

**EFFECT OF AN AGGRESSIVE VERSUS CONSERVATIVE, MULTI-MODAL
REHABILITATION PROGRAMME ON CHRONIC LOWER BACK PAIN**

by

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DEDICATION

I dedicate this thesis to my late grandfather, John Henry Billson. His passion for knowledge and his driving to understand has been an inspiration for me through the years. The opportunity to complete a thesis was never open to him, but it was his desire for his grandchildren to complete that which he was never given the opportunity to do. This has become the desire of my heart. My only regret is that he is not with us to see me achieve a goal that we both share.

According to the old saying, it is better to travel hopefully than to arrive. Our quest for discovery fuels our creativity in all fields, not just science. If we reached the end of the line, the human spirit would shrivel and die. But I don't think we will ever stand still; we shall increase in complexity, if not in depth, and shall always be the center of an expanding horizon of possibilities.



*Prof. Stephen Hawking in: The Universe in a Nutshell
Lucasian Professor of Mathematics at the University of Cambridge and
regarded as one of the most brilliant theoretical physicists since Einstein.*

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My parents: For all of their patience, love and support throughout the years, and who have made it possible for me to complete this study. Without them I would be nothing.

SYNOPSIS

Title	Effect of an aggressive versus conservative, multi-modal rehabilitation programme on chronic lower back pain
Candidate	John Henry Billson
Presenter	Prof. P.E. Krüger
Department	Biokinetics, Sport and Leisure Science
Degree	Doctor Philosophiae

Low back pain has become one of the most influential musculoskeletal diseases of modern society. It is one of most expensive diseases in terms of medical costs and increased worker absenteeism, which can lead to permanent disability and places strain on the economy as a whole. Pain has been recognised as a disease in itself, which has certain consequences when it becomes chronic. Many kinds of treatment options exist with varying degrees of success. The question is thus which treatment option is the most favourable and cost-effective.

Conservative treatment is the most recommended form of treatment when no serious underlying diseases are present. Exercise has been shown to be very effective in the treatment of chronic low back pain but there are still questions regarding the use of exercise therapy.

The predetermined goal of the study was to ascertain whether an aggressive-progressive exercise programme, and specifically what kind of exercises, would be more effective in the treatment of chronic low back pain. This was achieved through a number of steps, which included an extensive literature review, the identification of an appropriate test battery with related minimum physical requirements and cut scores, subject recruitment and screening of subjects, the implementation of the intervention and the subsequent re-testing of the subjects.

Once the data was completed, the next step was to make use of two case

studies to assist in illustrating the effectiveness of individual patients compared to the sample as a whole. These case studies were of patients who completed the entire programme but one took longer to complete the programme. This assists in illustrating the value of maintaining exercise protocol.

The results from the present study are extremely positive. The two case studies provided a glimpse of the potential value that could be added through the implementation of more aggressive-progressive exercise interventions in the treatment of chronic low back pain. The final product will greatly assist exercise therapists concerned with the treatment of chronic low back pain along with cognitive-behavioural techniques. Hopefully this study will provide insight into managing chronic low back pain in South Africa from an exercise standpoint. Secondly the study will provide practical techniques to implement in an era in which economic difficulties are rife.

Keywords

Aggressive-progressive exercises

Full working capacity adults

Cognitive-behavioural techniques

Multidisciplinary/interdisciplinary

Neuropathic pain

Fear avoidance behaviour

Disability

Work absenteeism

SAMEVATTING

Titel	Invloed van 'n aggressiewe versus 'n konserwatiewe, multimodale rehabilitasieprogram op chroniese laerugpyn
Kandidaat	John Henry Billson
Promotor	Prof. P.E. Krüger
Departement	Biokinetika, Sport- en Vryetydswetenskappe
Graad	Doctor Philosophiae

Laerugpyn het een van die invloedrykste muskuloskeletale siektes van die moderne samelewing geword. Dit is een van die duurste siektes in terme van mediese koste en verhoogde siekverlof deur werkers, wat kan lei tot permanente ongeskiktheid en 'n verhoogde las plaas op die ekonomie as 'n geheel. Pyn word erken as 'n siekte op sy eie wat sekere gevolge het wanneer dit chronies begin raak. Verskeie soorte behandelingsopsies is beskikbaar met variërende grade van sukses. Die vraag is dus watter behandelingsopsie is die bruikbaarste en koste-doeltreffendste.

Konserwatiewe behandeling is die mees aanbevole metode van behandeling wanneer daar geen ernstige onderliggende siektetoestande teenwoordig is nie. Dit is reeds bewys dat oefening baie doeltreffend is in die behandeling van chroniese laerugpyn. Daar bestaan egter steeds vrae rondom die gebruik van oefening as terapie.

Die vooropgestelde doelwit van die studie was om te bepaal of 'n aggressiewe-progressiewe inoefeningsprogram doeltreffend sal wees in die behandeling van chroniese laerugpyn, en meer spesifiek watter tipe oefening die doeltreffendste sal wees. Die navorsing het bestaan uit 'n paar stappe wat ingesluit het 'n intensiewe literatuursoektog, die identifisering van 'n gepaste toetsbattery met verwante minimum fisieke vereistes en afsnytellings, die verkryging en evaluering van proefpersone, die implementering van die intervensieprogram en die daaropvolgende hertoetsing van die proefpersone.

Nadat die invordering van die data en die gepaardgaande analise van die data voltooi is, was die volgende stap om gebruik te maak van twee gevallestudies ten einde die doeltreffendheid van die intervensieprogram vir individuele proefpersone te illustreer deur dit te vergelyk met die groep as 'n geheel. Die twee gevallestudies was van proefpersone wat die intervensieprogram volledig voltooi het, alhoewel die een proefpersoon langer geneem het om die intervensieprogram te voltooi. Dit help om die navolgingswaarde van 'n inoefeningsprotokol te illustreer.

Die resultate van die huidige studie is uiters positief. Die twee gevallestudies gee 'n mate van insig wat betref die potensiële waarde wat verkry kan word deur die implementering van 'n meer aggressiewe-progressiewe inoefeningsintervensie vir die behandeling van chroniese lae rugpyn. Die finale produk sal die nodige ondersteuning aan oefeningsterapeute bied wat onseker is oor die behandeling van chroniese laerugpyn deur middel van aggressiewe-progressiewe inoefeningsintervensies en kognitiewe gedragstegnieke. Hierdie studie sal dus die begrip en insig van die behandeling van chroniese laerugpyn in Suid-Afrika verhoog vanuit 'n oefeningsuitgangspunt. Tweedens sal die studie die gebruik van praktiese oefentegnieke aanmoedig in 'n era waarin ekonomiese tye moeilik is.

Sleutelsterme

Aggressiewe-progressiewe oefening

Volwerkendekapasiteit-volwassenes

Kognitiewe gedragsmetode

Multidissiplinêre/interdissiplinêre

Neuropatiese pyn

Vreesvermydingsgedrag

Ongeskiktheid

Werkafwesigheid

TABLE OF CONTENTS

	Page #
DEDICATION	i
ACKNOWLEDGEMENTS	ii
SYNOPSIS	iii
SAMEVATTING	v
TABLE OF CONTENTS	vii
LIST OF TABLES	xiv
LIST OF FIGURES	xv
LIST OF EXERCISE PHOTOS	xvii
LIST OF ABBREVIATIONS	xix

CHAPTER 1: THE PROBLEM

1.1	Introduction	1
1.2	Research Questions	7
1.3	Research Hypothesis	7
1.4	Goals of the Study	8
1.5	Objectives of the Study	8
1.6	Research Design	9
1.7	Research Procedure and Strategy	10
1.7.1	Inclusion Criteria	11
1.7.2	Exclusion Criteria	11
1.7.3	Study Sample	11
1.7.4	Intervention	12
1.7.5	Back School	13
1.8	Definition of Key Concepts	13

CHAPTER 2: LITERATURE SURVEY

2.1	Pain and its Physiology	16
2.1.1	The Pain System	18
2.1.2	Types of Pain	21
2.1.2.1	Nociceptive Pain	21
2.1.2.1.1	Peripheral Mechanisms of Pathophysiological Nociceptive Pain	23
2.1.2.2	Neuropathic Pain	24
2.1.2.2.1	Peripheral Mechanisms of Neuropathic Pain	25
2.1.2.3	Dysfunctional Pain	26
2.1.2.4	Mixed Pain	27
2.1.3	Chronic Pain and its Effects	27
2.1.3.1	Psychological/Psychosocial Consequence of Chronic Low Back Pain	30
2.1.3.2	Physical Changes and Deconditioning	35
2.1.3.3	The Concept of Central Sensitisation	40
2.1.3.3.1	The Role of Acute Pain in Central Sensitisation	40
2.1.3.3.2	The Physiology of Central Sensitisation	41
2.2	The Problem of Low Back Pain	43
2.2.1	Lifetime Occurrence of Low Back Pain	45
2.2.2	Impact of Low Back Pain	46
2.3	Low Back Anatomy	48
2.3.1	The Bone Structure	48
2.3.2	The Intervertebral Disc	51
2.3.2.1	The Nucleus Pulposus	52
2.3.2.2	Annulus Fibrosis	53
2.3.2.3	The Endplate	54
2.3.2.4	Properties and Function of the Intervertebral Discs	54
2.3.3	Movements of the Vertebral Column	56

2.3.4	The Model of Spinal Stability and Instability	56
2.3.5	The Passive Stabilising Structures of the Spine: Bone, Ligaments and Fascia	58
2.3.6	Dynamic Spine Stability: The Muscles Supporting the Spine	59
2.3.6.1	Muscles Involved in Spinal Stability	64
2.3.6.1.1	Multifidus	68
2.3.6.1.2	Transversus Abdominis	73
2.3.6.1.3	Internal and External Obliques	75
2.3.6.1.4	Quadratus Lumborum	78
2.3.6.1.5	Erector Spinae (Extensor Group)	79
2.3.6.1.6	Gluteus Maximus, Gluteus Medius, and Gluteus Minimus	80
2.3.6.1.7	Rotatores and Intertransversarii	81
2.3.6.1.8	Rectus Abdominis	81
2.3.6.1.9	Latissimus Dorsi	82
2.3.6.2	Neuromuscular Stabilisation and Postural Control	83
2.3.6.3	The Role and Application of Stabilisation	86
2.4	Recommended Treatment Modalities for Low Back Pain	89
2.4.1	Acute Low Back Pain and its Necessity for Exercise Treatment	90
2.4.2	Recommended Treatment for Chronic Low Back Pain	92
2.4.3	The Role of Exercise as a Treatment Modality	97
2.4.4	The Use of Exercise Intervention in Chronic Low Back Pain	100
2.4.5	Conservative vs. Aggressive Exercise Treatments	105
2.4.5.1	Does Aggressive Exercise Rehabilitation Play a Role in Managing Chronic Low Back Pain?	106
2.5	Ergonomics: The Key to Protecting the Spine	106
2.5.1	The Role of Ergonomic Modification and Risk Factor Prevention	107

2.5.2	Specific Task Modification: Occupational Risk Factor Management	109
2.5.3	The Back School Concept: The Role of Research and its Application	110
2.6	Research Problem	114

CHAPTER 3: METHODOLOGY

3.1	Introduction	116
3.2	Participants	116
3.2.1	History of the Subjects	117
3.2.1.1	The Use of Low Numbers in the Present Study	118
3.3	Methods and Materials	121
3.3.1	Medical Screening	121
3.3.2	Study Design	121
3.3.3	Questionnaires	122
3.3.3.1	Pain and Disability	122
3.3.3.1.1	The Visual Analogue Scale (VAS) for Pain Measurement	122
3.3.3.1.2	Oswestry Disability Index (ODI)	123
3.3.3.1.3	Functional Rating Index (FRI)	123
3.3.3.2	Fear Avoidance	124
3.3.3.2.1	Fear Avoidance Beliefs Questionnaire (FABQ)	124
3.3.3.3	Kinesiophobia	125
3.3.3.3.1	The Tampa Scale of Kinesiophobia	125
3.3.3.4	Exercise Intensity	125
3.3.3.4.1	The Borg Rate of Perceived Exertion (RPE) Scale	125
3.3.4	Physical Testing	127
3.3.4.1	Neurodynamic Testing	127
3.3.4.1.1	Straight Leg Raise Test	127

3.3.4.1.2	The Slump Test	131
3.3.4.2	Muscle Endurance Testing	132
3.3.4.2.1	The Sorenson Back Extension Test (The Ito Test Version)	132
3.3.4.2.2	Side Bridging Endurance Test	136
3.3.4.2.3	Flexor Endurance Test	137
3.3.5	The Exercise Programmes	138
3.3.5.1	Control Group (Conservative Exercise Programme)	138
3.3.5.2	Experimental Group (Progressive-Aggressive Programme)	141
3.3.5.2.1	Programme 1	141
3.3.5.2.2	Programme 2	144
3.3.5.2.3	Programme 3	148
3.3.6	The Back School	151

CHAPTER 4: RESULTS AND DISCUSSION

4.1	Background and Objectives	154
4.2	Research Design	154
4.3	Methodology	154
4.4	Statistical Analysis	155
4.4.1	Descriptive Statistics	155
4.4.2	Inferential Statistics	156
4.4.2.1	Mann-Whitney Test	156
4.4.2.2	Wilcoxon Signed-rank Test	156
4.5	Results	156
4.5.1.	Descriptive Statistics for the Two Groups on all Measurements	157
4.5.2	Frequency, Intensity and Duration	171

4.5.3	Results of Differences Between Experimental and Control Groups on Pre-test Measurements	186
4.5.4	Results of Differences Between Experimental and Control Groups on Post-test Measurements	189
4.5.5	Results of the Analysis to Test Whether Statistically Significant Differences Existed Between the Pre-test and Post-test Measurements Within the Experimental Group	191
4.5.6	Results of the Analysis to Test Whether Statistically Significant Differences Existed Between the Pre-test and Post- test Measurements Within the Control Group	193
4.6	Case Studies	196
4.6.1	Patient A	196
4.6.1.1	Pre-test Results	196
4.6.1.2	Post-test Results	197
4.6.2	Patient B	198
4.6.2.1	Pre-test Results	198
4.6.2.2	Post-test Results	199

CHAPTER 5: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1	Introduction	201
5.2	Summary of Results	201
5.3	Conclusion	204
5.4	Recommendations	207
5.5	Future Research	209

BIBLIOGRAPHY	213
ANNEXURE A	306
ANNEXURE B	317
ANNEXURE C	329
ANNEXURE D	338

LIST OF TABLES

Table		Page #
3.1	Borg RPE Scale	126
4.1	Descriptive Statistics per Group on Pre-test Measurements	157
4.2	Descriptive Statistics per Group on Pre-test and Post-test Measurements	159
4.3	Descriptive Statistics per Group on Pre-test and Post-test Measurements (continued)	161
4.4	Descriptive Statistics per Group on Pre-test and Post-test Measurements (continued)	164
4.5	Descriptive Statistics for the Experimental Group on Questionnaire Measurements	169
4.6	Descriptive Statistics for the Experimental Group on Questionnaire (continued)	170
4.7	Descriptive Statistics for the Experimental and Control Groups (continued)	174
4.8	Descriptive Statistics for the Experimental and Control Groups (continued)	176
4.9	Descriptive Statistics for the Experimental and Control Groups (continued)	178
4.10	Neuropathic Pain Results	186
4.11	Mean Scores of Experimental Group Compared to Patient A at Pre-test	197
4.12	Mean Scores of Experimental Group Compared to Patient A at Post-test	197
4.13	Mean Scores of Control Group Compared to Patient B at Pre-test	198
4.14	Mean Scores of Control Group Compared to Patient B at Post-test	199
4.15	Comparison of Post-Test scores for Patient A and Patient B	200

LIST OF FIGURES

Figure		Page #
2.1	The Nociceptive Pain System	22
2.2	A Radiological View of the Spine	49
2.3	The Lumbar Vertebrae	50
2.4	The Intervertebral Disc Between Two Adjacent Vertebrae	52
2.5	The Structure of an Intervertebral Disc	54
2.6	The Composition of the Intervertebral Disc Structures	55
2.7	The Muscles of the Spine	62
3.1	The Straight Leg Raise Test	130
3.2	The International Standard Protractor Goniometer	130
3.3	The Slump Test	132
3.4	The Sorensen Back Extension Test	134
3.5	The Ito Test	135
3.6	The Side Bridging Endurance Test	137
3.7	The Flexor Endurance Test	137
4.1	Difference Between Experimental and Control Groups on Pre-test Measurements	187
4.2	Difference Between Experimental and Control Groups on Pre-test Measurements (continued)	187
4.3	Difference Between Experimental and Control Groups on Pre-test Measurements (continued)	188
4.4	Difference Between Experimental and Control Groups on Pre-test Measurements (continued)	188
4.5	Difference Between Experimental and Control Groups on Post-test Measurements	189
4.6	Difference Between Experimental and Control Groups on Post-test Measurements (continued)	190
4.7	Difference Between Experimental and Control Groups on Post-test Measurements (continued)	190

4.8	Difference Between Pre-test and Post-test Measurements within the Experimental Group	192
4.9	Difference Between Pre-test and Post-test Measurements within the Experimental Group (continued)	192
4.10	Difference Between Pre-test and Post-test Measurements within the Experimental Group (continued)	193
4.11	Difference Between Pre-test and Post-test Measurements within the Control Group	194
4.12	Difference Between Pre-test and Post-test Measurements within the Control Group (continued)	195
4.13	Difference Between Pre-test and Post-test Measurements within the Control Group (continued)	195

LIST OF EXERCISE PHOTOS

Exercise Illustration	Page #
Control Group	
Cycling	138
Both Knees to Chest Stretch	139
Hamstring Stretch	139
Periformis Stretch	139
Roll Both Knees to Side	139
Sit on Stability Ball	140
Alt Superman on All-fours	140
Hip Lifts (Feet Flat on Floor)	140
Prone Alt Leg Lifts	140
Prone Alt Arm and Leg Lifts	141
Experimental Group Programme 1	
Cycling	142
Hamstring Stretch with Foot Flexion	142
Side Lying Quadricep Stretch	142
Lat Pulldown to the Front	142
Side Bridging (on Knees)	143
High Cable Horizontal Adduction (Downwards)	143
Hip Lifts with Feet on Bench	143
Alt Superman on Stability Ball	143
Abdominal Crunches (Feet on Bench)	144
Experimental Group Programme 2	
Cycling	144
Hamstring Stretch with Step-off	145
Side Lying Quadriceps Stretch	145
Lat Pulldown to Front	145
One-arm Dumbbell Row	146
Side Bridging (on Feet)	146

Low Cable Shoulder Flexion (Straight Arm)	146
Ball Squat Against Wall	147
Hip Lifts (Feet on Ball)	147
Alt Superman (Sweeping Hand on Floor Upon Return and Up Again)	147
Abdominal Crunches (Feet on Stability Ball)	148

Experimental Group Programme 3

Cycling	148
Periformis Stretch	148
Rotation Stretch	148
Side Lying Quadriceps Stretch	149
Lat Pulldown to Front	149
High Cable Pulldown to Opposite Hip with Both Arms	149
Seated Cable Row	149
Ball Squat Against Wall (With Weight)	150
Side Bridging (on Feet, Lift Side)	150
Hip Lifts With One Leg at a Time (Feet on Bench)	150
Alt Superman	151
Abdominal Crunches (Lying on Ball)	151

LIST OF ABBREVIATIONS

ACSM	American College of Sport Medicine
Alt	Alternative
BMI	Body Mass Index
cm	Centimetres
FABQ	Fear Avoidance Beliefs Questionnaire
FRI	Functional Rating Index
FWCA	Full Working Capacity Adults
Hrs	Hours
kg	Kilogram
min	Minute(s)
MVC	Maximal Voluntary Contraction
reps	Repetitions
RPE	Rate of Perceived Exertion
sec	Seconds
SIJ	Sacro-iliac Joint
SRL	Straight Leg Raise
VAS	Visual Analog Scale