



Laporan Akhir Projek Penyelidikan

R&D Jangka Pendek

**“NERVE CONDUCTION STUDY OF THE UPPER LIMB AND
LOWER LIMB IN 250 HEALTHY SUBJECTS. A COMPARISON
BETWEEN AGE, SEX, HEIGHT AND WEIGHT”**

(Grant No: 304/PPSP/6131231)

Investigators:

Dr Mohamed Saufi Awang

Professor Dr Jafri Malin Abdullah

Associate Prof Dr Mohd Rusli Abdullah

Adnan Tahir

Dr Salmi Abdul Razak

**BAHAGIAN PENYELIDIKAN & PEMBANGUNAN
CANSITORI
UNIVERSITI SAINS MALAYSIA**

Laporan Akhir Projek Penyelidikan Jangka Pendek

1) Nama Penyelidik: **Dr Mohamed Saufi Awang**

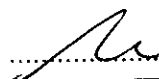
Nama Penyelidik-Penyelidik

Lain (Jika berkaitan) :

**...Professor Dr Jafri Malin Abdullah
Prof Madya Dr Rusli Abdullah
En Adnan Tahir
Dr Salmi Abdul Razak
Dr Jain George
Dr Myo Than**

2) Pusat Pengajian/Pusat/Unit : **.....Pusat Pengajian Sains Perubatan**

3) Tajuk Projek: **.....Nerve Conduction Study of the Upper Limb and Lower Limb in 250 Healthy Subjects. A Comparison Between Age, Sex, Height and Weight**

BAHAGIAN PENYELIDIKAN PUSAT PENGAJIAN SAINS PERUBATAN	
SALINAN :	
<input type="checkbox"/>	Bhg. Penyelidikan, PPSP
<input checked="" type="checkbox"/>	Perpustakaan Perubatan, USMCK
<input type="checkbox"/>	RCMO
T/Tangan : 	Tarikh : 26/7/05

ABSTRAK

Kajian Kelajuan Saraf DiBahagian Tangan dan Kaki Dikalangan 250 Subjek Sihat. Perbandingan Diantara Umur, Jantina, Ketinggian dan Berat Badan.

Pengenalan: Kajian konduksi saraf merupakan kajian yang dapat membantu dalam menyiasat penyakit-penyakit berkaitan dengan saraf. Kajian ini dapat mengukur kelajuan saraf motor dan sensori. Ada beberapa faktor personal khas yang boleh mempengaruhi kelajuan saraf seperti umur, jantina, ketinggian dan berat badan

Objektif: Tujuan utama kajian ini adalah untuk mengkaji kelajuan saraf-saraf di bahagian tangan dan kaki. Selain daripada itu, kajian ini juga menyiasat kesan umur, jantina, ketinggian dan berat badan keatas kelajuan saraf.

Bahan dan Metod: Seramai 250 subjek sihat terlibat didalam kajian ini. Kebanyakannya merupakan staf-staf hospital. Subjek-subjek akan diketepikan sekiranya mempunyai penyakit neuromuskular atau penyakit yang dapat memberi kesan keatas kelajuan saraf sama secara langsung atau tidak langsung seperti penyakit kencing manis atau sindrom terowong karpal. Subjek-subjek akan dibahagikan mengikut kumpulan umur, ketinggian dan berat badan yang berbeza. Saraf-saraf yang diuji adalah seperti berikut: median, ulnar untuk saraf ditangan dan peroneal sesama serta sural untuk saraf dikaki. Elektrode permukaan digunakan. Suhu bilik sentiasa lebih daripada 27 darjah celcius. Saraf akan dirangsang menggunakan gelombang bersegi selama 0.2msaat dan aksi potensial akan direkodkan. Pajang saraf diukur menggunakan tali tap dan kelajuan saraf akan dikira (m/s).

Keputusan: 250 subjek (137 lelaki dan 113 wanita). Purata umur, ketinggian dan berat badan (BMI) adalah seperti berikut: 34.46 ± 10.79 tahun, 159.47 ± 8.53 (cm) and 23.99 ± 4.20 (kg/m^2). Terdapat pengurangan tahap kelajuan saraf (median, ulnar, peroneal sesama dan sural) apabila umur meningkat. Hanya peroneal sesama menunjukkan penurunan kelajuan apabila ketinggian meningkat. Median, ulnar (motor), peroneal sesama dan sural menunjukkan pengurangan kelajuan apabila berat badan bertambah.

Rumusan: Secara keseluruhannya, kita merumuskan bahawa umur boleh mempengaruhi kelajuan saraf. Kajian ini mendapati kelajuan saraf median, ulnar, peroneal sesama dan sural perlahan apabila umur meningkat. Tetapi untuk faktor-faktor seperti ketinggian dan berat badan, kajian menunjukkan keputusan yang berbeza-beza.

ABSTRACT

Introduction: Nerve conduction study (NCS) is an important tool as part of investigating some neurological disorders. NCS can measure both motor and sensory velocities. There are specific personal factors that can influence the nerve velocity which include age, sex, height and weight.

Objectives: The aim of this study was to investigate the conduction velocities of nerves both in the upper limb and lower limb. The other aim of this study was to observe the influence of specific personal factors like age, sex, height and weight on nerve conduction velocities (NCVs).

Material and Method: Two hundred fifty healthy subjects were recruited in this study. They were mainly hospital staffs. The subjects were excluded if they have any neuromuscular disorders or any diseases that can have direct or indirect effect on nerve function such as diabetes or carpal tunnel syndrome. The subjects were divided into different age, height and weight (expressed as body mass index or BMI) groups. The nerves that were tested include: median and ulnar nerves for the upper limb (both motor and sensory velocities) and common peroneal (motor velocity) and sural nerves (sensory velocity) for the lower limb. Surface electrodes were used. The temperature in the laboratory was kept constant above 27^o C. The targeted nerve was supramaximally stimulated using square wave with a duration of 0.2ms and the action potential was picked up by the recording electrodes. The length of each nerve was estimated with a flexible measuring tape. Nerve velocities (m/s) were calculated and documented.

Results: Of 250 subjects, 137 were male and 113 were female. The mean age, height and BMI were 34.46 ± 10.79 years, 159.47 ± 8.53 (cm) and 23.99 ± 4.20 (kg/m²). Reduction in NCVs in median, ulnar, common peroneal and sural nerves across different age. Slowing of NCV was seen only in common peroneal nerve across different height groups. There were reduction in NCVs of median, ulnar (motor component), common peroneal and sural nerves as BMI increased.

Conclusion: In conclusion, our results showed that age has great influence on nerve velocities. We observed reduction in NCVs as the age increased in median and ulnar nerves (upper limb) and common peroneal plus sural nerves (lower limb). However, mixed trend of NCVs were seen across different height and body mass index groups.

- (b) Senaraikan Kata Kunci yang digunakan di dalam abstrak:

<u>Bahasa Malaysia</u>	<u>Bahasa Inggeris</u>
Kajian kelajuan saraf	Nerve conduction study
Ortodromic	Orthodromic
Antidromic	Antidromic
Saraf Median	Median Nerve
Saraf Ulnar	Ulnar Nerve
Saraf Sural	Sural Nerve
Saraf peroneal sesama	Common peroneal nerve

5) Output Dan Faedah Projek

- (a) Penerbitan (termasuk laporan/kertas seminar)
(Sila nyatakan jenis, tajuk, pengarang, tahun terbitan dan di mana telah diterbit/dibentangkan).

1. The manuscripts entitled "Nerve Conduction Study Among Healthy Malays. The influence of age, height and body mass index on median and ulnar nerves (**Part A**) and Nerve Conduction Study Among Healthy Malays. The influence of age, height and body mass index on common peroneal and sural nerves (**Part B**) have been sent for publication in Medical Journal of Malaysia (MJM) (**Both still under Editorial Board Review**)
2. Poster presentation in 9th National Conference On Medical Sciences May 2004.