

## 18. Symptoms and Signs

### Reference

Nishida T, Tachiyama R, Ping PY, et al. Effects of back massage for pain caused by prolonged lying in prone position. *Nihon Kango Gakkai Ronbunshu Kango Sogo (Japanese Nursing Association Articles – General Nursing)*. 2006; 37: 182–4 (in Japanese). Ichushi Web ID 2007145532

#### 1. Objectives

To evaluate the effectiveness of massage for mid and low back pain caused by prolonged lying in the prone position.

#### 2. Design

Crossover randomized controlled trial (RCT–cross over).

#### 3. Setting

Nursing laboratory at a university (university name not specified), Japan.

#### 4. Participants

Nine average adult females during the low temperature phase of the menstrual cycle (age range: 21~23 years).

#### 5. Intervention

The trial was run in a laboratory with the temperature at  $27.2\pm 0.9^{\circ}\text{C}$  and humidity at  $58.2\pm 5.6\%$ . After lying in the prone position for 20 minutes, participants received massage of the low back, mid back, neck, and shoulders for 5 minutes, and were then instructed to stay in the prone position for a further 60 minutes. Participants in the control group stayed in the prone position for 85 minutes.

Arm 1: Massage group (number of participants not specified).

Arm 2: Control group (no treatment, number of participants not specified).

#### 6. Main outcome measures

Electrocardiogram (heart rate variability), brain waves, and visual analogue scale (VAS) scores for comfort, pain intensity, and low/mid back pain intensity.

#### 7. Main results

1) Brain waves: the amount of  $\alpha_1$  and  $\alpha_2$  waves, which increase with relaxation, was significantly greater at the time of massage and 30 minutes after massage compared to the control group. However, no significant difference was found in the amount of  $\delta$  or  $\theta$  waves, which increase with drowsiness, or  $\beta_1$  or  $\beta_2$  waves, which increase when alert.

2) Heart rate variability: low frequency (LF), high frequency (HF), and LF/HF, which reflect sympathetic and parasympathetic activity, showed no significant difference.

3) Subjective evaluation: Comparing scores before and after lying in the prone position, comfort showed a significant increase in the massage group compared to the control group, while low/mid back pain intensity decreased significantly in the massage group.

#### 8. Conclusions

Low/mid back massage is an effective intervention for relieving pain and for relaxing patients who lie in the prone position for prolonged periods.

#### 9. Safety assessment in the article

Not mentioned.

#### 10. Abstractor's comments

The study objectively demonstrates that massage effectively reduces pain intensity and relieves low/mid back pain caused by prolonged lying in the prone position. Hopefully it will be integrated into the care of patients forced to lie in the prone position for long periods, for example, after retinal detachment surgery. The study is of great interest to those seeking to improve the quality of nursing care. The integrity of the design is high: the low/mid back pain model, the massage treatment, and the outcome evaluation methods are well devised. The study cannot, however, be rated as a high quality randomized controlled trial, because of the small sample size, the failure to specify the numbers of subjects in the massage or control groups and failure to specify the method of allocation. In addition, no change was observed in heart rate variability, which correlates with brain wave findings ( $\alpha$  wave increase), suggesting that issues remain around the parameter settings for capturing parasympathetic activity. Yet, the study has great significance in that its support of the effectiveness of massage is based on brain wave findings as well as subjective evaluation. Hopefully the authors will verify their results through clinical practice and will further deepen and develop their study into research which can build up qualitative evidence of patient satisfaction.

#### 11. Abstractor and date

Fujii R, 3 December 2011.