANGE

Bottle with orange odour:

Take the bottle you have in front of you and **smell** it for a while.

- How strong do you consider the odour of this sample is?
- Could you perceive/recognize any odour? Which is the main odour you can perceive?
- Are there different odours you are able to perceive?
- Which one of the following odours do you think is the main one?
Orange or cheese

CHEESE

Bottle with cheese odour:

Now, take this bottle, and **smell** it for a while.

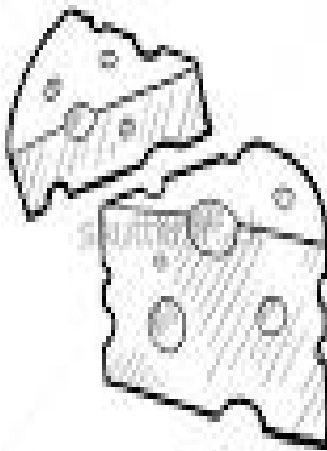
- How strong do you consider the odour of this sample is?
- Could you perceive/recognize any odour? Which is the main odour you can perceive?
- Are there different odours you are able to perceive?
- Which one of the following odours do you think is the main one?
Orange or cheese



ACTIVITY 2. Occupational therapy approach (40min)

- Participants have to **work in groups** (2 subgroups of 8 and 7 people). Each participant makes his own drawing.
- Recommendations: involve two or more people for assistance during the session, if possible.

Participants were helped to find and cut some pictures of oranges, cheese and their products on magazines to prepare a poster showing what they told during the previous sessions. They also paint their own drawings and then cut them in order to create a collage.





SESSION 7: IDENTIFICATION - RECOGNITION OF ORANGE AND CHEESE AND SNOEZELEN (60 min)

ACTIVITY 1. Recognition of orange and cheese by olfaction (20min)

- *Participants have to **work individually**. Each participant receives a set of samples.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

ORANGE

Bottle with orange odour:

Take the bottle you have in front of you and **smell** it for a while.

- How strong do you consider the odour of this sample is?
- Could you perceive/recognize any odour? Which is the main odour you can perceive?
- Are there different odours you are able to perceive?
- Which one of the following odours do you think is the main one?
Orange or cheese

CHEESE

Bottle with cheese odour:

Now, take this bottle, and **smell** it for a while.

- How strong do you consider the odour of this sample is?
- Could you perceive/recognize any odour? Which is the main odour you can perceive?
- Are there different odours you are able to perceive?
- Which one of the following odours do you think is the main one?
Orange or cheese



ACTIVITY 2. Sensory intervention (40min)

- *Participants have to **work in groups** (2 subgroups of 8 and 7 people). Each participant takes his time in order to examine and recognize.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

Participants tried to recognize orange and cheese among other foods/objects hidden in a box (orange, fork, banana, cheese and nut). We hid different objects and food in a box, so that the seniors individually had to touch until they find the orange or the cheese. We also hid a grater, so that the seniors had to touch and tell what is the object they can use with cheese and why is it used for.



SESSION 8: IDENTIFICATION - RECOGNITION OF TOMATO AND CHOCOLATE AND SNOEZELEN (60 min)

ACTIVITY 1. Recognition of tomato and chocolate by olfaction (20min)

- *Participants have to **work individually**. Each participant receives a set of samples.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

TOMATO

Bottle with tomato odour:

Take the bottle you have in front of you and **smell** it for a while.

- How strong do you consider the odour of this sample is?
- Could you perceive/recognize any odour? Which is the main odour you can perceive?
- Are there different odours you are able to perceive?
- Which one of the following odours do you think is the main one?
Tomato or chocolate

CHOCOLATE

Bottle with chocolate odour:

Now, take this bottle, and **smell** it for a while.

- How strong do you consider the odour of this sample is?
- Could you perceive/recognize any odour? Which is the main odour you can perceive?
- Are there different odours you are able to perceive?
- Which one of the following odours do you think is the main one?
Tomato or chocolate



ACTIVITY 2. Sensory intervention (40min)

- *Participants have to **work in groups** (2 subgroups of 8 and 7 people). Each participant takes his time in order to examine and recognize.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

Participants tried to recognize tomato and chocolate among other foods/objects hidden in a box (tomato, fork, banana, chocolate and nut). We hid different objects and food in a box, so that the seniors individually had to touch until they find the tomato and chocolate. We also hid a plastic knife, so that the seniors had to touch and tell what is the object they can use with tomato and why is it used for.



SESSION 9: DISCUSSION, IDENTIFICATION - RECOGNITION OF TOMATO AND CHOCOLATE & TASTE (60 min)

ACTIVITY 1. Cognitive enhancement and reminiscence activities (30min)

- *Participants have to **work in groups** (2 subgroups of 8 and 7 people). Each participant expresses his/her opinion.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

Discussion has been made about local food tradition, using the collage we made in previous sessions.

We talked about the areas where there is rich tomato cultivation. What is the best month to transplant tomatoes? And to harvest them? Different kind of tomatoes. Which are the nutritional values of tomatoes? How they prepare tomato sauce? In which food do we use tomatoes?

We talked about the history of chocolate. When do they taste chocolate for the first time in their life? Different kind of chocolate. Which food contains chocolate? What are the advantages and disadvantages of eating chocolate? How they prepare hot chocolate?

Finally the group was asked about what memories arouse by smelling tomato and chocolate.



ACTIVITY 2. Recognition of tomato and chocolate by olfaction (15min)

- *Participants have to **work individually**. Each participant receives a set of samples.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

TOMATO

Bottle with tomato odour:

Take the bottle you have in front of you and **smell** it for a while.

- How strong do you consider the odour of this sample is?
- Could you perceive/recognize any odour? Which is the main odour you can perceive?
- Are there different odours you are able to perceive?
- Which one of the following odours do you think is the main one?
Tomato or chocolate

CHOCOLATE

Bottle with chocolate odour:

Now, take this bottle, and **smell** it for a while.

- How strong do you consider the odour of this sample is?
- Could you perceive/recognize any odour? Which is the main odour you can perceive?
- Are there different odours you are able to perceive?
- Which one of the following odours do you think is the main one?
Tomato or chocolate



ACTIVITY 3. Recognition of tomato and chocolate by tasting (15min)

- *Participants have to **work individually**. Each participant receives some kinds of comestibles.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

TOMATO

Glass with tomato juice:

Take the glass you have in front of you and **taste** some of its content slowly.

- How strong do you consider the flavour of this juice is?
- Could you perceive/recognize any flavour? Which is the main flavour you can perceive?
- Are there different flavours you are able to perceive?
- Which one of the following flavours do you think is the main one?
Tomato or chocolate
- Do you think is easier to know which the main odour is when you taste the product?

CHOCOLATE

Piece of chocolate:

Now, take this piece, and **taste** it.

- How strong do you consider this flavour?
- Could you perceive/recognize any flavour? Which is the main flavour you can perceive?
- Are there different flavours you are able to perceive?
- Which one of the following flavours do you think is the main one?
Tomato or chocolate
- Do you think is easier to know which the main odour is when you taste the product?

* They all really liked the taste of chocolate.



SESSION 10: DISCUSSION, IDENTIFICATION - RECOGNITION OF ORANGE AND CHEESE & TASTE (60 min)

ACTIVITY 1. Cognitive enhancement and reminiscence activities (30min)

- *Participants have to **work in groups** (2 subgroups of 8 and 7 people). Each participant expresses his/her opinion.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

Discussion has been made about local food tradition, using the collage we made in previous sessions.

We talked about the areas where there is rich orange cultivation. Which are the best months to harvest oranges? Different kind of oranges. Which are the other citrus trees? Why oranges are good for human health? Which are the benefits of oranges in our health? What can we do with an orange? Orange juice, jam, fresh fruit, cake. How they prepare orange juice? In which food can we use oranges?

We talked about the history of cheese and about the areas where the production of cheese is bigger. Different kind of cheese. The procedure of making cheese. How do we make cheese from milk? In which food can we use cheese? What are the advantages and disadvantages of eating cheese? Why is good for the health?

Which are the best kind of cheese for our health? How they make cheese pie?

Finally the group was asked about what memories arouse by smelling orange and cheese.



ACTIVITY 2. Recognition of orange and cheese by olfaction (15min)

- *Participants have to **work individually**. Each participant receives a set of samples.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

ORANGE

Bottle with orange odour:

Take the bottle you have in front of you and **smell** it for a while.

- How strong do you consider the odour of this sample is?
- Could you perceive/recognize any odour? Which is the main odour you can perceive?
- Are there different odours you are able to perceive?
- Which one of the following odours do you think is the main one?
Orange or cheese

CHEESE

Bottle with cheese odour:

Now, take this bottle, and **smell** it for a while.

- How strong do you consider the odour of this sample is?
- Could you perceive/recognize any odour? Which is the main odour you can perceive?
- Are there different odours you are able to perceive?
- Which one of the following odours do you think is the main one?
Orange or cheese



ACTIVITY 3. Recognition of orange and cheese by tasting (15min)

- *Participants have to **work individually**. Each participant receives some kinds of comestibles.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

ORANGE

Slice of orange:

Take the slice you have in front of you and **taste** it, by chewing slowly.

- How strong do you consider the flavour of this slice is?
- Could you perceive/recognize any flavour? Which is the main flavour you can perceive?
- Are there different flavours you are able to perceive?
- Which one of the following flavours do you think is the main one? Orange or cheese
- Do you think is easier to know which the main odour is when you taste the product?

CHEESE

Piece of feta cheese:

Now, take this piece, and **taste** it.

- How strong do you consider this flavour?
- Could you perceive/recognize any flavour? Which is the main flavour you can perceive?
- Are there different flavours you are able to perceive?
- Which one of the following flavours do you think is the main one? Orange or cheese
- Do you think is easier to know which the main odour is when you taste the product?

* One person denied to taste cheese



SESSION 11: IDENTIFICATION - RECOGNITION OF TOMATO AND CHOCOLATE, WORKSHOPS & TASTE (90 min)

ACTIVITY 1. Recognition of tomato and chocolate by olfaction (20min)

- *Participants have to **work individually**. Each participant receives a set of samples.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

TOMATO

Bottle with tomato odour:

Take the bottle you have in front of you and **smell** it for a while.

- How strong do you consider the odour of this sample is?
- Could you perceive/recognize any odour? Which is the main odour you can perceive?
- Are there different odours you are able to perceive?
- Which one of the following odours do you think is the main one?
Tomato or chocolate

CHOCOLATE

Bottle with chocolate odour:

Now, take this bottle, and **smell** it for a while.

- How strong do you consider the odour of this sample is?
- Could you perceive/recognize any odour? Which is the main odour you can perceive?
- Are there different odours you are able to perceive?
- Which one of the following odours do you think is the main one?
Tomato or chocolate



ACTIVITY 2. Occupational therapy approach (40min)

- *Participants have to **work in groups** (2 subgroups of 8 and 7 people). Each participant has his own space.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

Participants were helped to cut tomatoes into small pieces using plastic knives. Furthermore, they put some chocolates in a box to take it home.

ACTIVITY 3. Recognition of tomato and chocolate by tasting (30min)

- *Participants have to **work individually**. Each participant receives some kinds of comestibles.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

TOMATO

Little pieces of tomatoes:

Take the piece you have in front of you and **taste** it, by chewing slowly.

- How strong do you consider the flavour of this piece is?
- Could you perceive/recognize any flavour? Which is the main flavour you can perceive?
- Are there different flavours you are able to perceive?
- Which one of the following flavours do you think is the main one?
Tomato or chocolate
- Do you think is easier to know which the main odour is when you taste the product?

CHOCOLATE

Cup of drinking chocolate:

Now, take this cup, and **taste** some of its content slowly.

- How strong do you consider this flavour?
- Could you perceive/recognize any flavour? Which is the main flavour you can perceive?
- Are there different flavours you are able to perceive?
- Which one of the following flavours do you think is the main one?
Tomato or chocolate
- Do you think is easier to know which the main odour is when you taste the product?



SESSION 12: IDENTIFICATION - RECOGNITION OF ORANGE AND CHEESE, WORKSHOPS & TASTE (90 min)

ACTIVITY 1. Recognition of orange and cheese by olfaction (20min)

- *Participants have to **work individually**. Each participant receives a set of samples.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

ORANGE

Bottle with orange odour:

Take the bottle you have in front of you and **smell** it for a while.

- How strong do you consider the odour of this sample is?
- Could you perceive/recognize any odour? Which is the main odour you can perceive?
- Are there different odours you are able to perceive?
- Which one of the following odours do you think is the main one?
Orange or cheese

CHEESE

Bottle with cheese odour:

Now, take this bottle, and **smell** it for a while.

- How strong do you consider the odour of this sample is?
- Could you perceive/recognize any odour? Which is the main odour you can perceive?
- Are there different odours you are able to perceive?
- Which one of the following odours do you think is the main one?
Orange or cheese



ACTIVITY 2. Occupational therapy approach (40min)

- *Participants have to **work in groups** (2 subgroups of 8 and 7 people). Each participant has his own space.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

Participants were helped to squeeze the oranges in order to prepare an orange juice. Furthermore, they grate some yellow cheese.

ACTIVITY 3. Recognition of orange and cheese by tasting (30min)

- *Participants have to **work individually**. Each participant receives some kinds of comestibles.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

ORANGE

Glass with orange juice:

Take the glass you have in front of you and **taste** some of its content slowly.

- How strong do you consider the flavour of this juice is?
- Could you perceive/recognize any flavour? Which is the main flavour you can perceive?
- Are there different flavours you are able to perceive?
- Which one of the following flavours do you think is the main one?
Orange or cheese
- Do you think is easier to know which the main odour is when you taste the product?

CHEESE

Slice of yellow cheese:

Now, take this slice, and **taste** it.

- How strong do you consider this flavour?
- Could you perceive/recognize any flavour? Which is the main flavour you can perceive?
- Are there different flavours you are able to perceive?
- Which one of the following flavours do you think is the main one?
Orange or cheese
- Do you think is easier to know which the main odour is when you taste the product?

* They all enjoyed the orange juice.



SESSION 13: IDENTIFICATION - RECOGNITION OF TOMATO AND CHOCOLATE, MANIPULATION & TASTE (90 min)

ACTIVITY 1. Recognition of tomato and chocolate by olfaction (20min)

- *Participants have to **work individually**. Each participant receives a set of samples.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

TOMATO

Bottle with tomato odour:

Take the bottle you have in front of you and **smell** it for a while.

- How strong do you consider the odour of this sample is?
- Could you perceive/recognize any odour? Which is the main odour you can perceive?
- Are there different odours you are able to perceive?
- Which one of the following odours do you think is the main one?
Tomato or chocolate

CHOCOLATE

Bottle with chocolate odour:

Now, take this bottle, and **smell** it for a while.

- How strong do you consider the odour of this sample is?
- Could you perceive/recognize any odour? Which is the main odour you can perceive?
- Are there different odours you are able to perceive?
- Which one of the following odours do you think is the main one?
Tomato or chocolate



ACTIVITY 2. Occupational therapy approach (40min)

- *Participants have to **work in groups** (2 subgroups of 8 and 7 people). Each participant has his own space.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

Participants were helped to cut tomatoes into small pieces using plastic knives and they also added some olive oil and salt/sugar in tomato soup. Moreover, they cut different kind of chocolate into smaller pieces, in order to compare and talk about the differences (smell, taste, ingredients).

ACTIVITY 3. Recognition of tomato and chocolate by tasting (30min)

- *Participants have to **work individually**. Each participant receives some kinds of comestibles.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

TOMATO

Participants tasted different kind of tomatoes.

- How strong do you consider the flavour?
- Are there different flavours you are able to perceive?
- Are all the flavours pleasant or not?

CHOCOLATE

Participants tasted different kind of chocolate (milk chocolate, dark chocolate, white chocolate)

- How strong do you consider the flavour?
- Are there different flavours you are able to perceive?
- Are all the flavours pleasant or not?
- Ask about their favourite chocolate (white, dark, milk).



SESSION 14: IDENTIFICATION - RECOGNITION OF ORANGE AND CHEESE, MANIPULATION & TASTE (90 min)

ACTIVITY 1. Recognition of orange and cheese by olfaction (20min)

- *Participants have to **work individually**. Each participant receives a set of samples.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

ORANGE

Bottle with orange odour:

Take the bottle you have in front of you and **smell** it for a while.

- How strong do you consider the odour of this sample is?
- Could you perceive/recognize any odour? Which is the main odour you can perceive?
- Are there different odours you are able to perceive?
- Which one of the following odours do you think is the main one?
Orange or cheese

CHEESE

Bottle with cheese odour:

Now, take this bottle, and **smell** it for a while.

- How strong do you consider the odour of this sample is?
- Could you perceive/recognize any odour? Which is the main odour you can perceive?
- Are there different odours you are able to perceive?
- Which one of the following odours do you think is the main one?
Orange or cheese



ACTIVITY 2. Occupational therapy approach (40min)

- *Participants have to **work in groups** (2 subgroups of 8 and 7 people). Each participant has his own space.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

Participants were helped to peel oranges in order to dry the peel. Moreover, they cut feta cheese into smaller pieces.

ACTIVITY 3. Recognition of orange and cheese by tasting (30min)

- *Participants have to **work individually**. Each participant receives some kinds of comestibles.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

ORANGE

Participants tasted some slices of orange and discussed about the intensity and the quality (positive or negative) of the flavour.

CHEESE

Participants tasted some pieces of feta cheese and discussed about the intensity and the quality (positive or negative) of the flavour.



SESSION 15: IDENTIFICATION - RECOGNITION OF ORANGE, MANIPULATION AND TASTE (60 min)

ACTIVITY 1. Recognition of orange by olfaction (10min)

- *Participants have to **work individually**. Each participant receives a set of samples.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

ORANGE

Bottle with orange odour:

Take the bottle you have in front of you and **smell** it for a while.

- How strong do you consider the odour of this sample is?
- Could you perceive/recognize any odour? Which is the main odour you can perceive?
- Are there different odours you are able to perceive?
- Which one of the following odours do you think is the main one?
Orange, cheese, tomato or chocolate



ACTIVITY 2. Occupational therapy approach (20min)

- *Participants have to **work in groups**. Each participant has his own tools.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

Participants were helped to prepare and spread on bread different orange jam in order to compare and talk about the differences (smell, taste, ingredients).

ACTIVITY 3. Recognition of orange by tasting (30min)

- *Participants have to **work individually**. Each participant receives some kinds of comestibles.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

ORANGE

Participants tasted different orange jam.

- How strong do you consider the flavour?
- Are there different flavours you are able to perceive?
- Are all the flavours pleasant or not?
- Which do you prefer?



SESSION 16: IDENTIFICATION - RECOGNITION OF CHEESE, MANIPULATION AND TASTE (60 min)

ACTIVITY 1. Recognition of cheese by olfaction (10min)

- *Participants have to **work individually**. Each participant receives a set of samples.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

CHEESE

Bottle with cheese odour:

Now, take this bottle, and **smell** it for a while.

- How strong do you consider the odour of this sample is?
- Could you perceive/recognize any odour? Which is the main odour you can perceive?
- Are there different odours you are able to perceive?
- Which one of the following odours do you think is the main one?
Orange, cheese, tomato or chocolate



ACTIVITY 2. Occupational therapy approach (20min)

- *Participants have to **work in groups**. Each participant has his own tools.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

Participants were helped to prepare - cut different kind of cheese into smaller pieces, in order to compare and talk about the differences (smell, taste, ingredients).

ACTIVITY 3. Recognition of cheese by tasting (30min)

- *Participants have to **work individually**. Each participant receives some kinds of comestibles.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

CHEESE

Participants tasted different kind of cheese (feta, cheddar, ladotyri).

- How strong do you consider the flavour?
- Are there different flavours you are able to perceive?
- Are all the flavours pleasant or not?
- Ask about their favourite cheese.

* One person disliked the taste of cheese



SESSION 17: IDENTIFICATION - RECOGNITION OF TOMATO, MANIPULATION AND TASTE (60 min)

ACTIVITY 1. Recognition of tomato by olfaction (10min)

- *Participants have to **work individually**. Each participant receives a set of samples.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

TOMATO

Bottle with tomato odour:

Take the bottle you have in front of you and **smell** it for a while.

- How strong do you consider the odour of this sample is?
- Could you perceive/recognize any odour? Which is the main odour you can perceive?
- Are there different odours you are able to perceive?
- Which one of the following odours do you think is the main one?
Orange, cheese, tomato or chocolate

ACTIVITY 2. Occupational therapy approach (40min)

- *Participants have to **work in groups**. Each participant has his own tools.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

Participants were helped to transplant small tomato plants.

ACTIVITY 3. Recognition of tomato by tasting (10min)

- *Participants have to **work individually**. Each participant receives some kinds of comestibles.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

TOMATO

Participants tasted some pieces of tomato and discussed about the intensity and the quality (positive or negative) of the flavour.



SESSION 18: IDENTIFICATION - RECOGNITION OF CHOCOLATE, MANIPULATION AND TASTE (90 min)

ACTIVITY 1. Recognition of chocolate by olfaction (10min)

- *Participants have to **work individually**. Each participant receives a set of samples.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

CHOCOLATE

Bottle with chocolate odour:

Now, take this bottle, and **smell** it for a while.

- How strong do you consider the odour of this sample is?
- Could you perceive/recognize any odour? Which is the main odour you can perceive?
- Are there different odours you are able to perceive?
- Which one of the following odours do you think is the main one? Orange, cheese, tomato or chocolate

ACTIVITY 2. Occupational therapy approach (60min)

- *Participants have to **work in groups**. Each participant has his own tools.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

Participants were helped to make fresh cake.

ACTIVITY 3. Recognition of chocolate by tasting (20min)

- *Participants have to **work individually**. Each participant receives some kinds of comestibles.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

CHOCOLATE

Participants tasted some pieces of chocolate cake and discussed about the intensity and the quality (positive or negative) of the flavour.



SESSION 19: DISCUSSION AND IDENTIFICATION - RECOGNITION OF TOMATO, CHOCOLATE, ORANGE AND CHEESE (60 min)

ACTIVITY 1. Cognitive enhancement (40min)

- *Participants have to **work in groups** (2 subgroups of 8 and 7 people). Each participant expresses his/her opinion.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

Discussion has been made about local food tradition and participant's food choices and habits, in order to assess any changes and the impact of the activities on senior's life.

We talked about the areas where there is rich tomato cultivation. What is the best month to transplant tomatoes? And to harvest them? Different kind of tomatoes. Which are the nutritional values of tomatoes? How they prepare tomato sauce? In which food do we use tomatoes?

We talked about the history of chocolate. When do they taste chocolate for the first time in their life? Different kind of chocolate. Which food contains chocolate? What are the advantages and disadvantages of eating chocolate? How they prepare hot chocolate?

We talked about the areas where there is rich orange cultivation. Which are the best months to harvest oranges? Different kind of oranges. Which are the other citrus trees? Why oranges are good for human health? Which are the benefits of oranges in our health? What can we do with an orange? Orange juice, jam, fresh fruit, cake. How they prepare orange juice? In which food can we use oranges?

We talked about the history of cheese and about the areas where the production of cheese is bigger. Different kind of cheese. The procedure of making cheese. How do we make cheese from milk? In which food can we use cheese? What are the advantages and disadvantages of eating cheese? Why is good for the health?

Which are the best kind of cheese for our health? How they make cheese pie?

Finally, the group was asked how often they eat tomatoes and in which foods, if they eat a lot of chocolate, if they eat oranges or drink fresh orange juice daily and how often they eat cheese and what kind.

ACTIVITY 2. Recognition of tomato, chocolate, orange and cheese by olfaction (20min)

- *Participants have to **work individually**. Each participant receives a set of samples.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*



TOMATO

Bottle with tomato odour:

Take the bottle you have in front of you and **smell** it for a while.

- How strong do you consider the odour of this sample is?
- Could you perceive/recognize any odour? Which is the main odour you can perceive?
- Are there different odours you are able to perceive?
- Which one of the following odours do you think is the main one?
Tomato, chocolate, orange or cheese

CHOCOLATE

Bottle with chocolate odour:

Now, take this bottle, and **smell** it for a while.

- How strong do you consider the odour of this sample is?
- Could you perceive/recognize any odour? Which is the main odour you can perceive?
- Are there different odours you are able to perceive?
- Which one of the following odours do you think is the main one?
Tomato, chocolate, orange or cheese

ORANGE

Bottle with orange odour:

Take the bottle you have in front of you and **smell** it for a while.

- How strong do you consider the odour of this sample is?
- Could you perceive/recognize any odour? Which is the main odour you can perceive?
- Are there different odours you are able to perceive?
- Which one of the following odours do you think is the main one?
Tomato, chocolate, orange or cheese

CHEESE

Bottle with cheese odour:

Now, take this bottle, and **smell** it for a while.

- How strong do you consider the odour of this sample is?
- Could you perceive/recognize any odour? Which is the main odour you can perceive?
- Are there different odours you are able to perceive?
- Which one of the following odours do you think is the main one?
Tomato, chocolate, orange or cheese

* The majority of the group asked to drink orange juice



SESSION 20: IDENTIFICATION - RECOGNITION OF TOMATO, CHOCOLATE, ORANGE AND CHEESE, DISCUSSION & TASTE (60 min)

ACTIVITY 1. Recognition of tomato, chocolate, orange and cheese by olfaction (20min)

- *Participants have to **work individually**. Each participant receives a set of samples.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

TOMATO

Bottle with tomato odour:

Take the bottle you have in front of you and **smell** it for a while.

- How strong do you consider the odour of this sample is?
- Could you perceive/recognize any odour? Which is the main odour you can perceive?
- Are there different odours you are able to perceive?
- Which one of the following odours do you think is the main one?
Tomato, chocolate, orange or cheese

CHOCOLATE

Bottle with chocolate odour:

Now, take this bottle, and **smell** it for a while.

- How strong do you consider the odour of this sample is?
- Could you perceive/recognize any odour? Which is the main odour you can perceive?
- Are there different odours you are able to perceive?
- Which one of the following odours do you think is the main one?
Tomato, chocolate, orange or cheese

ORANGE

Bottle with orange odour:

Take the bottle you have in front of you and **smell** it for a while.

- How strong do you consider the odour of this sample is?
- Could you perceive/recognize any odour? Which is the main odour you can perceive?
- Are there different odours you are able to perceive?
- Which one of the following odours do you think is the main one?
Tomato, chocolate, orange or cheese

CHEESE

Bottle with cheese odour:

Now, take this bottle, and **smell** it for a while.

- How strong do you consider the odour of this sample is?



- Could you perceive/recognize any odour? Which is the main odour you can perceive?
- Are there different odours you are able to perceive?
- Which one of the following odours do you think is the main one? Tomato, chocolate, orange or cheese

ACTIVITY 2. A kind of reminiscence therapy (30min)

- *Participants have to **work in groups** (2 subgroups of 8 and 7 people). Each participant expresses his/her opinion.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

We discussed if these smells trigger emotions and memories.

- What memories do these smells evoke to you?
- What memories arouse by smelling tomato, chocolate, orange and cheese?
- How do you feel by smelling all these?
- Do you have happy or nostalgic feelings?

* The majority of the group talked about their childhood and the place they grew up

ACTIVITY 3. Recognition of tomato, chocolate, orange and cheese by tasting (10min)

- *Participants have to **work individually**. Each participant receives some kinds of comestibles.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

TOMATO

Participants tasted tomato juice and discussed about the intensity and the quality (positive or negative) of the flavour.

CHOCOLATE

Participants tasted chocolate and discussed about the intensity and the quality (positive or negative) of the flavour.

ORANGE

Participants tasted some slices of orange and discussed about the intensity and the quality (positive or negative) of the flavour.

CHEESE

Participants tasted some pieces of feta cheese and discussed about the intensity and the quality (positive or negative) of the flavour.



SESSION 21: IDENTIFICATION - RECOGNITION OF TOMATO AND CHOCOLATE, SNOEZELLEN & TASTE (60 min)

ACTIVITY 1. Recognition of tomato and chocolate by olfaction (20min)

- *Participants have to **work individually**. Each participant receives a set of samples.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

TOMATO

Bottle with tomato odour:

Take the bottle you have in front of you and **smell** it for a while.

- How strong do you consider the odour of this sample is?
- Could you perceive/recognize any odour? Which is the main odour you can perceive?
- Are there different odours you are able to perceive?
- Which one of the following odours do you think is the main one?
Tomato or chocolate

CHOCOLATE

Bottle with chocolate odour:

Now, take this bottle, and **smell** it for a while.

- How strong do you consider the odour of this sample is?
- Could you perceive/recognize any odour? Which is the main odour you can perceive?
- Are there different odours you are able to perceive?
- Which one of the following odours do you think is the main one?
Tomato or chocolate



ACTIVITY 2. Sensory intervention (30min)

- *Participants have to **work in groups** (2 subgroups of 8 and 7 people). Each participant takes his time in order to examine and recognize.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

Participants were helped to discriminate tomato from a different set of vegetables (cucumber, carrots and tomatoes). They also tried to discriminate chocolate from a different set of chocolates (dark, white, carrots and milk).

ACTIVITY 3. Recognition of tomato and chocolate by tasting (10min)

- *Participants have to **work individually**. Each participant receives some kinds of comestibles.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

TOMATO

Participants tasted pieces of tomato and discussed about the intensity and the quality (positive or negative) of the flavour.

CHOCOLATE

Participants tasted chocolate and discussed about the intensity and the quality (positive or negative) of the flavour.

* Care givers mentioned that they asked for chocolate at home.



SESSION 22: IDENTIFICATION - RECOGNITION OF ORANGE AND CHEESE, SNOEZELLEN & TASTE (60 min)

ACTIVITY 1. Recognition of orange and cheese by olfaction (20min)

- *Participants have to **work individually**. Each participant receives a set of samples.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

ORANGE

Bottle with orange odour:

Take the bottle you have in front of you and **smell** it for a while.

- How strong do you consider the odour of this sample is?
- Could you perceive/recognize any odour? Which is the main odour you can perceive?
- Are there different odours you are able to perceive?
- Which one of the following odours do you think is the main one?
- Orange or cheese

CHEESE

Bottle with cheese odour:

Now, take this bottle, and **smell** it for a while.

- How strong do you consider the odour of this sample is?
- Could you perceive/recognize any odour? Which is the main odour you can perceive?
- Are there different odours you are able to perceive?
- Which one of the following odours do you think is the main one?
- Orange or cheese



ACTIVITY 2. Sensory intervention (30min)

- *Participants have to **work in groups** (2 subgroups of 8 and 7 people). Each participant takes his time in order to examine and recognize.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

Participants were helped to discriminate orange juice from a different set of juices (grape, mandarin and orange). They also tried to discriminate cheese from a different set of local cheese (feta, cheddar and ladotyri).

ACTIVITY 3. Recognition of orange and cheese by tasting (10min)

- *Participants have to **work individually**. Each participant receives some kinds of comestibles.*
- *Recommendations: involve two or more people for assistance during the session, if possible.*

ORANGE

Participants tasted orange juice and discussed about the intensity and the quality (positive or negative) of the flavour.

CHEESE

Participants tasted some pieces of yellow cheese and discussed about the intensity and the quality (positive or negative) of the flavour.

* Care givers mentioned that they asked for orange juice at home.



SESSION 23 & 24: FINALIZATION OF THE COURSE

ACTIVITY 1. Final tests (Same evaluation questionnaires after the sensory training)

- MNA[®] questionnaire
- TNA questionnaire
- a Diary in Excel format
- the Blanford Scale
- OCT: Odour intensity and identity capability questionnaire
- Mini Mental State Examination (MMSE)
- Clock Drawing Test (CDT)

ACTIVITY 2. Comments and observations

The last day, a feedback/satisfaction questionnaire was passed to participants in order to find weaknesses, improvements and modifications. The collected information together with the information found in the diary will serve in the future to elaborate the definitive version of the GYMSEN course for this population. The information found is summarized in the "Progress Report". In addition, the activities described are examples that should be modified according to the local conditions of potential new users interested in following this training program.



NOTES

Implementation

The courses delivered during the project had common modules among them, with certain parts adapted to the specific needs of each group. The program for people with dementia was implemented in the Dementia Care Day Center in Maroussi, Athens, Greece of the Athens Association of Alzheimer's Disease and Related Disorders. 15 people with dementia participated in the experimental group and 15 in the control group. All participants were assessed with validated questionnaires before and after the implementation of the sensory training program which lasted 3 months. The activities were organized in 24 sessions (twice a week for 12 weeks) and the session duration varied from 1 to 1.5 hours.

Program general structure

Activities were organized to increase in difficulty/variety: from a simple smell and talk/remember task to the addition of tasting and manipulating.

Session mainly focus on two products per time, usually pairing a basic/raw food with an elaborated one. However, sometimes only one or all four products have been used.

List of materials

- ✓ Oranges
- ✓ Tomatoes (different types) and small tomato plants
- ✓ Chocolate (different types)
- ✓ Cheese (feta, cheddar and ladotyri)
- ✓ Other ingredients/products: sugar, bread, lemons, dough for biscuits, cocoa powder, soil
- ✓ Pictures of these products for the memory game
- ✓ Other materials: magazines, scissors, glue, paper, box, grater, chopping boards, squeezers, potato peeler, plastics knives/plates/spoons/glasses, bowls.
- ✓ OCT bottles

General conclusions

Nowadays, several programs have been developed to improve the quality of life of older adults. These include implementing key guidelines regarding healthy nutrition, the benefits of physical activity, memory training in order to improve lifestyle and quality of life. The benefits obtained from these interventions are based on solid scientific evidences.



To implement the GYMSEN program for people with dementia we first did literature research in order to organize the specific activities. The activities were designed based on the principles of non-pharmaceutical interventions that were already implemented in the Dementia Day Center in Maroussi. More specifically, as non-pharmaceutical are defined the interventions that aim at enhancing cognitive functions and at managing neuropsychiatric symptoms (Behavioural and Psychological Symptoms in Dementia/BPSD). Vasse et al report physical activity, interventions for family caregivers, sensory stimulation (multisensory stimulation/snoezelen) and reminiscence therapy as the most often recommended non-pharmacological therapies for people with mild to moderate dementia, according to instructions from England, Germany, Spain, Denmark and Italy. The multi-sensory or snoezelen environment is a "specially designed physical environment" that employs "visual, auditory, tactile and olfactory stimulation" to "affect the relaxation process...by placing fewer demands on intellectual capacities but capitalize on the residual sensorimotor capabilities of people with dementia"¹. Moreover, guidelines from the National Institute for Clinical Excellence are the most comprehensive protocol about the implementation of non-pharmacological interventions in dementia². They, specifically, recommend, for people with mild to moderate dementia, physical activity, reminiscence therapy, sensory stimulation, massage, management of behavior disorders, cognitive behavioral therapy and creative activities. Additionally, multisensory environmental design, cognitive enhancement, music therapy, aromatherapy and therapy with pets are also recommended³.

The GYMSEN program aimed to prevent decline, during the aging process, of sensory capacities such as taste and olfaction, which usually leads to lack of appetite and increases the risk of malnutrition. The program has been adapted for each particular group that participated in the program. As the Alzheimer's disease progresses olfaction and taste are deteriorating. Preliminary data showed significant benefits for people with dementia with the GYMSEN training program compared to control group that did not receive any sensory training. However, the program in combination with other activities has reinforced the knowledge of participants in different fields such as nutrition.

We believe that the GYMSEN training program, is a non-pharmacological intervention that it is pioneer in promoting sensory abilities, particularly taste and olfaction for people with dementia. Additionally, more research is needed in order to improve the existing modules and to introduce new personalised activities to the specific needs of each group.



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NOTES:

