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**Table SI. LME model selections in Study 2.**

	Selected Model	Included Effects				AIC
		Fixed effects			Random effect	
		Group	Week	Group:Week	Participant ID	
DLQI					✓	664.6
			✓			690.4
			✓		✓	666.1
		✓				686.4
		✓			✓	654.0
		✓	✓			687.4
		✓	✓		✓	655.5
		✓	✓	✓		686.8
		✓	✓	✓	✓	648.9
EASI					✓	784.4
			✓			954.5
			✓		✓	774.4
		✓				942.0
		✓			✓	782.4
		✓	✓			945.0
		✓	✓		✓	772.4
		✓	✓	✓		948.9
		✓	✓	✓	✓	774.6
POEM					✓	737.7
			✓			793.8
		✓	✓		✓	732.5
		✓				794.9
		✓			✓	739.5
		✓	✓			793.3
		✓	✓		✓	734.3

		✓	✓	✓		798.9
		✓	✓	✓	✓	738.2
NRS					✓	492.7
			✓			536.3
	✓		✓		✓	490.1
		✓				536.7
		✓			✓	494.7
		✓	✓			538.2
		✓	✓		✓	492.1
		✓	✓	✓		541.8
		✓	✓	✓	✓	495.0
PSQI	✓				✓	534.2
			✓			592.6
			✓		✓	536.0
		✓				594.4
		✓			✓	536.0
		✓	✓			595.9
		✓	✓		✓	537.8
		✓	✓	✓		599.9
		✓	✓	✓	✓	541.7

Abbreviations: AIC, Akaike's information criterion

Table SII. LME model outputs in Study 2.

Characteristic	DLQI			EASI			POEM			NRS			PSQI		
	Beta	95% CI <sup>1</sup>	p-value	Beta	95% CI <sup>1</sup>	p-value	Beta	95% CI <sup>1</sup>	p-value	Beta	95% CI <sup>1</sup>	p-value	Beta	95% CI <sup>1</sup>	p-value
<b>Intercept</b>	7.85	6.022, 9.678	<0.001	18.168	12.710, 23.626	<0.001	13.9	11.856, 15.944	<0.001	5.125	4.426, 5.824	<0.001	6.075	5.269, 6.881	<0.001
<b>Group</b>															
<b>Control</b>	—	—		—	—										
<b>Intervention</b>	1.25	-1.335, 3.835	0.3	-7.553	15.197, 0.090	0.053									
<b>Week</b>															
<b>0 week</b>	—	—		—	—		—	—		—	—		—	—	
<b>4 week</b>	-0.4	-2.055, 1.255	0.6	-1.413	-2.797, -0.028	0.046	-	-3.284, -0.166	0.031	-	-0.769, 0.419	0.6	0.175	0.419	0.6
<b>8 week</b>	-0.5	-2.155, 1.155	0.5	-2.686	-4.071, -1.302	<0.001	-	-3.884, -0.766	0.004	-	-1.332, -0.143	0.016	0.738	-0.143	0.016
<b>Group * Week</b>															
<b>Intervention * 4</b>	-2.2	-4.541, 0.141	0.065												
<b>Intervention * 8</b>	-3.85	-6.191, -1.509	0.002												

Abbreviation: CI, confidence interval

**Table SIII. Change in total sleep time, sleep efficiency, scratching time, and percentage of total scratching time in Study 2.**

Week	mean $\pm$ SD							
	1 (n=19)	2 (n=18)	3 (n=19)	4 (n=19)	5 (n=19)	6 (n=18)	7 (n=19)	8 (n=19)
Total Sleep Time[hrs.]	5.76 $\pm$ 1.64	5.83 $\pm$ 1.02	5.41 $\pm$ 1.07	6.06 $\pm$ 1.89	5.83 $\pm$ 1.32	5.95 $\pm$ 1.84	5.93 $\pm$ 1.52	5.77 $\pm$ 1.76
Sleep Efficiency[%]	92.3 $\pm$ 5.92	91.3 $\pm$ 6.66	91.1 $\pm$ 6.93	89.4 $\pm$ 6.62	90.5 $\pm$ 6.52	90.2 $\pm$ 6.97	91.1 $\pm$ 6.56	90.4 $\pm$ 7.26
Scratching Time[Sec]	81.1 $\pm$ 74.4	93.2 $\pm$ 78.1	104.5 $\pm$ 96.2	124.5 $\pm$ 92.9	124.9 $\pm$ 94.2	121.1 $\pm$ 112.2	122.6 $\pm$ 130.2	112.5 $\pm$ 106.8
%Total Scratching Time[%]	0.34 $\pm$ 0.28	0.4 $\pm$ 0.3	0.46 $\pm$ 0.39	0.47 $\pm$ 0.31	0.46 $\pm$ 0.33	0.51 $\pm$ 0.46	0.51 $\pm$ 0.49	0.45 $\pm$ 0.38

Scores are mean $\pm$ SD per week. n is number of participants measured at least once per week. No significant difference was observed.