

# Study of relationship between second stroke and localization of multi-point stimuli

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Poster: C20 MBB2022

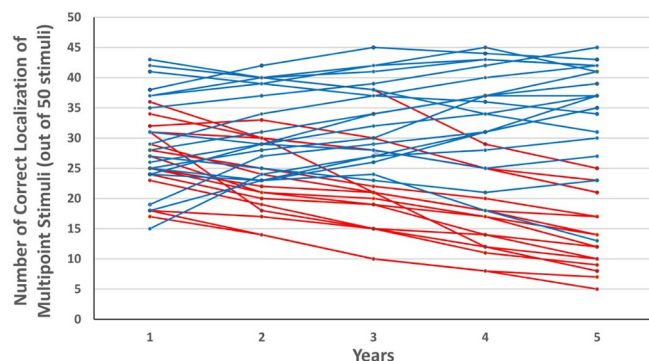
## Introduction

In physical stimuli, the closer the stimulus points are to each other, the more difficult it is to distinguish the location of the skin stimulation sites. This localization also depends on the location of the stimulus and age. The number of tactile receptors on the shoulder blade and back of the human body is less than the rest of the body, and the fingertips have the largest number of tactile receptors, therefore, the number of stimuli on the fingertips is more likely to be detected than on the shoulder blade and back. Also, with advanced age stimuli detection encounters more mistakes. In this study, the number of separable tactile stimuli in localization that a person can count correctly was measured and recorded, and its relationship with second stroke was studied.

## Methods

Simultaneous multi-point stimulations with standard recognizable distance were conducted in 36 patients for 5 years. These stimuli were applied to the thigh, palm, arm, shoulder blade, and back of the subjects without them watching the place of the stimuli. Then they were asked about the number of stimuli. Patients are examined annually.

## Results



This work demonstrates the relationship between the ability to detect the number and location of stimuli in simultaneous multi-point stimulations and second stroke probability. Subjects with fewer correct responses (in detecting the number of simultaneous stimuli) are more likely to have a second stroke.

Figure 1. This graphs show the ability of subjects in localizing multipoint stimuli. As it seems, the majority of subjects whose results get worse during this period, experienced second-stroke (16 out of 20), which are shown by red bars. In opposite, all of those who showed improvement throughout these years, didn't have such experience, which are shown by blue bars.

— No Second-Stroke  
— Had Second-Stroke

## Discussion

Our findings provide evidence that depending on the age of the person and the location of the stimulus, subjects with more mistakes in detecting simultaneous multi-point stimulations are more likely to have a second stroke.