

# Novel Method of Repetitive Nerve Stimulation in Trapezius Muscle :Middle trapezius method

Miho Kanda, MT, Department of Clinical Laboratory, Kurashiki Central Hospital, Japan

Hitoshi Mori, MD, Department of Neurology, Kurashiki Central Hospital, Japan



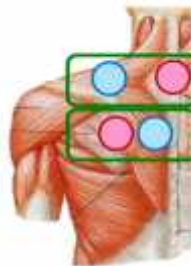
## Introduction

Nerve conduction study of upper trapezius muscle is difficult because of motion artifact of upper trapezius muscle. Repetitive nerve stimulation (RNS) of upper trapezius muscle is more difficult due to the proper fixation of the recording electrode over the muscle. The middle trapezius muscle recording has less motion artifact, we propose the middle trapezius recording methods for repetitive nerve stimulation.

## Methods

Subject: 12 normal adults(age:37±17(Mean±SD),Male:Female=5:7)  
 Testing equipment: Viking select Nicolet  
 Stimulation site: accessory nerve on the side neck 1)  
 Stimulation method: 3Hz repetitius stimulation  
 Fixation: grab a chair bottom in a sitting position by the subject

Figure1: Location of recording electrode 1)

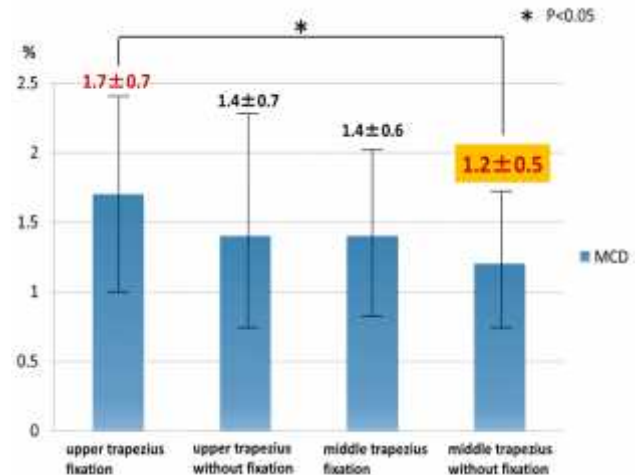


	active electrode	reference electrode
the upper trapezius	5 cm lateral to the seventh spinous process	the seventh spinous process
the middle trapezius	halfway between the scapular spine and adjacent spinous process	on the scapula

The compound muscle action potential (CMAP) amplitude decrements (%) were measured in the both group, then we calculated the mean consecutive difference 2) (MCD) of individual decrement. **Small MCD means little fluctuation.**

## Results

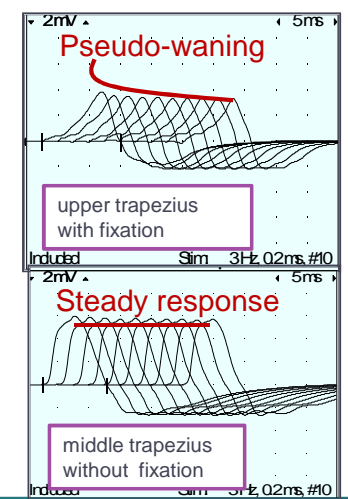
Figure2: MCD value of upper trapezius recording with/without fixation and of middle trapezius recording with/without fixation.



## Consideration

Proper fixation of target muscle is difficult in trapezius muscle . The ability to fix the muscle by the subject or the examiner may vary.  
 The muscle contraction of middle trapezius is smaller than that of upper trapezius. Smaller contraction of muscle means less artifact.  
**⇒Middle trapezius recording without fixation is suitable for RNS and nerve conduction study.**

Figure3:RNS recordings in one of the subjects



## Conclusion

Middle Trapezius recording without muscle fixation for RNS is novel and suitable recording.

## References

- 1)Green.RF and Brien,M:Accessory nerve latency to the middle and lower trapezius.Arch Phys Med Rehabil 1985;66:23
- 2) Ekstedt J, Nilsson G, Stalberg E. Calculation of the electromyographic jitter. J Neurol Neurosurg Psychiatry. 1974;37:526-39.