The combination of connective tissue massage, Kabat’s technique, kinesitherapy and home exercise is helpful in facial rehabilitation of Systemic Sclerosis patients.

**BACKGROUND**

In Systemic Sclerosis (SSc), tissue sclerosis, of both hands and face, is very frequent and can lead to important loss in mobility and functionality with a decrease in quality of life (HRQoL). Involvement of face and oral tissues causes aesthetic changes, impairment of the self-image, due to anomic face, loss of cutaneous furrows, peri-oral wrinkling, nose sharpening, telangiectasias, microcheilia, and disability, mainly due to microstomia, in eating, speaking and oral hygiene measures [1]. Despite this, only few rehabilitative approaches on faces of SSc patients were tried. Non-surgical management of microstomia, based on exercises of mouth-stretching and oral augmentation improved mouth opening in SSc patients [4]. Despite this, only few rehabilitative approaches on faces of SSc patients were tried. Non-surgical management of microstomia, based on exercises of mouth-stretching and oral augmentation improved mouth opening in SSc patients [4].

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**METHODS**

40 SSc patients (6 males and 34 females; age and disease duration: 57.28 ± 11.33 and 9.4 ± 4.3 years) were enrolled: 20 patients (Interventional Group) were treated for 9 weeks (twice a week, 1 hour per session) with connective tissue massage (10 minutes), Kabat’s technique (15 minutes), kinesitherapy (15 minutes of active, 20 minutes of relaxing exercises) and home-based mimic exercises (3 times a day) and 20 patients (Control Group) performed home exercises only. In both groups, home exercises were performed after the end of the treatment (T1) for further 9 weeks till the end of follow-up (T2), for a total duration of 18 weeks.

**REHABILITATION TECHNIQUES**

Connective massage is a manual technique used to treat altered connective tissues, that increases local blood flow and releases involved tissue by connective tissue stretching. We treated face, neck and clavicular regions [Fig 1a-b] [5].

Kabat’s method is a neurorehabilitation technique using spinal and diagonal movement patterns and stretch, resistance and other proprioceptive facilitation techniques to reinforce neuromuscular recruitment [6] by which orbicularis oris [Fig 1c], zygomaticus [Fig 1d], levator labii [Fig 1e], nasalis [Fig 1f], buccinator [Fig 2a], frontalis [Fig 2b-c] and corrugator [Fig 2d] muscles were stimulated.

Kinesitherapy consisted in passive, active or assisted exercises for temporomandibular joint (to improve mouth opening and jaw lateralizing) [2-4] (Fig. 2e-f) and relaxing exercises.

- **Home daily exercises** consisted in: 1) a mouth-stretching exercise to enlarge the oral angles (5 minutes, 3 times/day); 2) an oral augmentation exercise executed by placing tongue depressors between the premolars of one arch towards the molars of the contralateral one to open the mouth; (1 or more series 8 minutes each, once a day) (Fig. 3a-c); 3) mimic exercises (once a day), based on a series of grimaces to exercise (oro)facial muscles [2-4].

**ASSESSMENT**

All patients were assessed at baseline (T0), at the end of the treatment (T1) and after 9 weeks of follow-up (T2)

**RESULTS**

Baseline characteristics were similar in patients of Interventional and Control Group (tables 1 & 2). At T1, both groups improved in mouth opening (p<0.05), but the improvement was maintained at T2 only in Interventional Group (tables 1 & 2).

In Interventional Group facial skin score ameliorated at T1, and maintained at T2 (p<0.05 versus T0), while no change was observed in controls (tables 1 & 2).

MHISS scale improved significantly in Interventional group at T1 (p<0.001), while no change was found in controls.

In both groups, SF-36 and HAQ were not affected by the treatment (tables 1 & 2).

**CONCLUSIONS**

The combination of connective tissue massage, Kabat’s technique, home exercise and kinesitherapy is more effective than a home exercise program alone in the rehabilitative treatment of SSc facial involvement.