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Development of technology-assisted swallowing program for older adults with dysphagia

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1. Introduction

- Dysphagia is a prevalent age-related disorder that affects swallowing process .
- In Hong Kong, >40% of elderly in the daycare centers had swallowing problems (Pu et al., 2017; Pu, Chan & Yiu, 2015).
- Might due to insufficient swallowing trainings as treatment by a SLP might be too expensive with long waiting time

2. Aim

- Design a sustainable online training program that allows elderly to receive training more conveniently
- To improve and prevent deterioration of swallowing problems

3. Hypothesis

- Digital imaging measurement can act as a reliable assessment tool to determine presence and severity of oromotor impairment,
- Accurately track patients' oromotor movement in providing immediate biofeedback

4. Method

- 40 healthy adults without cognitive deficit and swallowing problems were recruited
- Participants were asked to perform 4 different sets of oral motor movements in 3 levels .
- Videos collected will generate numerous sets of data regarding different face movement parameters
- SPSS is used for data processing

5. Results

Smile	Kissing	Jaw	Cheek
1. Mouth smile R 2. Mouth smile L 3. Mouth lower down R 4. Mouth lower down L 5. Mouth upper up R 6. Mouth upper up L 7. Cheek squint R 8. Cheek squint L	1. Mouth smile R 2. Mouth smile L 3. Nose sneer R 4. Nose sneer L 5. Jaw open 6. Mouth close 7. Mouth funnel 8. Mouth pucker 9. Mouth shrug lower 10. Mouth shrug upper 11. Cheek puff	1. Mouth lower down R 2. Mouth lower down L 3. Mouth stretch L 4. Jaw forward 5. Jaw open 6. Mouth funnel 7. Mouth stretch R	1. Cheek squint L 2. Mouth pucker

(above is a summary table showing dignificant parameters of the 4 movements

- All selected parameters of "smile" showed significant differences across different levels of severity.
- Most parameters of "kissing" and "jaw" also showed significant results across different levels.
- "Cheek" has the least number of parameters (two) that showed significant results.

6. Conclusion

- Digital imaging measurement is feasible in automatically tracking the performance of different oromotor-movement levels
- Study can be carried out in a larger scale
  1. With more sample size
  2. Invite participants with oro-motor dysfunctions

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- Combine interactive games with the online training
  1. E.g. dart throwing, running race
  2. Act as instant biofeedback
- Expected to **increased training motivation**