Summary of literature regarding the effect of sole-ground contact while eating on the feeding-swallowing function

Reference	Design	Participants	Posture	Methods and evaluation index	Evaluation
Uesugi et al.(2019)	Experimental research	26 healthy adults	3 types of postures ・soles off the floor ・sole-ground contact with knees bent at either 90° ・sole-ground contact with knees bent at either 135°	・Bolus materials：saliva, 5-ml water, 10-ml water, and 5ml yogurt ・Participants swallowed four bolus materials in each sole-ground contact condition. ・The muscular activities of the suprahyoid muscle (SH) and the sternocleidomastoid muscle (SCM) during swallowing were detected and recorded using surface electromyography.	・Duration of SH during 10-ml water swallow for Off was significantly longer than that for KB 90°. ・ Duration of SH during 5-ml yogurt swallow for Off was significantly longer than that for KB 90°. ・Integration of SH during 10-ml water swallow for Off was significantly greater than that for KB 135°. ・ Integration of SH during 5-ml yogurt swallow for Off was significantly greater than that for KB 90°.
Shinya et al.(2016)	Experimental research	5 healthy adults	Two types of postures ・soles off the floor and sit in a vertical sitting position on a height-adjustable chair without a backrest so that about 1/2 of the thigh is in contact ・sole-ground contact in the same posture as when sole off the floor	・ Bolus materials：Gum (XYLITOL® chewing force evaluation gum) ①Mastication efficiency was measured by chewing gum for 60 seconds and evaluating the mixed state. ②Masticatory movements were measured using a three-dimensional 6-DOF jaw motion measuring device (Naso Hexagraph II JM-2000.GC). Head movement analysis software for nasohexagraph was used to analyze chewing movements. ・Regarding ① and ②, the order of sole off the floor and sole-ground contact conditions was randomized for each subject.	・Masticatory efficiency showed a higher value with sole-ground contact than sole off the floor. However, no significant difference was observed between soles off-the-floor and sole-ground contact. ・Regarding masticatory movements, significant differences were between sole-ground contact and soles off the floor during the stop phase of mastication.
Ishikawa et	Experimental	20 healthy	Two types of postures	・Body sway was measured using a Footscan®plate	・There was a significant difference between edge sitting

al.(2006)	research	adults 33 elderly individuals (nursing home residents)	・Trunk sitting position with the soles off the floor ・Sitting on edge with the sole-ground contact	system ・Occlusal force was measured by using a dental prescale	position and trunk sitting position for both body sway distance and maximum occlusal force in healthy adults and elderly individuals.
Hamaguchi et al.(2016)	Experimental research	52 healthy adults	4 types of postures ・sole-ground contact while keeping the trunk vertical to the floor surface and a horizontal eye-ear plane(①) ・sole-ground contact while keeping the trunk is tilted forward about 45° (②) ・soles off the floor while keeping the trunk vertical to the floor surface (③) ・soles off the floor while keeping the trunk is tilted forward about 45° (④)	・ Bolus materials：Gummy jelly(Kamzo-kun® Mamarissimo Co., Ltd.) ・Occlusal contact area was measured using a T-scanⅢ®(Nitta) ・Masticatory ability was measured the number of times chewing gummy jelly and time until swallowing were determined.	・Regarding a occlusal contact area, ① was significantly larger than the other three postures. ・Time until swallowing and number of times of mastication increased significantly in ①＜②＜③＜④.