

**The Effect of Perioperative Heated Sock Use in Preventing Hypothermia During Total
Hip Prosthesis Surgery: A Randomized Controlled Trial**

NCT number: NO

Document Date:31/12/2022

Methods

Study Aim and Design

The aim of the study was to determine the effect of one of the active heating methods of perioperative heated sock use to prevent hypothermia during THP surgery and to contribute to the literature. This study is a randomized, controlled experimental study.

Population and Sampling

The population for the research comprised patients undergoing THP surgeries between 15 October 2021 and 31 December 2022 in Samsun Gazi State Hospital. The sample for the population comprised patients who met the research criteria and who accepted participation in the research from among individuals in the population. Calculation of the effect size in the study used the calculation method (d value) developed by Cohen (Cheon & Yoon, 2017). To determine the d value for the effect size index, findings from studies researching the effect of perioperative heating on preventing hypothermia by Lee et al. (2018) and Lau et al. (2018) were used. In the calculations for these studies, the effect size obtained from comparing two groups was identified to be $d=1$ and above (large effect). However, with the aim of obtaining a larger sample group in this research, it was appropriate to take large effect size as reference for the initial limit for the t test to measure the difference between two groups. In this context, with $d=0.8$, $\alpha=0.05$ (error), $1-\beta=0.95$ (power), accompanied by the stated criteria, with the aid of the G-power (version 3.1) program, the sample group was determined to require a total of 70 people, with 35 in the experiment group and 35 in the control group.

Data collection instruments and procedure for data collection

This research was completed in the orthopedic clinic ward, preoperative waiting unit, operating rooms, and post-anesthesia care unit (PACU) in a public hospital in Samsun, during daily working hours of 08:00-16:00. Data were collected with a Descriptive Features Form,

Recording Form for Measured Data, tympanic thermometer and blood pressure device. Six heated socks and a thermal blanket were used during the intervention.

Heated Socks: In the research, 6 heated socks (operated with rechargeable batteries) obtained by the researchers were used. Socks used sequentially by each patient were sterilized in the hospital's sterilization unit and then worn. Each pair of socks worked with 6 rechargeable batteries. Heated socks are a non-invasive, easily worn, pain-free and suitable-cost method to prevent heat loss (Lee, 2018).

Both verbal and written consent was obtained from patients accepting participation in the research. Firstly patients completed the Descriptive Features Form. Then 75 minutes before surgery, patients in the experiment group were dressed in heated socks in the orthopedic ward. Before dressing in heated socks and every fifteen minutes afterwards, body temperature, heart rate, blood pressure and shivering were measured and recorded for each patient.

During transfer from the orthopedic ward to the surgery, a thermal blanket was used to prevent temperature loss. The patient was transferred to the surgery with the heated socks and the socks remaining on the feet during surgery. In the first fifteen minutes until taken from the preoperative waiting unit to the operating room and every fifteen minutes during a total of 120 minutes of surgery, body temperature, blood pressure and shivering were monitored and recorded. Additionally, the total drainage amount was recorded during surgery. When surgery ended, the patient was transferred to the PACU with the socks and the socks remained on the patient's feet while in the PACU. In the PACU, the body temperature, heart rate, blood pressure, shivering and total drainage amount were measured and recorded every fifteen

minutes for a total of thirty minutes. During transfer from the surgery to the orthopedic ward, a thermal blanket was used to prevent temperature loss in patients. Patients were transferred from PACU to the ward with the socks.

The socks remained on the feet for 3 hours after returning to bed postoperatively. After transfer to the bed and every fifteen minutes, body temperature, heart rate, blood pressure, and shivering were measured and recorded for a total of 180 minutes. Additionally, patients had 24-hour total drainage amounts measured and recorded. Patients in the control group underwent the same procedures as patients in the experiment group. The only difference was that patients in the experiment group were dressed in heated socks, while patients in the control group were not dressed in heated socks.

Ethical considerations

The study was completed in accordance with ethical rules and the principles of the Helsinki Declaration. To be able to perform the research, written permission was obtained from Samsun University Non-Interventional Research Ethics Committee (research protocol code: GOKA/2021/15/4). Verbal and written informed consent was obtained from participants in the research.