شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم

شبكة المعلومـــات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

﴿ قـسـم ﴾

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد اعدت دون آية تغيرات

يجب أن

تحفظ هذه الأفلام بعيداً عن الغبار

في درجة حرارة من 15 – 20 مئوية ورطوبة نسبية من 20-40 %

To be kept away from dust in dry cool place of
15 – 25c and relative humidity 20-40 %

بعض الوثائق الأصلية تالفة

بالرسالة صفحات

لم ترد بالأصـــل

Low intensity laser therapy versus cardiac Rehabilitation program for ischemic heart disease patients

Thesis
Submitted for partial fulfillment of the requirements of
the Doctoral Degree in Physical Therapy
By

Eman Yassin Salim Abdou

MSc in
Physical Therapy Department for Internal Medicine and Geriatrics,
Faculty of Physical Therapy. Cairo University

Supervisors

Prof. Dr. Nagwa Mohamed Badr

Vice Dean for graduate student and research
and acting chairman of Physical Therapy
Department for Cardiopulmonary disorders and Geriatrics,
Faculty of Physical Therapy, Cairo University

Prof. Dr. Mostafa Abd Elsalam

Consultant of cardiology and Chairman of intensive
Care Unit Department
National Heart Institute
Imbaba Cairo

Dr. Zienab Mohamed Helmy

Lecturer of Physical Therapy
Department for Cardiopulmonary disorders and Geriatrics,
Faculty of Physical Therapy, Cairo University

Faculty of Physical Therapy,
Cairo University
2001

بسم الله الرحمن الرحيم

قالوا

سبحانك لا علم لنا إلا ما علمتنا

إنك أنت العليم الحكيم

صدق الله العظيم

سورة البقرة آية ٣٢

Low intensity laser therapy versus cardiac Rehabilitation program for ischemic heart disease patients

Eman Yassien Salim Adbou.

Supervisors :

Prof .Dr. Nagwa Mohamed Bader, Prof.Dr. Mostafa abdelsalam, Dr. Zienab Mohamed Helmy.

Cairo University, Faculty of Physical Therapy, Thesis, Doctoral, Physical Therapy/ Cardiopulmonary disorders and Geriatrics Department- 193 pages1- 2001

Abstract

The aim of this study is to investigate the effect of laser therapy as a new trend for improving L.V. function versus C.R in patients with IHD to increase their exercise capacity and to avoid further progression of the disease. Sixty patients Aged 45-70 years old were selected form National Heart institute- Imbaba- Cairo. They were randomly assigned into 4 groups, each consisted of 15 patients. First group received laser therapy, second group enrolled in an exercise training program, third group received laser therapy and exercise training, and the fourth groups received their medication only. Assessment was done by cardiopulmonary stress exercise test, 24 hour holter monitoring, and dobutamine stress echo cardiography before and after 3 months of the study. Data were collected and calculated and the results showed significant increase in peak oxygen consumption, significant increase in R-R intervals of the 24 hour holter monitoring, and significant improvement in the results of dobutamine stress echocardiography of the 3 studied groups, whether there was no significant results in the control group also there were no significant results in between the 3 studied groups 50 we concluded that the laser therapy, cardiac rehabilitation and the laser therapy combined with cardiac rehabilitation are three effective methods in the rehabilitation of ischemic heart disease patients.

Acknowledgement

First and above all, I thank Allah for unlimited help grant us.

I would like to offer my sincere gratitude to Prof. Dr. Nagwa Mohamed Hamed Badr Vice Dean for graduate student and research & acting chairman, and Prof. of Physical Therapy Department for cardiopulmonary disorders and Geriatrics, Faculty of Physical Therapy, Cairo University for her continuous encouragement, precious help and kind advice throughout the whole work. Here precious remarks and wise guidance were very helpful and valuable for the whole work.

I wish to express my profound thanks to Prof. Dr. Mostafa Abdelsalam, consultant of cardiology & Head of intensive care Unit, National Heart institude, Imbaba, cairo for his helpful advices, continuous encouragement, and unfailing support. He has closely followed the preparation of this work and has not spared any effort in assisting me in it

I would like to express my great debt of gratitude to Dr. Zienab Mohamed Helmy, Lecturer of physical therapy Department for Cardiopulmonary disorders and Geriatrics, Faculty of Physical Therapy, Cairo University for her continuous guide, encouragement, great assistance and valuable advices.

Also, I would like to express my thanks to Dr. Rokaia Mostafa, Consultant of physical therapy and chairman of physical therapy department of Elmataria Teaching Hospital for her guidance and great help during the preparation of this study.

Last but not the least, I feel deeply thankful to all subjects who helped me to finish this work especially all patients who accepted to participate in this work, without whom this work would not have been possible.

List of abbreviation

%	Percent
^0C	Degree centigrade
2D	Two dimensional
3D	Three Dimensional
ACE	Angiotensin converting Enzyme
ADP	Adenosine diphosphate
ATP	Adenosine triphosphate
A-Vo_2	Arterio- venous
C.R	Cardiac rehabilitation
CABG	Coronary artery bypass graft
CAD	Coronary artery disease
cm	Centimeter
Cm^2	Centimeter sequare
CO_2	Carbon dioxide
Ea	Higher energy level
Eb	Lower energy level
ECG	Electrocardiogram
Fig	Figure
HDL	High density lipoprotein
He-Ne	Helium Neon
Hertz	Hz
HR	Heart rate
HRV	Heart rate variability
IHD	Ischemic heart disease
I-R	Infra red
J/cm^2	Joule per centimeter sequare
Kg	Kilogram
L.V	Left ventricle

Laser	Light amplification of stimulated emission of radiation
LDL	Low density lipoprotein
LLLT	Low level laser therapy
Mean R-R	Mean of normal to normal R-R intervals
MI	Myocardial infarction
min	Minute
mm	Millimeter
mm Hg	Millimeter mercury
mw	Milliwatts
NCEP	National cholesterol Education program
nm	Nanometer
NN	Normal to normal
NN 50	The number of interval differences of successive NN intervals greater than 50ms
NN 50%	The percentage of number of interval differences of successive NN intervals greater than 50ms
o	Degree
O2	Oxygen
PTCA	Precutaneous transluminal coronary angioplasty
RMSSD	The square root of the mean squared differences of successive NN intervals.
rpm	Round per minute
SDNN	The standard deviation of normal to normal intervals
TEM	Transverse electromagnetic mode
TENS	Transcutaneous electroneurostimulation
Vab	Energy bundle or photon
W	Watt
Yrs	Years
µg	Microgram

LIST OF TABLES

Table No.	*Subject*	*Page*
Table 1	Age;, weight, height of the four groups.	*88*
Table 2	Sex distribution in the four groups	*91*
Table 3	Descriptive statistics of systolic and diastolic blood pressure and pulse rate of the four groups.	*93*
Table 4	Frequency of diabetes mellitus, hypertension, smoking and positive family history.	*96*
Table 5	Peak oxygen consumption in the four groups at the begining of the study.	*99*
Table 6	Peak oxygen consumption in the four groups at the end of the study.	*99*
Table 7	Peak oxygen consumption in laser, C.R and laser and C.R groups at the end of the study.	*101*
Table 8	The peak oxygen consumption before and after the study in laser, C.R and laser and C.R groups.	*104*
Table 9	The mean R-R intervals of the four groups at the begining of the study.	*106*
Table 10	The mean R-R intervals of the four groups at the end of the study.	*106*
Table1 1	The mean R-R of the treated (laser- C.R and Laser and C.R) groups at the end of the study.	*108*
Table 12	The means of R-R in the four groups before and after the study	*111*
Table 13	The PNN 50% in all groups at the begining of the study.	*113*
Table 14	The PNN 50% in all groups at the end of the study	*113*
Table 15	The PNN 50% laser, C.R, and laser and C.R groups at the end of the study.	*115*
Table 16	The PNN 50% of the four groups before and after the study.	*118*
Table 17	Comprison of resting echo between the four groups at the starting.	*121*
Table 18	Comprison of low level dobutamine between the four groups at the starting	*121*
Table 19	Comprison of high level dobutamine between the four groups at the starting	*122*
Table 20	Comprison of resting dobutamine echo between the four groups at the end of study.	*125*
Table 21	Comprison of low level dobutamine between the four	*125*

	groups at the end of the study	
Table 22	Comprison of high level dobutamine between the four groups at the end of the study	*126*
Table 23	Comprison between the three treated groups at resting, low dose and high dose dobutamine.	*129*
Table 24	The score of wall motion of laser group before and after the study at resting, low and high levels of dobutamine	*133*
Table 25	The score of wall motion of C.R group before and after the study at resting, low and high levels dobutamine	*133*
Table 26	The score of wall motion of laser and C.R group before and after the study at resting, low and high levels of dobutamine.	*134*
Table 27	The score of wall motion of control group before and after the study at resting, low and high levels of dobutamine.	*134*

LIST OF FIGURES

Fig No	*Subject*	*Page*
Fig 1	*Structure of the atom*	*48*
Fig 2	*Absorption of radiation by the atom*	*50*
Fig 3	*Spontaneous emission of absorbed radiation by the atom*	*50*
Fig 4	*Stimulated emission of radiation by the atom*	*53*
Fig 5	*Essential component of convential laser*	*53*
Fig 6	*Equipment for assessment* *a) Cardiopulmonary stress exercise test.* *b) Dobutamine stress echocardiography.* *c) Twenty- four- hour Holter monitoring.*	*75*
Fig 7	*Equipment for treatment* *a) Laser therapy: Asa medical laser.* *b) Electronically braked bicycle ergometer.* *c) Treadmill.*	*77*
Fig 8	*Application of laser therapy*	*84*
Fig 9	Age, weight, height of the four groups.	*89*
Fig 10	Sex distribution in the four groups (n.=15/group)	*92*
Fig 11	Systolic and diastolic blood pressure and pulse rate of the four groups.	*94*
Fig 12	Frequency of diabetes mellitus, hypertension, smoking and positive family history.	*97*
Fig 13	Peak oxygen consumption in the four groups at the begining of the study.	*100*
Fig 14	Peak oxygen consumption in the four groups at the end of the study.	*100*
Fig 15	Peak oxygen consumption in the three treated groups at the end of the study.	*102*
Fig 16	Peak oxygen consumptio before and after the study in the four groups.	*104*
Fig 17	Mean R-R of the four groups at the beginning of the study.	*107*
Fig 18	Mean R-R of the four groups at the end of the study.	*107*
Fig 19	Mean R-R after the end of the study of the treated (laser- C.R and Laser and C.R).	*109*
Fig 20	Mean R-R in the four groups before and after the study	*111*
Fig 21	The PNN 50% in the four groups at the begining of the study.	*114*
Fig 22	The PNN 50% in the four groups at the end of the study	*114*
Fig 23	The PNN 50% in laser, C.R, and laser and C.R groups at the end of the study.	*116*
Fig 24	The PNN 50% in the four groups before and after the study.	*118*
Fig 25	Comprison of resting echo between the four groups at the starting	*122*
Fig 26	Comprison of low level dobutamine between the four groups at the	*123*

	starting	
Fig 27	Comprison of high level dobutamine between the four groups at the starting	*123*
Fig 28	Comprison of resting dobutamine echo between the four groups at the end of study.	*126*
Fig 29	Comprison of low level dobutamine between the four groups at the end of the study	*127*
Fig 30	Comprison of high level dobutamine between the four groups at the end of the study	*127*
Fig 31	*Comprison between the three treated groups at resting echocardiography, low dose, and high dose dobutamine at the end of the study.*	*130*
Fig 32	The score of wall motion of laser group before and after the study at resting, low and high levels of dobutamine.	*135*
Fig 33	The score of wall motion of C.R group before and after the study at resting, low and high levels of dobutamine	*135*
Fig 34	The score of wall motion of laser and C.R group before and after the study at resting, low and high level of dobutamine.	*136*
Fig 35	The score of wall motion of control group before and after the study at resting, low and high level of dobutamine.	*136*