

UNIVERSITI SAINS MALAYSIA



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**Final Report for Sport Research Scheme
Ministry of Higher Education 2007**

***Effects of Exercise Prescription on Blood Lipid Profiles, Health
Related Fitness Component and Anthropometric Profile of Subjects with
High Cholesterol Level.***

Dr. Mohamed Saat Ismail

**Lecturer and Chairman
Exercise & Sport Science Program
School of Health Sciences
Universiti Sains Malaysia
Health Campus
16150 Kubang Kerian, Kelantan
Malaysia**

JANUARY 2010

LAMPIRAN 1

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Date : 20th November 2008

Ms. Nurulsiqah Hussin
School of Health Sciences
Health Campus
Universiti Sains Malaysia
16150 Kubang Kerian
Kelantan

APPLICATION FOR ETHICAL APPROVAL

Research Title :

Effects of Exercise at Moderate Intensity and High Frequency on Blood Lipid Profiles of Hyper Cholesterolemic Patients

I refer to your application received on 21st September 2008.

I am pleased to inform you that the Research Ethics Committee (Human), Universiti Sains Malaysia has met on 29th October 2008 and has approved in principle the protocol study of the above title.

Research Center : Universiti Sains Malaysia

Date Start : November 2008

Duration : 12 months

Number of Samples : 12 subjects

Name of Principal Researcher : Ms. Nurulsiqah Hussin

Co- researcher : Dr. Mohamad Saat Ismail

Financial Support : -

CERTIFICATE

This is to certify that the dissertation entitled
**"EFFECTS OF MODERATE INTENSITY AND HIGH FREQUENCY EXERCISE
ON BLOOD LIPID PROFILES OF SUBJECTS WITH HIGH CHOLESTEROL
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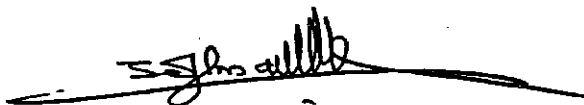
MS NURULSIQAH BINTI HUSSIN

During the period from July 2008

to April 2009

under my supervision

Signature of supervisor:



Name and address of Supervisor:

Dr. Mohamed Saat Ismail

Lecturer and Chairman

Exercise & Sport Science Program

School of Health Sciences

Universiti Sains Malaysia

16150 Kubang Kerian

Kelantan.

DR. MOHAMED SAAT ISMAIL

Pensyarah Kanan

Pusat Pengajian Sains Kesihatan

Universiti Sains Malaysia

Kampus Kesihatan

16150 Kubang Kerian, Kelantan.

Date:

Mac, 23, 2009

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Our. Ref. : USMKK/PPP/JEPeM [(206.4(2.3))]
Date : 20th November 2008

Ms. Nur Syamsina Ahmad
School of Health Sciences
Health Campus
Universiti Sains Malaysia
16150 Kubang Kerian
Kelantan

APPLICATION FOR ETHICAL APPROVAL

Research Title :

Effects of Exercise at Moderate Intensity and Low Frequency on Blood Lipid Profiles of Hyper Cholesterolemic Patients

I refer to your application received on 21st September 2008.

I am pleased to inform you that the Research Ethics Committee (Human), Universiti Sains Malaysia has met on 29th October 2008 and has approved in principle the protocol study of the above title.

Research Center	: Universiti Sains Malaysia
Date Start	: November 2008
Duration	: 12 months
Number of Samples	: 12 subjects
Name of Principal Researcher	: Ms. Nur Syamsina Ahmad
Co- researcher	: Dr. Mohamad Saat Ismail
Financial Support	: -

CERTIFICATE

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**"EFFECTS OF MODERATE INTENSITY AND LOW FREQUENCY
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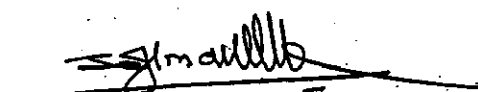
MS NUR SYAMSINA BINTI AHMAD

During the period from July 2008

to April 2009

under my supervision

Signature of supervisor:



DR. MOHAMED SAAT ISMAIL
Pensyarah Kanan
Pusat Pengajian Sains Kesihatan
Universiti Sains Malaysia
Kampus Kesihatan
16150 Kubang Kerian, Kelantan.

Name and address of Supervisor:

Mohamed Saat Bin Ismail
Lecturer and Chairman
Exercise & Sport Science Program
School of Health Sciences
Universiti Sains Malaysia
16150 Kubang Kerian
Kelantan.

Date:

Mac 23, 2009

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Our. Ref. : USMKG/PPP/JEPeM [(206.4(2.3))]
Date : 20th November 2008

Ms. Nursyuhada Mohd Sukri
School of Health Sciences
Health Campus
Universiti Sains Malaysia
16150 Kubang Kerian
Kelantan

APPLICATION FOR ETHICAL APPROVAL

Research Title :

Effects of Exercise Frequency on Fitness Levels in Overweight Subjects

I refer to your application received on **21st September 2008**.

I am pleased to inform you that the Research Ethics Committee (Human), Universiti Sains Malaysia has met on **29th October 2008** and has approved in principle the protocol study of the above title.

Research Center : Universiti Sains Malaysia
Date Start : November 2008
Duration : 12 months
Number of Samples : 18 subjects
Name of Principal Researcher : Ms. Nursyuhada Mohd Sukri
Co- researcher : Dr. Mohamed Saat Ismail

Financial Support : -

CERTIFICATE

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**"EFFECTS OF DIFFERENT FREQUENCY OF MODERATE INTENSITY
EXERCISE ON HEALTH RELATED FITNESS COMPONENT IN ADULT
MALES."**

is the bonafide record of research work done by

MS NURSYUHADA BINTI MOHD SUKRI

During the period from July 2008

to April 2009

under my supervision

Signature of supervisor: _____



Name and address of Supervisor:

Dr. Mohamed Saat bin Ismail
Lecturer and Chairman
Exercise & Sports Science Program
School of Health Sciences
Universiti Sains Malaysia
16150 Kubang Kerian
Kelantan.

Date: _____

23, Mei 2009

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Date : 20th November 2008

Ms. Shamsinar Mahmud
School of Health Sciences
Health Campus
Universiti Sains Malaysia
16150 Kubang Kerian
Kelantan

APPLICATION FOR ETHICAL APPROVAL

Research Title :

Effects of Exercise Frequency on Body Composition in Overweight Subjects

I refer to your application received on **21st September 2008**.

I am pleased to inform you that the Research Ethics Committee (Human), Universiti Sains Malaysia has met on **29th October 2008** and has approved in principle the protocol study of the above title.

Research Center : Universiti Sains Malaysia

Date Start : November 2008

Duration : 12 months

Number of Samples : 18 subjects

**Name of Principal
Researcher** : Ms. Shamsinar Mahmud

Co- researcher : Dr. Mohamed Saat Ismail

Financial Support : -

CERTIFICATE

This is to certify that the dissertation entitled
**"EFFECTS OF DIFFERENT FREQUENCY OF MODERATE INTENSITY
EXERCISE ON ANTHROPOMETRIC PROFILE IN ADULT MALES"**

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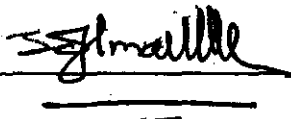
MS SHAMSINAR BINTI MAHMUD

During the period from **July 2008**

to **April 2009**

under my supervision

Signature of supervisor:



Name and address of Supervisor:

Dr. Mohamed Saat bin Ismail
Lecturer and Chairman
Exercise & Sport Science Program
School of Health Sciences
Universiti Sains Malaysia
16150 Kubang Kerian
Kelantan.

Date:

May 23, 2009

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Tarikh : 22 Mac 2010

Cik Amra Othman
Penolong Pendaftar
Unit pengurusan Geran & Kontrak
Pejabat Pengurusan & Kreativiti Penyelidikan
USM, 11800 Minden
Pulau Pinang

Puan,

**LAPORAN AKHIR PROJEK SKIM PENYELIDIKAN SUKAN KEMENTERIAN
PENGAJIAN TINGGI 2007**

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2. Bersama-sama ini disertakan laporan akhir bagi geran penyelidikan seperti di bawah untuk tindakan puan selanjutnya.

Bil.	Nama Pensyarah	Tajuk Geran
1.	Dr. Mohamed Saat Ismail	Effects of exercise prescriptions on high cholesterol level subjects

Sekian, terima kasih.

BERKHIDMAT UNTUK NEGARA
"Memastikan Kelestarian Hari Esok"

Yang benar,



WAN SURIATI WAN NIK

Amra/Nizam
N.P.?
HAZLAN ABDUL HAMID
Ketua Penolong Pendaftar
Pejabat Pengurusan & Kreativiti Penyelidikan
USM, 11800 Minden
Pulau Pinang

Pu. Wafwan
Untuk urusan
T&.
23/3

ABSTRACT

Effects of Exercise Prescription on Blood Lipid Profiles, Health Related Fitness Component and Anthropometric Profile of Subjects with High Cholesterol Level.

The aim of this study was to compare the effectiveness of exercise prescription on lipid profile changes, cardiorespiratory fitness, blood pressure, resting heart rate, musculoskeletal fitness and anthropometry measurement of high cholesterol subject. Nine untrained male subjects age between 40 to 55 year and were serum total cholesterol level more than 5.8 mmol.L⁻¹ randomized assigned between three days per week (Group 1, n=3), six days per week (Group 2, n=3) at 50% VO_{2max} for 60 minutes throughout twelve weeks or no exercise (Control group, n=3) . Their fasting blood lipid will be assessed for both groups one day before intervention programme (pre), after four weeks of intervention programme (post-1), after eight weeks of intervention programme (post-2) and after twelve weeks of intervention programme (post-3) to compare the changes of blood lipid profiles. After twelve weeks intervention programme it showed greater positive improvement of exercise with a reduction in 17.1% triglycerides, and 15.4% VLDL in Group 2. Meanwhile positive improvement also was seen with a reduction in 9.0% total cholesterol, 11.5% LDL cholesterol in Group 1. Additionally, both groups showed slightly improvement in HDL cholesterol. Therefore, both exercise prescription was sufficient to alter overall lipid profile changes including HDL cholesterol and reduces cardiovascular risk in

previously high cholesterol subjects. But it is encourage increasing sample size and prolonged duration more than twelve weeks for additional benefit.

The blood pressure (BP), resting heart rate (RHR) and health related fitness test consisted of maximum oxygen consumption (VO_{2max}), back strength (BS), leg strength (LS), dominant hand grip strength (HG), sit up (SU), push up (PU) and sit and reach (SR) were performed at a day before intervention programme (pre), at the end of week 4 (post-1) and week 8 (post-2). After eight weeks exercise intervention programme, Group 1 demonstrated greater improvement with decreased in systolic BP (2.7%), diastolic BP (6.2%) and RHR (9.0%) compared to Group 2. While Group 2 showed better improvement in VO_{2max} (4.9%), (BS (26.1%), LS (35.2%), HG (3.6%), PU (46.0%) and SR (3.9%) compared to Group 1. These findings suggested that low frequency exercise group (3 times/week) induced more positive changes in resting heart rate and blood pressure. While, high frequency exercise group (6 times/week) induced more positive changes in VO_{2max} , muscular strength, push-up and sit and reach. In order to maximize the effects of moderate intensity exercise of 60 min/session on cardiorespiratory fitness (VO_{2max}), high frequency exercise of 3 times per week should be recommended.

The anthropometric measurements were performed at a day before intervention programme (pre), at the end of week 4 (post-1) and week 8 (post-2). After 8-week exercise intervention programme, group 2 showed greater improvements with decreased in body weight (2.6%), BMI (2.4%), reduced in subscapular (10.4%) and front thigh (13.1%) skinfold thickness, and decreased in

girth of arm relaxed (1.3%), arm flexed (1.3%), waist (1.3%), hip (1.6%) and calf (4.1%) than group 1. While group 1 show more improvements that decreased in triceps (7.8%), biceps (5.9%), iliac crest (8.6%), medial calf (3.4%), and calf girth (0.3%) than group 2. These findings suggest that high frequency exercise group (6 d/wk) had greater reduction in anthropometric measurements more than low frequency exercise group (3 d/wk). In order to maximize the effects of moderate intensity exercise of 60 min/session on anthropometric measurements, high frequency exercise of 6 times per week should be recommended