

ABSTRACT

THE EFFECT OF FREQUENCY ON SENSATION IN ELECTRO CUTANEOUS STIMULATION

By

Rafidah Rahmi Bachtiar
Dr.-Ing. Stephan Lau, Advisor
M.Sc. Eva-Maria Dölker, Advisor

Identifying the sensations electrical stimulation of the skin can invoke can be used in various fields, including but not limited to furthering the understanding of how humans perceive sensations as well as practical applications such as sensory substitution in prostheses. The Flicker Fusion Frequency (FFF) phenomenon in visual psychophysics may present a way of viewing temporal perception categories. Ten participants (5 male 5 female) are given an electrical current to the upper forearm, wave biphasic square, pulse width 150 μ s, and at incremented frequencies from 5 Hz to 2000 Hz. Using a questionnaire, information regarding temporal and qualitative sensations are collected at every frequency point. Results show relatively uniform transition frequencies for temporal perception bar the vibration to continuous (VTC) point. Only 4 out of 10 participants report sensations other than knocking, all of which after the temporal resolution enters vibrating. Simple frequency variation in electrical stimulation may not give rise to varied qualitative percepts.

Keyword

Transition frequency, electrocutaneous stimulation, qualitative perception