# Berlin (Bolus) Swallow Test (BST)

Schultheiss C, Nusser-Müller-Busch R, Seidl RO: The bolus swallow test for clinical diagnosis of dysphagia – a prospective randomised study. Eur Arch Otorhinolaryngology DOI 10.1007/s00405-011-1628-5

https://link.springer.com/article/10.1007/s00405-011-1628-5

The screening has been developed for patients with oropharyngeal dysphagia, both for neurological patients (e.g. after stroke) and non-neurological patients (e.g. ENT tumor patients).
Exclusion criterion: Patients with cuffed tracheostomy tubes (TT). The BST can be carried out by supplying thr deflated TT with a speaking valve.

## *Indication*

The Berlin Swallowing Test (BST) can be used for the clinical assessment and follow-up examinations of the oropharyngeal swallowing capacity of a patient.

The BST has four sections: 1. Saliva Swallowing Test (SST), 2. Bolus Swallowing Test (BST) for semi-solid (pureed) consistencies (jelly or applesauce. To standardizise the examination: one and the same consistency is used, also during follow-ups.), 3. The assessment of SST and BST and 3.1 resulting dietary recommandations.

Exclusion criterion: Patients with cuffed/inflated tracheostomy tubes (TT). The BST can be carried out by supplying the deflated TT with a speaking valve.

## *Procedure*

### Preparation

- Provision of utensils (jelly or applesauce, teaspoons, supporting material: cushions, pillows, blankets, towels to provide support and for stabilizing.
- Positioning the patient (sitting upright at the table or upright in bed, supported if necessary)

### 1. Saliva Swallowing Test

Swallowing is observed. The items are listed in ascending order by severity (7 = worst value).
Only **ONE** of the given items will be marked. If more than one match, select the one with the highest value.

0: Spontaneous swallowing can be seen.
1: Vigilance: If spontaneous saliva swallowing occurs, but the swallowing frequency is reduced due to a restricted or fluctuating vigilance, 1 point is awarded.
If there is no spontaneous swallowing of saliva, the technique of mouth stimulation according to F.O.T.T.® (Jakobsen & Elferich 2015, see below) can be used.
2: If swallowing occurs after mouth stimulation, 2 points will be awarded.
If there is no swallowing reaction or this technique is not used, the following items in the SST will be tested:
3: Breathing: 3 points are awarded to patients with respiratory problems, breathing sounds, increased frequency and to patients who inhale after swallowing (risk of penetration/aspiration).
4: cough with swallowing,
5: gargling voice after swallowing (5),
6: cough without swallowing,
7: swallowing not possible (7)

## 2 Bolusschlucktest (BST)

The BST involves testing 1 g (1/3 teaspoon), 2.5 g (1/2 teaspoon) and 5 g (1 teaspoon) of jelly (or apple sauce) in ascending order. Patients are asked to phonate an ‘ah’ (or answer a question) after each swallow.

The examiner observes whether the patient is able to remove any residues (check for coughing with or without a follow-up, clearing swallow).

**- Termination criterias**
**o No spontaneous swallowing responses in the SST**
**o Patient shows two coughs or no swallowing at the same amount**
**o Breathing irritation during or after swallowing (suspicion of aspiration), gurgly voice**

## *) F.O.T.T. Tactile Oral Stimulation

(Jakobsen D: Oral hygiene: an interprofessional concern. In: Nusser-Müller-Busch R (ed): Die Therapie des Facio-Oralen Trakts, Springer 4th edition 2015 (english version in press)

The tactile oral stimulation can be used to assess and treat problems with tone, reaction on touch and movement in the face and oral tract and with swallowing of saliva. This stimulation routine can be applied as a daily routine, preparation for therapeutic eating or oral hygiene.

Objectives:

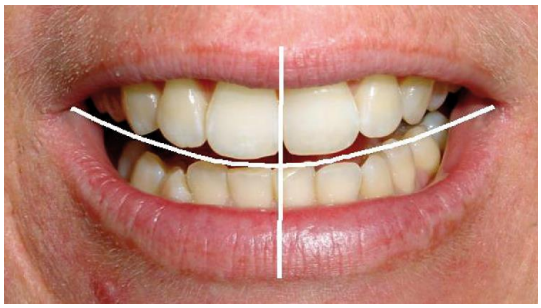
- Tactile preparation before oral hygiene or therapeutic eating, providing structured input to the hands, face and mouth
- Regulation of gingival blood circulation
- Increase of saliva production
- Activation of oral structures by structured input, goals: e.g. motor response from the tongue, or swallowing of saliva
- Increase of arousal in patients with disorders of consciousness

### Procedure

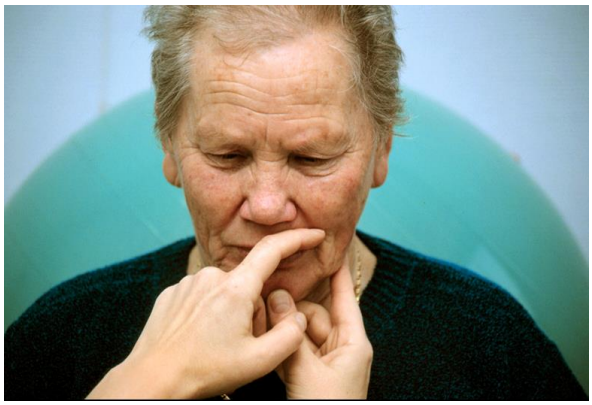
The patient is in an appropriate position for tactile oral stimulation, e.g. sitting or side lying.
Throughout the whole procedure, the therapist offers support to the patient, by moving/ adapting the position if necessary and stabilizing the head and the jaw.

The so-called `tactile hello´ prepares the patient for subsequent contact inside the mouth. The patient's hands are guided to his own face and mouth by the therapist in a structured way an in an appropriate tempo. Then the therapist touches the patient´s hand and face structured and firmly with her hands. Thereby, the therapist carefully evaluates the patient´s reactions to touch. This procedure ensures that the privacy of the person concerned is respected.

The mouth is conceptually divided into 4 sections, quadrants

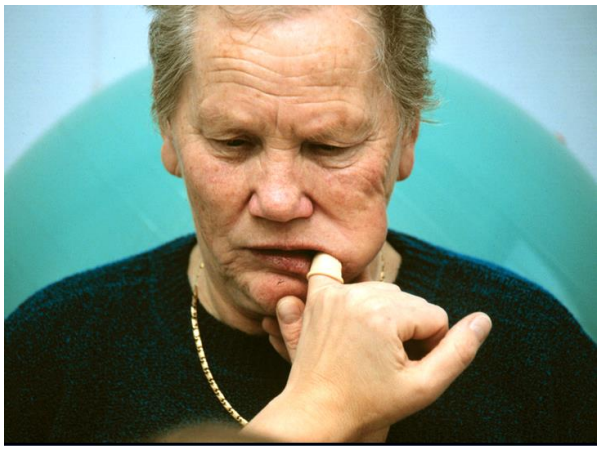


Stimulation begins on the more or the less affected side, depending on the patient´s problems. The therapist touches the mouth from outside (upper lip and lower lip) and observes the response.



Contact is targeted and unambiguous, avoiding wiping movements. Then, the therapist moistens her gloved finger with water and touches the gum under the upper lip. The therapist evaluates, whether the patient is able to tolerate the touch. The therapist's finger then moves forwards and backwards along the upper gum, from the front to the back of each quadrant (usually three times).

The finger then moves along the inside of the cheek, enabling the therapist to feel and influence the tone.



There is a pause after every quadrant, when the therapist removes the finger and helps the patient to close the mouth. A swallowing reaction would normally be expected at this point, if responsiveness and saliva production are intact.
This procedure is repeated on the lower gum on the same side of the mouth, and then on the opposite quadrants (top and bottom). During the whole procedure, the patient´s reactions are carefully analyzed.

If biting reactions can be excluded, the therapist's finger touches the anterior third of the tongue.

The finger is moved from ventral to dorsal in three steps (from the tip to the middle of the tongue). The therapist´s finger is then removed, so that the patient can close his mouth.
When biting might occur, a spatula wrapped with gauze can be used to touch the tongue.

The hard palate is touched once, behind the upper incisors, with the therapist ´s finger or a wrapped spatula. The patient's reaction might be, to move the tongue spontaneously or on request towards the palate. Then, the patient gets the opportunity to close the mouth. Each time the mouth is closed, the therapist observes, whether there are spontaneous tongue movements (e.g. to collect saliva), or spontaneous swallowing. Swallowing is facilitated, if necessary. The patient´s position is monitored during tactile oral stimulation, and modified if necessary.

CAVE: Using the patient's own finger for stimulation might have therapeutic benefits, but care must be taken: biting reactions are not under the patients' control, even with their own fingers!

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