

(Study detail)

We measured brainwaves of 12 subjects from age 18 to 76 (10 male and 2 female), on 2 non-consecutive nights.

Night 1 : with Rinshu's music 30 min. before going to sleep and 60 min. after starting to sleep.

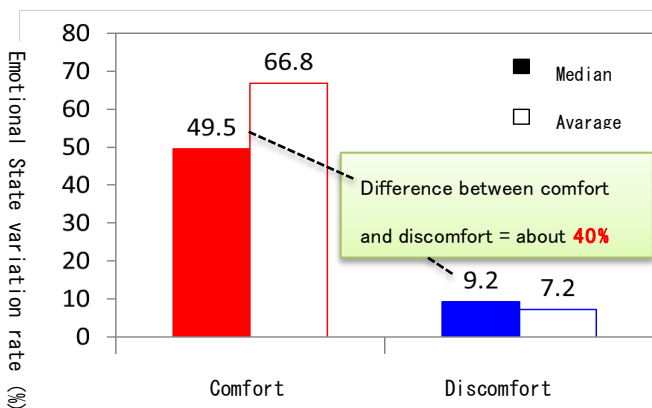
Night 2: no music, same room temperature, same humidity, same environments in room

We used harp improvisational music (recorded in 24bit 96KHz) which no subjects are familiar and there's no distinctive melody.

F1: Fractal dimension of brainwave, average in time of first half of whole sleep

(result)

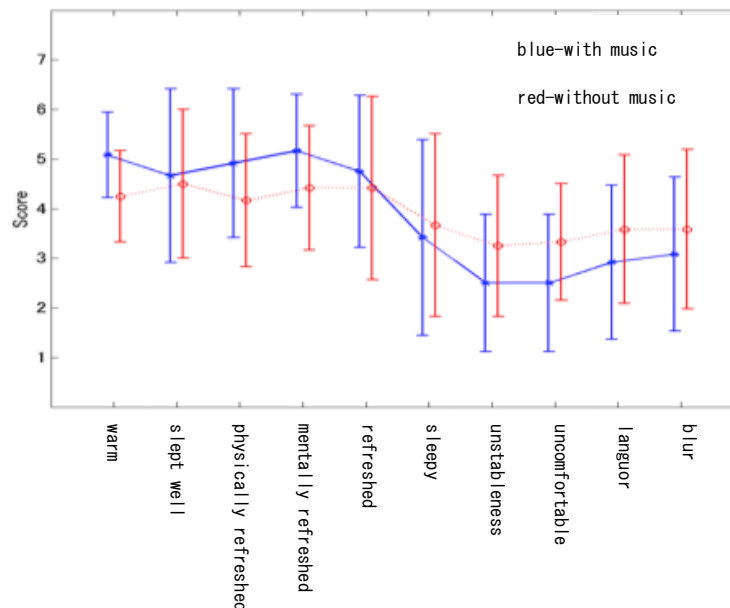
10 subjects out of 12 (83%) showed lower fractal dimension when slept with Rinshu's music, than one without music, in average of first half of whole sleep (F1). Also, 8 subjects out of 12 (66.8%) showed lower fractal dimension with music than one without music in average of whole sleep



F2: Emotional state variation rate in comfort / discomfort (p<0.05)

In regard to emotional state variation rate between with and without music throughout whole sleep, subjects show 40.3 % (in difference) of more comfort with music than without music (p<0.05). 7-step scaling evaluation regarding quality of sleep, conducted in waking up shows all "positive" response in average, and especially significant in improvement of unstableness, and refresh (F3).

Delta wave, which occupies 50% of whole brainwave captured during stage IV non-rem sleep, and fractal dimension of brainwave have negative correlation, and decrease of fractal dimension shows superiority of non-rem sleep.



F3: 7-step scaling evaluation of quality in sleep