

CHIROPRACTIC CARE IN ASSOCIATION WITH  
A WELLNESS APPROACH FOR THE TREATMENT  
OF MECHANICAL LOW BACK PAIN.

by  
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The dissertation is dedicated to my parents  
Johan and Marthie Opperman.

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# ABSTRACT

This study was done in order to compare the effectiveness of chiropractic treatment in association with a wellness approach, to chiropractic treatment without a wellness approach in the management of Mechanical Low Back Pain.

Low back pain is an enormous problem in today's society. Vast amounts of money are spent annually on the investigation into and treatment of low back pain, and numerous work days are lost due to absenteeism. Chronic low back pain also affects the individual's life-style, and can lead to psychological problems. Thousands of low back operations are done yearly, with a significantly high failure rate. (Frymoyer et al. 1980.)

In this study factors such as cost, recovery time and incidence of reoccurrence were used as criteria to determine the effectiveness of chiropractic treatment applied to the two groups of patients. The concept of holism was applied to one group, whereas the other group was treated without this approach.

The study was conducted as a clinical trial, with two experimental groups. Thirty patients who had responded to an advertisement were selected and randomly divided into two groups. The patients were selected from the general population on the grounds of their signs and symptoms.

Group A received chiropractic treatment in association with the wellness approach. This comprised patient education in the form of guidance towards life-style changes and exercises. Patients were also given a detailed explanation of their problems, leading to an understanding of their conditions. Group B received chiropractic treatment only. Their condition was not explained, and they did not receive any of the holistic aspects mentioned for group A.



In each case, chiropractic care included Diversified Technique and Myofascial Pain and Dysfunction therapy relevant to the condition under treatment.

Patients were treated for a maximum of twelve treatments over a four week period, with a follow-up visit one month after the last treatment. Data were obtained at the first, last and follow-up visits. The Oswestry Low Back Disability Index (Appendix E), Numerical Rating Scale 101 (Appendix F), Short-Form McGill Pain Questionnaire (Appendix G), General Well-Being Schedule (Appendix H), Wellness Approach Questionnaire (Appendix I) and Follow-up Wellness Approach Questionnaire (Appendix J) were used to evaluate the subjective aspect. To measure the objective aspect an Algometer was used.

Results were statistically analyzed using the Mann-Whitney U-test (inter-group comparison) and the Wilcoxon Signed rank test (intra-group comparison). Bar charts were drawn using the medians of the groups.

It was found that group A improved at all stages, and group B only improved during the actual treatment period. When comparing the groups it was shown that group A had improved significantly more than group B, except on the psychological level which was measured by the General Well-Being Schedule.

The results of this study demonstrated that chiropractic treatment in association with a wellness approach was more effective in the treatment of Mechanical Low Back Pain than chiropractic care on its own. The improvement of the patients in group A also lasted longer, as was demonstrated by the results of the follow-up visit.

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# DEFINITIONS

## Adjustment

A specific form of direct articular manipulation, utilising a short lever, and characterised by a dynamic, forceful high velocity thrust of controlled amplitude (Kurk et al. 1991: 1).

## Chiropractic treatment/care

This includes adjustments as defined by the Diversified Technique, as well as auxiliary chiropractic therapies, e.g. electrotherapy, massage and traction (Till, personal communication 1994).

## Effectiveness

The result of a technique that will produce pain relief in the shortest space of time, as well as the average result of a group that retains the least amount of pain after a one month follow-up period when compared with others.

## Electrotherapy

Treatment of disease by means of electricity (Dorland's Medical Dictionary: 538).

## Holistic

The term holistic considers man as a functioning whole (Dorland's Medical Dictionary: 771).

## Maigne's Syndrome

Pain over the iliac crests due to joint dysfunction and nerve irritation in the T12 and L1 regions (Kirkaldy-Willis & Burton 1992: 161).

## Massage

Systematic therapeutic friction, stroking or kneading of the body (Dorland's Medical Dictionary: 985).

## Mechanical Low Back Pain

This includes Posterior Facet Syndrome, Maigne's Syndrome, Sacro-iliac Syndrome and Myofascial pain and Dysfunction Syndrome (Kirkaldy-Willis & Burton 1992: 161).

### Myofascial Pain and Dysfunction Syndrome

Pain and or autonomic phenomena referred from active myofascial trigger points with associated dysfunction (Travell & Simons 1992 1: 3).

### Objective assessment

Measurements taken to assess patients' clinical improvement by using their external senses (Dorland's Medical Dictionary: 1164). A pressure Algometer was used to assess patients' pain sensitivity (Dorland's Medical Dictionary: 46).

### Posterior Facet Syndrome

Low back pain associated with pain which can be local or referred, and joint dysfunction (Gatterman 1990: 161).

### Sacro-iliac Syndrome

Local or referred pain due to dysfunction of the Sacro-iliac joints (Gatterman 1990: 114).

### Subjective assessment

Patients' perception of the treatment, and their improvement are assessed by using questionnaires.

### Traction

Flexion distraction of the lumbar spine allows traction and flexion, with or without rotation and side bending at a specific level of the spine (Gatterman 1990: 370).

### Trigger point

A focus of hyper-irritability in a tissue that, when compressed, is locally tender and, if sufficiently hypersensitive, gives rise to referred pain and tenderness (Travell & Simons 1992 1: 4).

### Trigger point therapy

Some accepted ways of treatment of trigger points are: stretching, ice and heat, dry needling and injection (Travell & Simons 1992 1: 5). However, in this study only dry needling of the trigger point using an acupuncture needle was done.

### Wellness

Wellness is a term describing the concept and practice of holism; it includes the biological spectrum, life-style modifications and patient education (Till, personal communication 1994).

# CHAPTER 1

## INTRODUCTION

Statistics show that 80% of adults will have at least one occurrence of low back pain in their lives. In the USA 16-60 million dollars are spent annually on the treatment of low back pain. An average of 250 000 lumbar surgeries are performed, with a failure rate of 15% and 40 000 re-operations done annually. It is estimated that 75 million people suffer from low back pain, with an incidence of 7 million new patients yearly. (Frymoyer et al. 1980.) Low back pain is the leading cause of disability in people younger than 45 and the leading cause of visits to physicians (Vernon 1991).

Chiropractic treatment of low back pain has been shown to be very effective (Hastings et al. 1980: 232). Treatment includes mainly manipulative techniques, but some physiotherapy modalities are also utilised. Chiropractors are also trained in prescription of auxillary approaches such as exercise therapy, life-style modification and nutritional advice. (Gatterman 1990: xv, 8.) However, it is possible that due to lack of education, ignorance, laziness or very large patient loads practitioners may fail to employ these auxillary approaches.

Holism is a philosophy that maintains that man is not reducible to the sum of his parts, but that he/she is a whole living unit who acts within his/her environment. The doctor advises and educates the patient instead of just treating the presenting problem. According to the holistic philosophy, a health problem cannot be fully understood or adequately treated if everything about the person is not taken into consideration. (Jamison 1991a.) Till (personal communication 1994) defined wellness as a term used to describe the concept and practice of holism; it involves the doctor advising and educating the patient instead of just treating

the presenting problem. The difference between being a "fixer" and a "healer" of the body, is that a "fixer" only removes or fixes the problem the patient presents with. This approach contrasts with a true healer who takes into consideration the patient's psycho-social factors, life-style and internal and external environment when treating him/her in order to improve not only his presenting disorder but also to increase his quality of well-being. (Deliman & Smolowe 1982: 8, 9.) "To exclude paying attention to the patient's life-style and factors influencing him from his environment, be it at work or at home, as a contributing factor to his well-being and health would be a serious omission in the total management of the patient" (Jamison 1991a: 7). Treatment of symptoms is only a temporary solution, and it is unsatisfactory because there is a greatly increased possibility of relapse. Elimination of all irritating factors for optimal all-round health should be the goal of any kind of therapy. (Tilscher & Eder 1991: 5.)

If a holistic approach is incorporated into chiropractic health care, the treatment of low back pain would be more effective and it may aid in reducing recurrence by emphasising preventative care (Jamison 1991a). However, a search of the literature has failed to reveal any attempt by researchers to test whether the above concept is valid when applied to the management of mechanical low back pain. Kotze (1995) found that patients were aware of holism, but that their experience of holism did not fully correspond with the holistic approach offered by the practitioners. She therefore argued that practitioners need to be more clear about the definition and practice of holism.

In designing this study, it was therefore postulated that its potential benefit would be to determine an effective means of treating Mechanical Low Back Pain. To achieve this aim, it was necessary to determine which patients could be treated effectively with conservative care, in order to limit the number of operations required. As chiropractic treatment has been shown to be more cost effective than medical treatment for low back pain (Hastings et al. 1980: 232), it was also necessary to



determine whether the treatment duration could be decreased to minimize the amount of days lost from work. A holistic approach may be more expensive in the short term, but could be more effective in the long term as it will decrease the incidence of reoccurrence. With increased quality of care and education it was theorised that patients would be more compliant to the treatment, and that they would apply given advice.

In the light of this, the aim of the study was to evaluate the response of patients to chiropractic care alone (adjustments and trigger point therapy) in comparison with chiropractic care in association with a wellness approach, in terms of objective and subjective assessment, in order to determine which approach was more effective in the management of Mechanical Low Back Pain.

The first objective was to evaluate the response of patients to chiropractic care alone in comparison with chiropractic care in association with a wellness approach in terms of objective assessment, in order to determine which approach was more effective in the management of Mechanical Low Back Pain.

The second objective was to evaluate the response of patients to chiropractic care alone in comparison with chiropractic care in association with a wellness approach in terms of subjective assessment in order to determine which approach was more effective in the management of Mechanical Low Back Pain.

The third objective was to integrate the results of the first and second objectives in order to determine which approach was more effective in the management of Mechanical Low Back Pain.

# CHAPTER 2

## REVIEW OF THE RELATED LITERATURE

### 2.1 INTRODUCTION

Holism can be described as looking at the person as a functioning whole. Breaking him down into different parts and treating him accordingly, is called reductionism. (Davies 1987: 61.) An example to explain this is given by Davies (1987: 61) when he considers a photograph from a newspaper which consists of many dots. When looking closely no amount of scrutiny will reveal a face, but when looking at it from a distance, i.e. viewing all the dots together, the image can be seen clearly. This is in accordance with Ehrenfel's well known principle: "The whole is greater than the sum of its parts" (Davies 1989: 61; Gordon 1990; Tilscher & Eder 1991: 1.)

### 2.2 HISTORY

According to Capra (1988: 308-309), health practitioners in the distant past were shamans or witch doctors, named according to the culture in which they practised. They first looked at the person from a spiritual perspective and in the context of his social environment, and secondly they treated his illness, because they believed that illness was caused by disharmony and imbalance in his environment. Capra (1988: 308) argues there are many similarities between these practitioners and modern psychotherapists, since the psychotherapists also look at social behaviour and environmental influences as the cause of some illnesses. Shamans viewed humans as an integral part of an ordered system, i.e. the society you live in. This is also consistent with the modern holistic view that disease is a consequence of imbalance and disharmony, and that healing will have to go beyond biological mechanisms to find the causes of illness in e.g. environmental influences, psychological patterns and social relations. (Capra 1988: 309.)

The aim of traditional Chinese medicine was to keep the person in harmony with the environment and to help him adapt to any changes. The emphasis was on balance and harmony to keep the person healthy. Prevention played a major role. It was the person's responsibility to keep his body healthy and the doctor's to give advice, treat serious illnesses and coordinate rehabilitation. (Capra 1988: 315.)

The ancient Greeks had a classical ideal of a sound mind in a sound body (Deliman & Smolowe 1982: 6). Even in the Hippocratic writings health is a state of balance between environment, life-style and the different aspects of human nature (Capra 1988: 311; Gordon 1990).

Hippocrates as the "Father of Medicine" believed that disease was created by natural causes and that the physician's role was to assist nature's own healing force. The doctor's first interest had to be the patient and not the disease, and his concern was with the body as a whole. Symptoms served only as indicators of the status of the patient, rather than a basis of classification. (Deliman & Smolowe 1982: 6.)

During the early Renaissance humanists interpreted Hippocratic ideas, then tried to explain "miracles" rationally. This gave them a greater insight into the role of psychological factors in disease. "Imagination" was recognised as a factor in the cause and cure of many diseases. (Deliman & Smolowe 1982: 6.)

Even Darwin's theory of evolution influenced concepts of holism by showing interrelationship between organisms and their environments (Deliman & Smolowe 1982: 6).

During the mid 1800's Claude Bernard, a French physiologist and biochemist, described the concept of homeostasis or balance seeking. He theorised that an internal environment exists as a mediator between the life of the organism and its external environment. He also stated that organisms tend to maintain the composition of their environment, and if this dynamic equilibrium is upset, reactions occur to restore the balance. (Deliman & Smolowe 1982: 6; Bron 1990.)

Biological systems exist as unstable equilibrium flows, whose regulated state is maintained by homeostasis (Tilscher & Eder 1991: 1, 3).

Physics and other natural sciences started to separate matter, mind and spirit in order to study them, and to understand the human body and its processes better. Soon holistic practice was completely lost and scientists became more involved with the cause and treatment of diseases. In the late nineteenth century this started to change when individuals discovered interconnection among the elements of the universe. (Deliman & Smolowe 1982: 2.)

In the 1920's these ideas were crystallised into the theory of holism by Jan Christiaan Smuts, a South African statesman and philosopher who originated the term "holism". He realised that rigid materialism could no longer explain nature; and this deepened his inquiry into the idea of "wholes" and he arrived at the concept of holism. (Deliman & Smolowe 1982: 6; Marks 1987; Gordon 1990.)

During all these years Eastern culture continued its old philosophies of holism, and in recent years health practitioners from the East have played a major role in introducing these concepts and practices to Western culture (Deliman & Smolowe 1982: 6).

### 2.3 WESTERN MEDICINE

As western medicine developed over the last 300 years, especially since the influence of Descartes, a reductionist view has been used more and more (Davies 1987: 61, 64). Reductionism means to compartmentalize; the body is seen as a machine with different parts, and disease as malfunction of the biological mechanisms (Hastings *et al.* 1980: 487; Capra 1988: 321). In this model the objective is to intervene and explain the disease process which is due to biological disturbance (Vernon 1991).

The patient is seen in a few minutes and due to rising numbers of patients, an investigation is seldomly done beyond the presenting problem, irrespective of what the precipitating cause is (Lincoln 1992).

Specialists have an even bigger problem because they are trained to be experts in a particular field, and not to look at the whole person or at any other systems that might cause or contribute to the problem (Capra 1988: 320). Brom (1990) discusses the way any "general" practitioner should practice, i.e. as a primary contact physician he should treat all the patients holistically and then only send problem cases to specialists. In the Western world there are many kinds of health care practitioners, e.g. family doctors, nurses, chiropractors and homeopaths, who have the responsibility of a primary contact physician (Capra 1988: 317).

In using a holistic approach, chiropractors are fulfilling the ideal of being a primary contact practitioner (Jamison 1991b).

In the past medicine was focused on diagnosis and treatment, with the physician assuming all the responsibility (Lincoln 1992). However, the dominant practitioner-dependent patient relationship of the medical model of health care is seldom appropriate at the primary level of health care. A biopsychosocial health care model that includes the physical signs and symptoms manifestation of disease, as well as the patient's feelings or illness response and behaviour or sickness presentation is more appropriate to primary health care practice. To prevent disease the doctor must realise that the reductionist, unifactoral basic science approach fails to address substantive primary health care issues. (Jamison 1991a: 3.) To assess the contribution of biological, social and psychological factors to illness of a patient, is the essence of the art and science of general practice and primary health care (Capra 1988: 335).

Health should be defined positively in terms of well-being and not in the usual negative way. Only then can suffering from a disease force the patient to bring about positive changes in his life-style, which will



thus help to build the body up to a higher degree of well-being and health (Van Der Steen & Thung 1988: 196).

#### 2.4 HOLISM

The word holism is derived from the greek word "holos", which means total or whole (Marks 1987). According to Capra (1988: 317) there are two kinds of holism: the first is a medical concept where the human is seen as a living system whose components are all interdependent and interconnected; the second is much broader in the sense that the human is seen not only as a complete being, but also as interacting with his environment. (Marks 1987.)

Coulter (1993) states that the type of practitioner that will practise holistically will be: non-reductionist, he will preferably use natural medicine, he will be humanistic and caring, as little as possible intervention will be used allowing the body to heal itself and he will encourage an equal partnership between the doctor and the patient.

Practising holistically means to collect a wide range of information from the patient, and selecting the appropriate treatment protocol best suiting the patient. (Capra 1988: 335.) Deliman & Smolowe (1982: 8) say that therapies cannot be holistic; but that the entire approach itself must be holistic, this includes the way of viewing the patient, the general diagnostic procedure as well as therapeutic practices. All dimensions such as movement, structure and spirit are so intimately and sensitively interrelated that a change in one part brings about shifts in other parts. (Hastings et al. 1980: 16; Deliman & Smolowe 1982: 8.)

Deliman & Smolowe (1982: 9) described many different dimensions. The nutritional dimension can be defined as that which a person does with his diet in relationship to awareness, energy, personal responsibility and emotions. Structural dimension is that which considers the arrangement of muscles and bone including posture, muscle tension and flexibility. Other dimensions are: movement, emotion, the breathing dimension (which also includes muscle tone and circulation), symbolic,

sensory or imagery dimension (which describes what the patient perceives and how he processes information from external and internal environments), interpersonal, cardiovascular and mental. (Deliman & Smolowe 1982: 9.)

Thus from a holistic point of view health can be defined as a wholeness, and as a balanced and harmonious union of the body, mind and spirit (Marks 1987). Illness is then a disturbance of the functioning of the whole and not just an isolated cause or effect (Deliman & Smolowe 1982: 9). Jensen & Allen (1993) state that illness is not only the absence of disease, but is also due to imbalance or deviation from the norm (Hastings 1980: 17).

Four leading principles of holism are:

1. Entities and systems function as unified wholes.
2. All parts of the wholes are dynamically interdependent and interrelated.
3. In order to understand the whole the parts cannot be examined separately.
4. The whole is greater than the sum of its parts.

(Van Der Steen & Thung 1988: 196; De Leeuw 1989.)

Wellness is a term used to describe the concept and practice of holism; it involves the doctor advising and educating the patient instead of just treating the presenting problem (Till, personal communication 1994). Jensen & Allen (1993) and Coulter (1990) state that wellness is more than a concept. It is a way of life in which harmony is achieved between all aspects of the person, i.e. mind, body and soul, and is not just the absence of illness. Marks (1978) also includes the following aspects to the list: complete personal fulfilment and harmony, physical and mental fitness, vitality and enthusiasm, confidence and realistic optimism, satisfactory sleep and sexual fulfilment.

A wellness approach also includes aspects such as: the patient's personality, improved communication between the doctor and the patient, active patient participation, life-style modification and genetic predisposition (Hastings et al. 1980: 1-487).

## 2.5 ASPECTS OF HOLISTIC TREATMENT

### 2.5.1 Cultural and religious differences

The first aspect that must be considered in the practice of holism relates to cultural and religious differences. Littlewood (1991) discusses the case of a young Asian girl whose health was influenced because of her religion and environment. She was treated medically with no improvement, and not until the external stresses were addressed did she recover from her illness. Understanding a patient's cultural views may give one a very important insight into his illness (Hastings et al. 1980: 17; Broome 1989: 61).

### 2.5.2 Personality

The patient's personality is a crucial element in the generation of illness. This is a very important reason to treat patients holistically; should this be overlooked, the patient will be treated inappropriately. (Capra 1988: 328; Jamison 1991b.) For example, Type A personalities are known to be more prone to heart disease as a result of their higher stress levels than Type B personalities (Lamarine 1989). Treatment for Type A will include counselling in order to teach them how to manage their stress levels.

### 2.5.3 Communication

Van Der Steen & Thung (1988: 398) say that an open channel of communication between patients and doctors is an essential part of holism. If this does not exist one would never be able to assess the patient's problem accurately, and the patient would probably not listen to the doctor's advice (patient education).

To improve communication between the doctor and the patient, the importance of the treatment and patient participation must be stressed. (Marks 1987; Van Der Steen & Thung 1988: 398.)

Terms and concepts must be simplified so that the patient can understand easily. Repetition and using specific statements are important methods to reinforce the facts and to help the patient to remember. It has been shown that most patients either don't understand what is said, or by the time they get home they cannot recall what was said. To make sure that the patient definitely knows what has been said, and that he understands, he should be asked to repeat what he has heard. The benefits of improved communication are: firstly, the patient's knowledge about his illness increases, and secondly, the patient is more satisfied with the treatment. This will result in increased patient compliance, and the patient will recover quicker from his illness. (Van Der Steen & Thung 1988: 92, 398-399; Broome 1989: 75, 85; Vernon 1991.)

In a study about patient satisfaction one of the most common reasons for dissatisfaction was the failure to receive an understandable explanation of the problem (Vernon 1991). Deyo and Diehl (1986) demonstrated a significant association between patient satisfaction and compliance as well as self-rated improvement. These patients also had less desire for additional diagnostic tests. Their study also showed no link between length of time spent and satisfaction, but rather highlighted the importance of good understanding of the condition. Information is the most important reason why patients seek care for back pain; they seek a diagnostic label and an etiological explanation rather than a cure.

Many illnesses may result from underlying psychological problems. It is therefore very important to listen carefully to one's patient, as sometimes patients with "incurable" diseases can be helped. (Stanford 1977: 40)

#### 2.5.4 Patient education

As mentioned above, improved communications will make patient education much simpler. The aim of education is to make patients understand how their behaviour and environment affect their health and to teach them how to cope with and prevent further problems. (Capra 1988: 333.) Jamison (1991a: 4) states that the doctor is the teacher and the patient takes over some of the doctor's functions. Although chiropractic care is more involved with the neuromuscular system, early detection and recognition of diseases by screening for risk factors are important. Patients can also be made aware of early signs and symptoms; here the chiropractor assumes the responsibility of being a health information recourse, health promotion counsellor and disease prevention professional. (Jamison 1991a: 4, 7.)

The focus of the first consultation should be to educate the patient about the nature of the illness and the possibility of changes. This is in accordance with the original role of the "docere" (Latin) which means to teach. (Capra 1988: 335; Coulter 1993.) In a study cited by Vernon (1991) it was shown that twice as many chiropractic patients as compared with medical patients (16% MD vs 44% DC) knew what to do to take care of their backs as a result of the initial visit.

Patient education has been reported to make a substantial contribution to the patient's health and sense of well-being. It is also cost effective because in the long term the patient will remain healthier. With increased understanding and knowledge there are increased compliance, adherence to treatment protocols, increased self-care performance and decreased anxiety about procedures if the patient knows what to expect. With increased understanding, there will ultimately be fewer treatments needed to solve the problem. (Kruger 1990.)

#### 2.5.5 Patient participation

Patient participation is an important aspect of holistic health care (Gordon 1990). Health care must include restoring and monitoring the dynamic balance of individuals, families and other social groups. It

will mean people taking responsibility for their own health with the help of therapists. Patient participation is an essential part of self-healing and the first part of this is that the patient must learn that he has participated, even if unwittingly, in the original cause or development of his condition, and that he therefore has a responsibility to himself to take part in the healing process. (Marks 1987; Capra 1988: 329.)

Today persons are more involved with their own health, and they want to participate in the healing process, but they need to be guided. According to Jamison (1991a: 3), this is where the doctor serves as an information recourse. (Lincoln 1992.) Coulter (1990) mentions that the patients have a responsibility towards their own health; they should seek out information about their condition, and make rational choices to determine which practitioners to consult. Without this patient responsibility wellness will never be achieved. When the patient is healthy his personal responsibility in his health care is emphasised, but when he is sick his dependence on professional health care increases. The objective of self-care and professional health care is to maximise the patient's level of health. (Jamison 1991a: 7.) Wardwell (1992: 219) says that patient responsibility is part of chiropractic treatment. The practitioner places the burden of health primarily on the patient, and the practitioner takes the responsibility of motivating the patient. Jamison (1991b) states that the most productive interchange between the doctor and the patient at the primary health care level is achieved by mutual participation.

#### 2.5.6 Life-style modification

Life-style modification is a very important factor in holistic health care. However, a change in life-style will be very difficult to achieve. Patient trust, a sense of responsibility and good communication are probably the best ways to achieve this. (Marks 1987; Van Der Steen & Thung 1988: 92.) Major changes in life-style can cause the patient to study and learn of his own accord, and this will leave the patient at a higher level of health and understanding of his condition than before.

Periods of ill health are natural stages in the ongoing interaction between the individual and the environment, and by understanding it better the patient will be better able to cope. (Capra 1988: 323.) According to Jamison (1991a: 16), identification of and emphasis on existing positive habits are important in order to encourage the patient to change other aspects of his life-style.

Direct treatment should be supplemented with exercises, diet and mental health practices. (Wardwell 1992: 218.)

#### 2.5.7 Attitude

It is important to have a positive attitude, as this could increase the patient's self-confidence and trust in the doctor (Capra 1988: 336).

#### 2.5.8 Self-healing properties of the body

The body has its own natural ability to heal itself, and to maintain good health. The reductionist medical model distracted us from this fact. The fundamental criticism levelled at modern medicine is that it concentrates more on treating localised disease, rather than on the person who has the disease. Therapy is focused more on symptoms and drug treatment rather than on improving the natural resistance of the body. (Wardwell 1992: 1-2.)

Claud Bernard, regarded as the father of modern physiology, referred to the "milieu interior", i.e. any change in the internal balance of the body because of external and internal factors can cause illness (Brom 1990). If the balance of the body and mind is disturbed, or if there is disharmony in the environment and society, these can cause disease (Brom 1990; Caplan 1991). All systems and aspects mentioned above function in a dynamic balance, meaning that they are changing all the time. The body's ability to adapt will depend on the person's health status, his mental well-being and his place in society. "The basic strength of the holistic health movement is in the concept of the human body and mind as a fully unified biological system capable under most circumstances of warding disease off and overcoming it ... the primary function of the

physician is to engage to the fullest the ability of the body to right itself." (Coulter 1990.) Coulter (1993) states the physician is the facilitator of the healing process and that health comes from within the individual, it is not given by the practitioner.

#### 2.5.9 Genetic predisposition

Another very important aspect to take into consideration is genetic predisposition (Hastings et al. 1980: 16). Certain patients are predisposed to specific conditions and this must not be left unnoticed when treating a patient holistically (Marks 1987). Jamison (1991a: 4) also places emphasis on environmental factors which can influence genetic traits significantly (Lamarine 1989).

#### 2.6 CONCLUSION

Thus we realise that a new model for medicine is needed, but if we look back we see that this model has existed for hundreds of years. It has been lost and needs to be rediscovered and practised. The attitude in multidimensional holism is one of great receptiveness and flexibility. It is compassionate and requires getting to know each patient as an unique individual, as well as looking at that patient's life openly and including every aspect of their personal history, sensibility, physical energy and motivation. The whole symptom complex is taken into consideration in the diagnostic procedure (Deliman & Smolowe 1982: 10). The usual treatment is aimed at eliminating symptoms, and at best it should re-establish the tolerance capacity that was present before the onset of a disorder. This state is sufficient for a short time, but it is unsatisfactory because the danger of relapse is not taken into consideration. Eliminating known irritation factors in order to restore optimal all-round functioning of all systems so that a person no longer suffers from any complaint, should be the goal of any kind of therapy. (Tilscher & Eder 1991: 5.)

Every practitioner must know his role in advising, educating and treating his patients. Health care will consist of restoring and maintaining the dynamic balance. Apart from the basic medical and



psychological knowledge required from a practitioner, he will also have to have experience, wisdom, compassion and concern for the patient as a human being. Coulter (1990) states that chiropractors are already filling this holistic role. According to Wardwell (1992: 2) most chiropractors recognise the importance of other factors that cause disease, and although they deal mainly with the musculo-skeletal system they still emphasise the importance of diet, life-style changes, prevention and psychological factors in maintaining health. Hildebrandt (1978) summarises this well in his article published in the Journal of Manipulative and Physiological Therapeutics. He states that the "uniqueness of chiropractic is not so much in its clinical methodologies per se - whether it be adjustments or manipulations - but rather in its "holistic" concerns for the total internal/external environment of the patient, and recognition of the fact that since healing takes place from within and the best that can be expected of any health care approach is that it be part of the solution rather than part of the problem."

The preferred doctor patient relationship model is well demonstrated by the humanised approach of chiropractors (Jamison 1991b). In a study by Cherkin & MacCornack (1989) it was shown that patients rated chiropractors as better practitioners than family physicians. They were satisfied by the information given to them about their problem, and they felt that the provider was concerned about them during and after the visit.

Jamison (1992) felt that it is not only the responsibility of the practitioners to practise holistically, but that professional teaching institutions should, rather than producing only "diagnostically reductionist and therapeutically specialised technicians", focus on training clinically competent holistic practitioners.

It is our responsibility, as future chiropractic practitioners, to realise that the well-being of our patients is of the utmost importance. This kind of health care cannot be "provided" or "delivered"; it has to be "practised" to the best advantage of the patient (Capra 1988: 332).

# CHAPTER 3

## MATERIALS AND METHODS

### 3.1 STUDY DESIGN

The objective of this study was to evaluate the response of patients to chiropractic care alone (adjustments and trigger point therapy) in comparison with chiropractic care in association with a wellness approach, in terms of objective and subjective assessment in order to determine which approach was more effective in the management of Mechanical Low Back Pain. This study was done as a clinical trial.

### 3.2 SUBJECTS

Advertisements were placed in the Durban newspapers to attract patients with low back pain.

Of those responding to the advertisement a case history (Appendix A) was obtained, both regional examination (Appendix B) and a physical examination (Appendix C) were performed in order to reach a specific diagnosis. If needed, X-rays were taken to exclude contraindicating pathologies.

Thirty patients were selected to take part in this study, and they were randomly divided into two groups of fifteen each. Only patients with the following mechanical low back pain syndromes were selected: Posterior Facet Syndrome, Sacro-iliac Syndrome, Maigne's Syndrome and Myofascial Pain and Dysfunction Syndrome. They had to conform to the specified requirements before they were accepted into the study. In terms of the diagnosis the patient had to conform to one or more of the conditions as set out below:

#### 3.2.1. Posterior Facet Syndrome:

- Low back pain which sometimes radiates to the groin, hip, buttock

and often into the leg.

- Pain increase on extension and decrease with flexion.
- Low back stiffness especially in the morning or during periods of inactivity.
- Palpable muscle spasm.
- Focal tenderness over the affected joint.
- Restriction on motion palpation.
- Kemp's test may be positive.

(Kirkaldy-Willis & Hill 1979; Gatterman 1990: 161-163.)

#### 3.2.2. Sacro-iliac Syndrome:

- Pain is typically dull, unilateral, and located over the buttock. It may radiate posteriorly down the thigh or to the groin and anterior thigh. Occasionally it may extend down the lateral or posterior calf to ankle, foot, toes.
- Referred pain to posterior dermatomal areas of L5, S1, and S2; over the sacrum or in the buttocks.
- Local tenderness or tenderness on joint challenge.
- Gaenslen's, Erickson's and Patrick Faber's tests may be positive.

(Kirkaldy-Willis & Hill 1979; Gatterman 1990: 114-5.)

#### 3.2.3. Maigne's syndrome:

- Referred pain to iliac crest, lumbo-sacral, sacro-iliac, gluteal or trochanter areas. Frequently no local pain in the T12-L1 area.
- Joint dysfunction T12-L1 on motion palpation.
- T12-L1 area tenderness on joint challenge.
- Pain on skin rolling over area of cluneal nerves.

(Maigne 1972; Kirkaldy-Willis & Burton 1992: 161.)

#### 3.2.4. Myofascial pain and dysfunction syndrome:

- There will be local areas/spots of tenderness in the muscles.
- Referred pain will be experienced with compression of these spots.
- The patient will have a jump sign or twitch response.

(Travell & Simons 1992 1: 1-10.)

Selected patients were assigned randomly to the two groups. This was done by drawing up two lists with 15 allocations each. As the patients arrived for their treatment their names were added to the list in an alternate fashion, e.g. the first patient was allocated to group A, the second patient to group B, the third patient to group A, etc. During the treatment some patients left the study, and their places were then filled by new patients, selected from the patients who responded to the advertisements.

Male and female patients of any race between the ages of sixteen and sixty were included in the study. Patients had to be able to read and write English. Patients found to have any additional pathology contradictory spinal manipulation and/or who developed further problems influencing their low back pain were excluded. Patients who underwent any major changes in life-style or habits that could influence the results of this study were not included.

### 3.3 INTERVENTION

There were two experimental groups, i.e. group A and group B.

Group A was treated with the wellness approach. They received normal chiropractic treatment, relevant to their condition. In addition, their condition was explained to them in great detail using pictures, models and X-rays. They received advice and information sheets on life-style modification, nutrition, stress management and exercise. They played an active role in the healing and rehabilitation process by being involved in exercise programs and practising the suggested life style changes. This protocol took up considerable clinical time and was supported by regular check-ups and motivation.

Group B also received normal chiropractic treatment relevant to their condition. However, none of the holistic aspects mentioned above were applied. They received no information sheets, their first visit was brief and their condition was not explained in detail. No models or X-rays were used to explain their conditions. These patients received no advice or education, and were not actively involved in the healing

process. They were only treated for the presenting symptom picture.

Normal chiropractic treatment involved manipulative and physiotherapeutic therapies. Lumbar roll and drop piece adjustments were used. Physiotherapeutic modalities included interferential current and ultrasound.

Dry needling was used for trigger point therapy. This was similar for both groups.

Patients were treated over a four week period with a treatment frequency of two or three visits per week. Patients were discharged as they became asymptomatic (pain free) or after a maximum of twelve treatments.

### 3.4 MEASUREMENTS

If the patient was accepted into this study, they completed the following documentation on the first visit: Patient Consent Form (Appendix D), Oswestry Disability Index (Appendix E) (Fairbank et al. 1980), Numerical Rating Scale 101 (Appendix F) (Jensen et al. 1986), Short-Form McGill Pain Questionnaire (Appendix G) (Melzack 1987) and a General Well-Being Schedule (Appendix H) (Fazio 1977; Edwards et al. 1978; Brook et al. 1979; Monk 1981). On the last visit of the treatment series, the Wellness Approach questionnaire (Appendix J), as well as the questionnaires mentioned above were completed.

There was a one month follow-up consultation. At the one month follow-up consultation each patient completed the questionnaires mentioned above as well as the Follow-up Wellness Approach questionnaire (Appendix K). Patients completed the questionnaires in private and then handed them in to the clinic secretary. An Algometer by Wagner Instruments was used to measure pain tolerance. This was done at the beginning of the first, last and follow-up visits.

The Wellness Approach questionnaire (Appendix I) and Follow-up Wellness Approach questionnaire (Appendix J) evaluated the patient's perception of the treatment received at the clinic. The 5-point Likert scale format was used to design the questionnaires. It is necessary to use Likert

scales to guarantee validity of adding respondents' "scores" (Huyssamen 1983: 106). Evaluation was done by a team of 10 people, comprising chiropractic and non-chiropractic students, chiropractic staff, clinicians, patients and a statistician. This evaluation was used to determine the ease of use of these questionnaires.

The Numerical Pain Rating Scale 101 (NRS 101) (Appendix F) provides a simple way to record subjective estimates of pain intensity (McDowell & Newell: 235). According to a study done by Love et al. (1989) NRS 101 is one of the best methods for measuring subjective assessment. A uniform distribution of pain intensity is produced and the results are reliable over time. It is very sensitive to slight changes in pain levels and is recommended to be used to evaluate a treatment programs.

The Oswestry Low Back Pain Disability Questionnaire (Appendix E) indicates the extent to which the person's functional level is restricted by pain (McDowell & Newell: 239).

The Short-form McGill Pain Questionnaire (Appendix G) provides a quantitative profile of three aspects of pain. The method is also used to evaluate pain therapies. (McDowell & Newell: 243; Love et al. 1989.)

The General Well-Being Schedule (Appendix H) offers a broad-ranging indicator of subjective feelings of psychological well-being and distress. It reflects the way the individual feels about his "inner personal state". (McDowell & Newell: 125.) Love et al. (1989) note that it is necessary to include psychological evaluation when using subjective measurements.

### 3.5 ETHICAL CONSIDERATIONS

The nature of the study was explained to the patient. If they agreed to participate, an informed consent form was signed.

When taking X-rays of patients, gonad protection was used and the ten-day rule was applied to females in the reproductive ages.

Careful technique was applied to keep the exposure to radiation as low as possible.

### 3.6 STATISTICS

All the questionnaires were screened. The answer blocks on the questionnaires were assigned numerical values. The scores were added up and converted to percentage values.

The data collected from the different questionnaires were converted to percentage values; the data from the algometer measurements were compared. All the data were then statistically analyzed.

Statistical evaluation of the data was conducted by using Statgraphics Plus by Manugistics Inc. (2115 East Jefferson Street, Rockville, Maryland, USA) Analyses were performed using the Mann-Whitney U test (inter-group comparison) and the Wilcoxon Signed Rank test (intra-group comparison). The Wilcoxon Signed Rank test and the Mann-Whitney U test are both nonparametric tests, which allows them to be better suited to small sample groups such as those participating in this study. (Daniel 1978: 31, 82.) The medians for all the questionnaires and the algometer measurements were calculated, and bar charts were drawn from these results. The averages of the results of the Wellness Approach and Follow-up Wellness Approach Questionnaires as well as the average length of treatment were calculated.

These results are presented in the next chapter.

# CHAPTER 4

## RESULTS

### 4.1 INTRODUCTION

This chapter covers the results obtained after statistically analysing the data collected from the measurement criteria used, namely:

- Numerical Rating Scale 101 (Appendix F)
- Oswestry Disability Index (Appendix E)
- Short-Form McGill Pain Questionnaire (Appendix G)
- General Well-Being Schedule (Appendix H)
- Wellnes Approach questionnaire (Appendix I)
- Follow-up Wellnes Approach questionnaire (Appendix J)
- Algometer measurements.

Intra-group comparisons were done, and these were followed by inter-group comparisons. These were done using the Wilcoxon signed rank test and the Mann-Whitney U-test respectively. The averages of the Wellnes Approach and the Follow-up Wellnes Approach questionnaires were tabulated. Subsequently the average number of treatments was determined for each group, and lastly summary statistics were performed and graphs were compiled from them.

### 4.2 CRITERIA FOR THE ADMISSIBILITY OF THE DATA

All the questionnaires were completed by patients participating in the study, and the data were processed under the supervision of the researcher.

### 4.3 WILCOXON'S SIGNED RANK TEST

This analysis was used for intra-group comparison of the median "pain" as measured by the Oswestry Disability Index (Appendix E), Numerical Rating Scale 101 (Appendix F), Short-Form McGill Pain Questionnaire



(Appendix G) and Algoæter.

The level of significance ( $\alpha$ ) was set at 5% or 0.05. (Daniel 1987: 31-37)

#### 4.3.1 Group A:

Group A received chiropractic care in association with a wellness approach.

Table I

Comparison of treatments as measured by the Numerical Rating Scale 101  
(Appendix F).

Treatments	Critical Large Sample Value (z)	Exceedance Probability Value (p)
First to Last	3.12379	0.0008927
Last to Follow-up	2.08163	0.0183215
First to Follow-up	1.0672	0.14294

The null hypothesis for the first to last treatments was rejected. It was concluded that the patients had improved.

The null hypothesis for the last to follow-up treatments was rejected. It was concluded that the patients had improved.

The null hypothesis for the first to follow-up treatments was accepted. It was concluded that the patients had not improve.

Table II

Comparison of treatments as measured by the Oswestry Low Back Disability Index (Appendix E).

Treatments	Critical Large Sample Value (z)	Exceedance Probability Value (p)
First to Last	2.76217	0.002871
Last to Follow-up	2.47106	0.0087356
First to Follow-up	3.07505	0.0010488

The null hypotheses for the all these measurements were rejected. It was concluded that the patients had improved.

Table III

Comparison of treatments as measured by the General Well-Being Schedule (Appendix H).

Treatments	Critical Large Sample Value (z)	Exceedance Probability Value (p)
First to Last	2.88772	0.0019403
Last to Follow-up	0.425971	0.3350825
First to Follow-up	3.15219	0.0008103

The null hypotheses for the first to last and first to follow-up treatments were rejected. It was concluded that the patients had improved during these periods.

The null hypothesis for the last to follow-up treatments was accepted. It was concluded that the patients had not improved during the one month follow-up period.

Table IV

Comparison of treatments as measured by the Short-form McGill Pain Questionnaire (Appendix G).

Treatments	Critical Large Sample Value (z)	Exceedance Probability Value (p)
First to Last	3.37937	0.0003633
Last to Follow-up	1.26794	0.104206
First to Follow-up	3.37937	0.0003633

The null hypotheses for the first to last and first to follow-up treatments were rejected. It was concluded that the patients had improved during these periods.

The null hypothesis for the last to follow-up treatments was accepted. It was concluded that the patients had not improved during the one month follow-up period.

Table V

Comparison of treatments as measured with the Algometer.

Treatments	Critical Large Sample Value (z)	Exceedance Probability Value (p)
First to Last	3.37937	0.0003633
Last to Follow-up	3.43617	0.000295
First to Follow-up	3.43617	0.000295

The null hypothesis was rejected for all the measurements. It was concluded that the patients had improved during these periods.

#### 4.3.2 Group B:

Group B received adjustments and trigger point therapy only. Their management did not follow a wellness approach.

Table VI

Comparison of treatments as measured by the Numerical Rating Scale 101  
(Appendix F).

Treatments	Critical Large Sample Value (z)	Exceedance Probability Value (p)
First to Last	2.446	0.0072205
Last to Follow-up	1.25553	0.104643
First to Follow-up	1.53802	0.082021

The null hypothesis for the first to last treatments was rejected. It was concluded that the patients had improved during the treatment. The null hypotheses for the last to follow-up and first to follow-up treatments were accepted. It was concluded that the patients had not improved.

Table VII

Comparison of treatments as measured by the Oswestry Low Back Disability  
Index (Appendix E).

Treatments	Critical Large Sample Value (z)	Exceedance Probability Value (p)
First to Last	0.910259	0.181342
Last to Follow-up	1.60815	0.0539005
First to Follow-up	0.125553	0.4500405

The null hypotheses for the all these measurements were accepted. It was concluded that the patients had not improved.

Table VIII

Comparison of treatments as measured by the General Well-Being Schedule (Appendix H).

Treatments	Critical Large Sample Value (z)	Exceedance Probability Value (p)
First to Last	2.47083	0.0087437
Last to Follow-up	1.22112	0.1110205
First to Follow-up	0.690541	0.2449255

The null hypothesis for the first to last treatments was rejected. It was concluded that the patients had improved during these periods. The null hypotheses for the last to follow-up and first to follow-up treatments were accepted. It was concluded that the patients had not improved.

Table IX

Comparison of treatments as measured by the Short-form McGill Pain Questionnaire (Appendix G).

Treatments	Critical Large Sample Value (z)	Exceedance Probability Value (p)
First to Last	0.709952	0.2388655
Last to Follow-up	0.251103	0.400564
First to Follow-up	1.0372	0.14294

The null hypotheses for all the treatments were accepted. It was concluded that the patients had not improved.

Table X

Comparison of treatments as measured with the Algometer.

Treatments	Critical Large Sample Value (z)	Exceedance Probability Value (p)
First to Last	2.35704	0.0092105
Last to Follow-up	0.549125	0.2914585
First to Follow-up	1.4483	0.073766

The null hypothesis for the first to last treatments was rejected. It was concluded that the patients had improved during the treatment period.

The null hypotheses for the first to follow-up and last to follow-up treatments were accepted. It was concluded that the patients had not improved during the one month follow-up period.

#### 4.4 MANN-WHITNEY U-TEST

This tested whether there was a significant difference in improvement between the two groups as measured by the Oswestry Disability Index (Appendix E), Numerical Rating Scale 101 (Appendix F), Short-form McGill Pain Questionnaire (Appendix G) and Algometer. This was done by testing whether indeed the median "pain" of group A was statistically less than that of group B. Group A received normal chiropractic care in association with a wellness approach and group B received only normal chiropractic care (adjustments and trigger point therapy).

The level of significance ( $\alpha$ ) was set at 5% or 0.05 (Daniel 1987: 82-86).

Table XI

Comparison of treatments as measured by the Numerical Rating Scale 101  
(Appendix F).

Treatments	Critical Large Sample Value (z)	Exceedance Probability Value (p)
First	-1.64794	0.04968195
Last	1.51547	0.064827
Follow-up	2.68221	0.0036569

The null hypotheses for the first and follow-up treatments were rejected. It was concluded that there was a significant difference in median pain between groups A and B.

The null hypothesis for the last treatment was accepted. It was concluded that there was no significant difference in median pain between groups A and B.

Table XII

Comparison of treatments as measured by the Oswestry Low Back Disability  
Index (Appendix E).

Treatments	Critical Large Sample Value (z)	Exceedance Probability Value (p)
First	-1.05993	0.14457
Last	0.457738	0.323569
Follow-up	2.39513	0.0083071

The null hypotheses for the first and last treatments were accepted. It was concluded that there was no significant difference in median pain between groups A and B.

The null hypothesis for the follow-up treatment was rejected. It was concluded that there was a significant difference in median pain between groups A and B.

Table XIII

Comparison of treatments as measured by the General Well-Being Schedule (Appendix H).

Treatments	Critical Large Sample Value (z)	Exceedance Probability Value (p)
First	-0.767515	0.221365
Last	0.435714	0.3315205
Follow-up	1.20313	0.1144625

The null hypotheses for the all the treatments were accepted. It was concluded that there was no significant difference in median pain between groups A and B.

Table XIV

Comparison of treatments as measured by the Short-form McGill Pain Questionnaire (Appendix G).

Treatments	Critical Large Sample Value (z)	Exceedance Probability Value (p)
First	-1.61764	0.0528695
Last	1.30816	0.095409
Follow-up	2.49201	0.006351

The null hypotheses for the first and last treatments were accepted. It was concluded that there was no significant difference in median pain between groups A and B.

The null hypothesis for the follow-up treatment was rejected. It was



concluded that there was a significant difference in median pain between groups A and B.

Table XV

Comparison of treatments as measured with the Algometer.

Treatments	Critical Large Sample Value (z)	Exceedance Probability Value (p)
First	1.7446	0.0405267
Last	-0.581081	0.2805915
Follow-up	-2.65696	0.0039426

The null hypothesis for the last treatment was accepted. It was concluded that there was no significant difference in median pain between groups A and B.

The null hypotheses for the first and follow-up treatments were rejected. It was concluded that there was a significant difference in median pain between groups A and B.

#### 4.5 SUMMARY STATISTICS

Table XVI

Median measurements for groups A and B

Variable	Group A	Group B
NRS 1	52.5	45
NRS last	15	30
NRS f/u	5	47.5
OSW 1	22	17.7
OSW last	10	12
OSW f/u	6	15.5
GWB 1	48.79	44.3
GWB last	33.95	38.7
GWB f/u	30.6	41.12
McG 1	41.63	21.5
McG last	10.42	27.63
McG f/u	5.89	20.57
ALG 1	5.5	6.35
ALG last	9	8.1
ALG f/u	11	8

NRS: Numerical Rating Scale (Appendix F)

OSW: Oswestry Low Back Disability Index (Appendix E)

GWB: General Well-Being Schedule (Appendix H)

McG: Short-form McGill Questionnaire (Appendix G)

ALG: Algometer Measurements

1: First treatment

last: Last treatment

f/u: One month follow-up visit.

#### 4.6 WELLNESS APPROACH AND FOLLOW-UP WELLNESS APPROACH QUESTIONNAIRES

The Wellness Approach (Appendix I) and Follow-up Wellness Approach (Appendix J) Questionnaires measured patients' perceptions of the nature of the treatment they received.

Table XVII

Groups	Wellness approach questionnaire	Follow-up wellness approach questionnaire
A	36.667	38.067
B	53.533	50.887

#### 4.7 AVERAGE NUMBER OF TREATMENTS

This table illustrates the average number of treatments received by each group.

Table XVIII

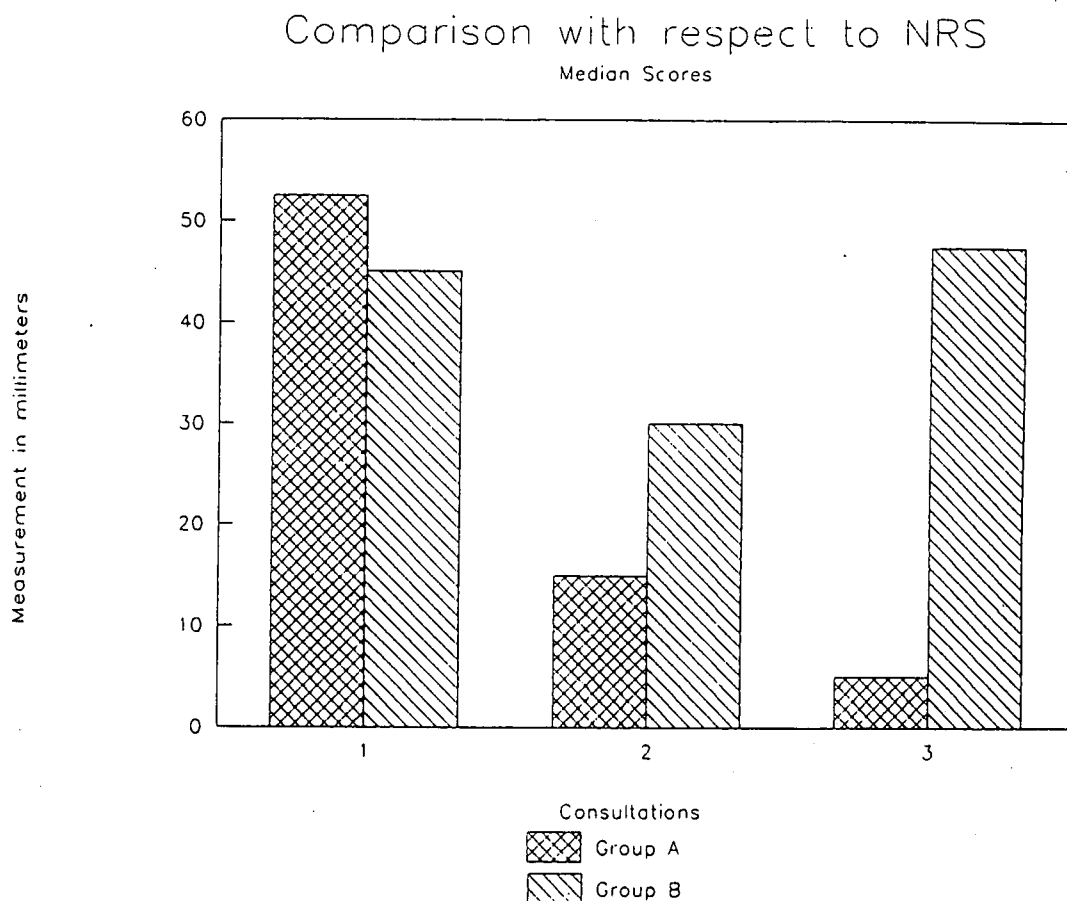
Groups	Average number of treatments
A	6.267
B	8.733

#### 4.8 BAR CHARTS

Bar charts were drawn using the medians of the questionnaires and Algometer as mentioned before for groups A and B. The median is the most sensitive measurement for this sample size. Consultation 1 was the first treatment, consultation 2 was the last treatment and consultation 3 was the follow-up treatment.

#### Graph I

NRS 101 (Appendix F) was used to measure the patients' pain tolerance.

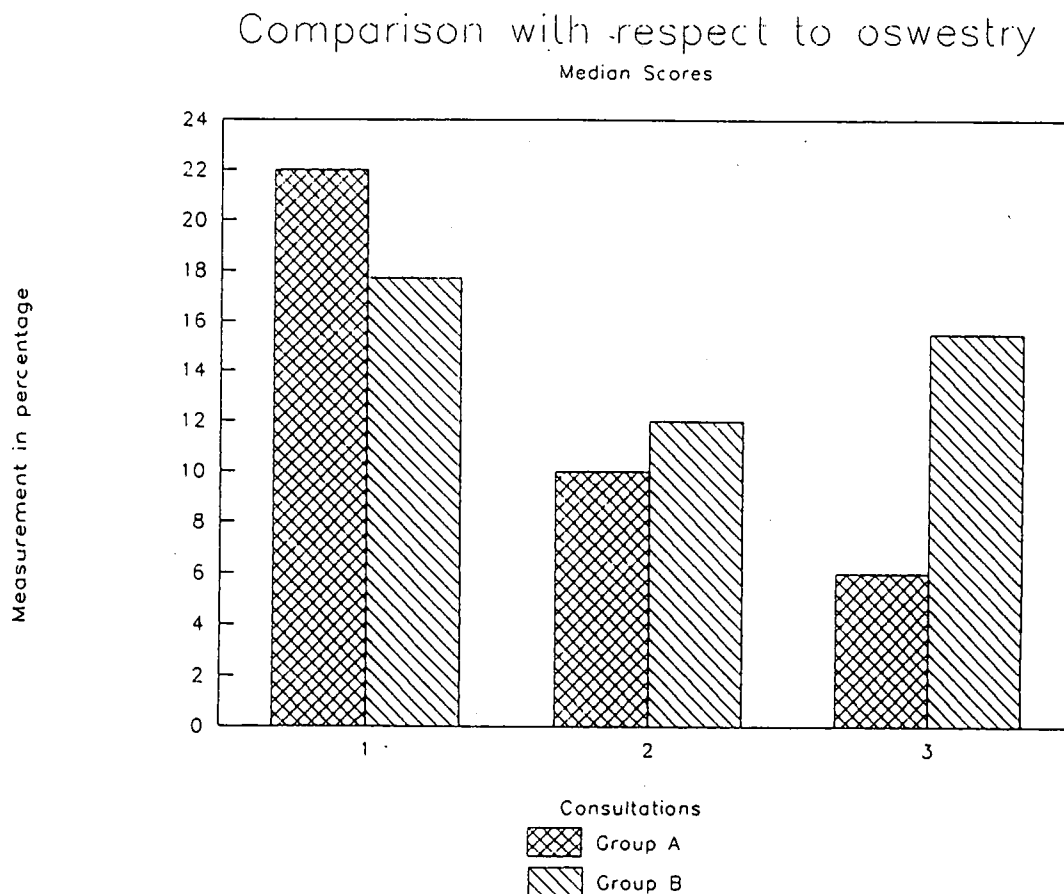


This graph demonstrates that group A improved throughout the treatment, as the pain median decreased.

Group B however improved only during the treatment period. By the one month follow-up visit group B showed an increase in pain intensity. It is also interesting that even though group A had a greater initial pain intensity than group B, they improved to a greater degree than group B.

## Graph II

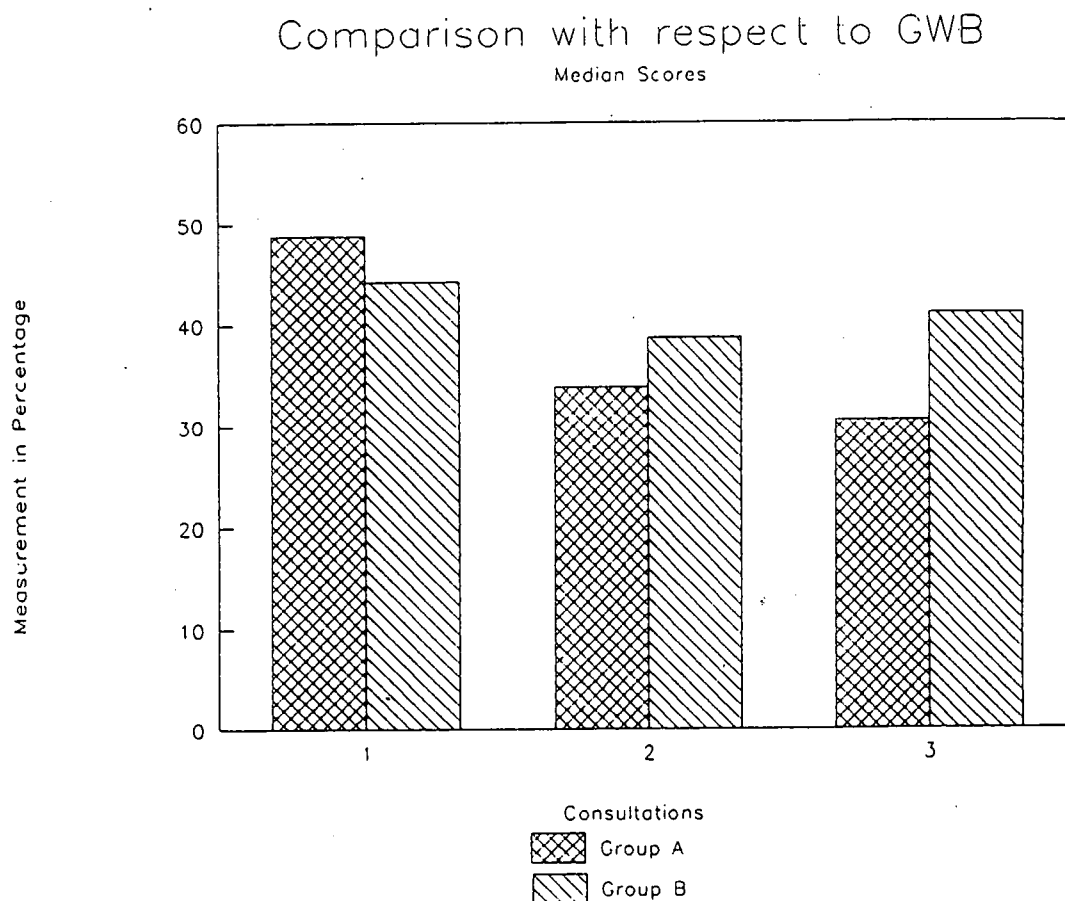
Oswestry Low Back Disability Questionnaire (Appendix E) measured the patients' disability levels due to their low back pain.



Group A showed improved disability throughout the treatment; however, group B improved from the first to the last treatments, but their disability increased from the last to the follow-up visit.

### Graph III

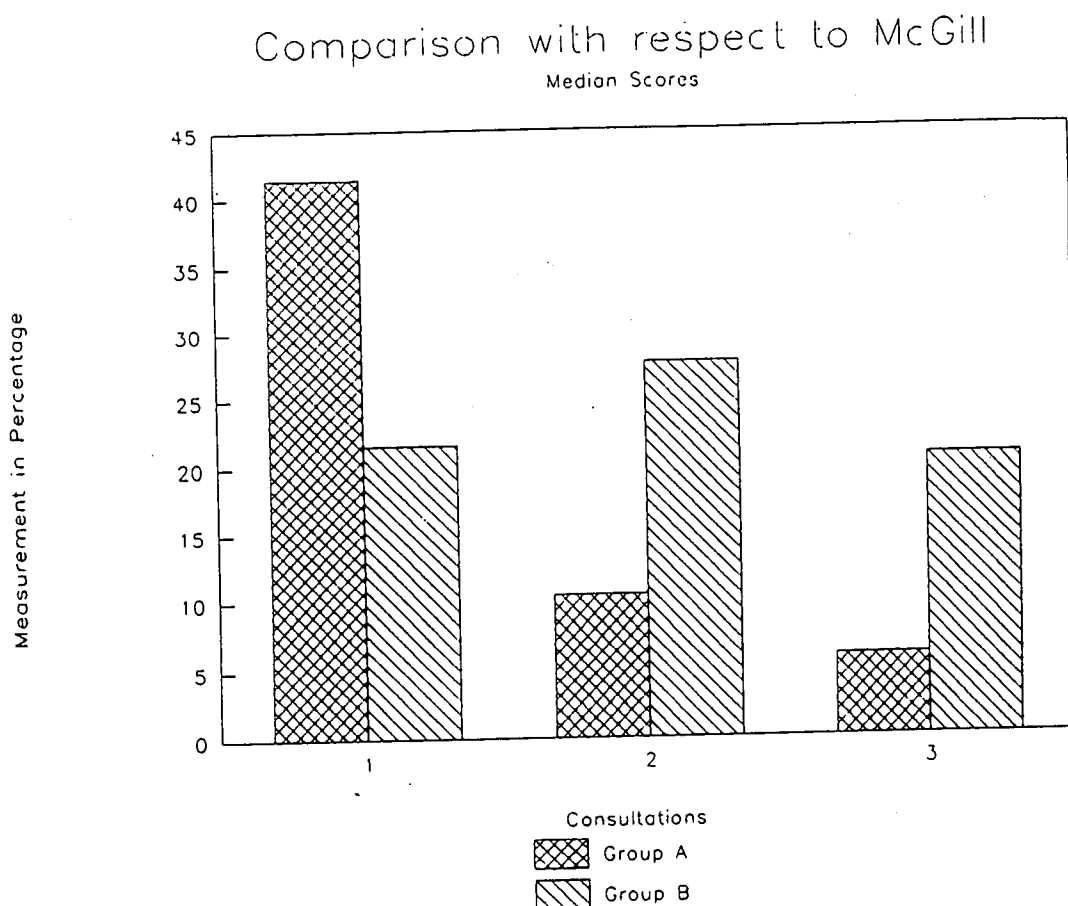
The General Well-Being Schedule (Appendix H) measured to what extent the patients' psychological well-being was influenced by their low back pain.



Improvement was not so dramatic for group A as seen on the other graphs, and in group B it was very slight. But the same trend was apparent as in the NRS 101.

#### Graph IV

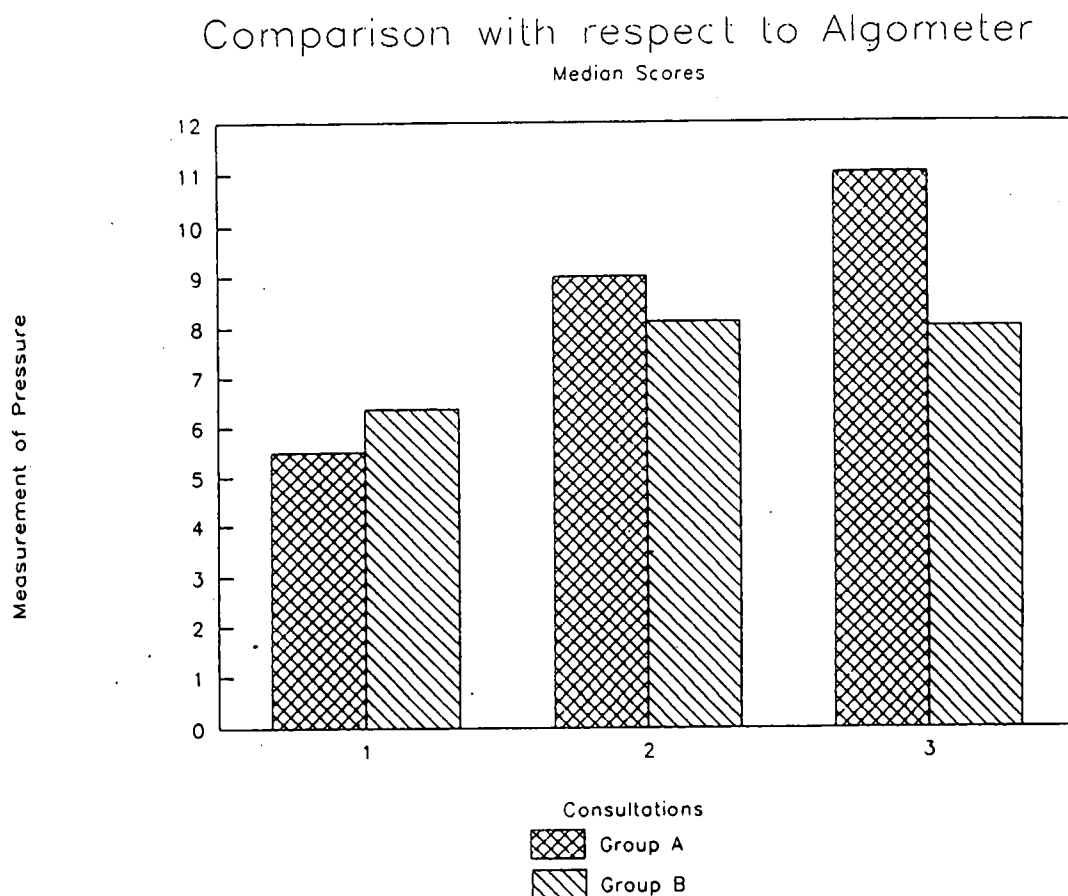
Short-form McGill Pain Questionnaire (Appendix G) measured the quality of pain experienced by the patients.



Quality of pain for group A improved throughout the treatment. Group B showed an increase from the first to the last treatment, but improvement from the last treatment to the follow-up visit.

### Graph V

The Algometer measured the patients' pain tolerance.



When considering objective measurements, group A showed a progressively increased pain tolerance over the study period. Group B showed increased tolerance from the first to the last treatments, but a slight decrease in the period from the last to the follow-up visit.

### 4.9 CONCLUSION

This chapter presented the results obtained from the collected data. The discussion, interpretation and implications of these results are dealt with in chapter 5.



# CHAPTER 5

## DISCUSSION

The results of this study showed that there was overall improvement of the group which received chiropractic care in association with a wellness approach (group A).

The NRS 101 (Appendix F) results for group A showed that there was statistically significant improvement between the first to last and last to follow-up visits (Table I). However, no significant improvement was detected between the first visit and the follow-up consultation (Table I). Similar results were obtained in a study by Carlsson (1996) who suggests that this could be due to the fact that patients forget the intensity of their pain over a long period of time, thus when assessing the pain intensity the results will not be a true reflection of the patient's improvement. Group B only showed statistically significant improvement from the first to last treatments (Table VI), but their pain intensity did not improve during the one month follow-up period (Table VI). When comparing group A with group B using the NRS 101 questionnaire, it was found that at the first treatment group A had a higher median pain intensity than group B (Table XI). However, at the last treatment there was no significant difference between the groups (Table XI). At the follow-up visit group A showed significantly more improvement (Table XI). This could be due to the fact that both groups improved between the first and last treatments; however, only group A subjects still showed improvement after one month. This indicates that group A experienced greater long-term benefit from the treatment.

The Oswestry Low Back Pain Disability Questionnaire (Appendix E) showed statistically significant improvement throughout the treatments for group A (Table II), but no improvement for group B (Table VII). At the

first and last treatments group A and B showed no significant difference; however, at the follow-up visit group A showed further improvement. This showed a similar trend as with the NRS 101, where there was significant improvement at the follow-up visit. Thus it can be said that group A's disability due to low back pain was diminished, but that this was not the case for group B.

The General Well-being Schedule which measured the patients' psychological well-being showed statistically significant improvement in group A from the first to last treatment and first treatment to follow-up visit (Table III). During the one month follow-up period no improvement was noted; i.e. last to follow-up treatment (Table III). Group B showed improvement only during the treatment period, i.e. from the first to the last treatments (Table VIII). This tendency for both groups to improve only during the treatment periods may have been due to the fact that during the treatment the patients received attention and their condition was being treated. During the one month follow-up period when there was no contact between the researcher and the patients, their psychological state did not improve. In group A special attention was paid to listening to the patients' fears and problems; they also had a good understanding of their conditions. This could account for the improvement of these patients as measured by the General Well-Being Schedule, from the first treatment to the follow-up visits. Love *et al.* (1989) suggest that the results of questionnaires could be severely influenced by current events in the patients' lives and could influence their judgement of their pain. Some patients in group B became very despondent during the treatment if their pain did not improve significantly. This could account for the lack of improvement in group B. Inter-group comparison for the questionnaire showed no improvement at any stage (Table XII). This could show a weakness in the study: either the researcher did not have the knowledge to deal with the psychological aspects of the subjects' lives, or these psychological aspects were not adequately addressed in the study. More attention should have been paid to these psychological aspects.

The Short-form McGill Pain Questionnaire (Appendix G) for group A showed statistically significant improvement between the first to last treatments and the first treatment to the follow-up visit; however, during the one month follow-up period there was no improvement (Table IV). This demonstrates that the patients in group A improved during the treatment and that there was overall improvement throughout the treatment period. Group B showed no improvement at any of the measurements (Table IX). On comparison of groups A and B there was no significant improvement at the first and last treatments, but group A showed improvement at the follow-up visit (Table XIV). Improvement at the follow-up visit was seen as with the NRS 101 (Appendix F) and the Oswestry Disability Questionnaires (Appendix E). Both groups improved during the treatment period, but only group A showed continued improvement at the follow-up visit. This questionnaire measures pain by using descriptive words, which could have made it easier for the patients to relate their pain to the questionnaires. Thus this questionnaire can be considered to be one of the more accurate subjective measurements of this study.

Algoneter measurements, which were the only objective measurements recorded in this study, showed improvement at all measurements for group A (Table V); i.e. the patients improved at each treatment and at the follow-up visit, but for group B improvement was only evident during the actual treatment period - thus they did not improve during the one month follow-up period (Table X). When comparing the groups, group A had a higher median pain than group B at the first treatment and the follow-up visit (Table XV). Again the same trend was seen, with improvement during the treatment period and group A showing prolonged benefit at the follow-up visit. A possible reason for the above trend may be that group A improved more during the one month follow-up period due to the fact that they knew how to take care of their own condition.

The median scores of the questionnaires were used to draw bar charts which represented the clinical improvement reported by the patients. These bar charts are significant as they illustrate whether the patients

got better or worse between measurements. The use of the non-parametric tests showed whether there was a significant difference between the groups. The bar chart for the NRS 101 (Appendix F) showed improvement for group A throughout the treatment as well as at the one month follow-up visit. Group B however improved during the treatment period, and got worse after the treatment was completed (Graph I). The bar chart for the Oswestry disability questionnaire (Appendix E)(Graph II), the General Well-being schedule (Appendix H)(Graph III), the McGill questionnaire (appendix G)(Graph IV) and the algometer measurements (Graph V) showed similar trends to the NRS 101, but to varying degrees. This indicates that clinically a wellness approach in association with chiropractic care was more effective than chiropractic care alone.

The Wellness Approach (Appendix I) and Follow-up Wellness Approach (Appendix J) Questionnaires showed that group A received a lower percentage of holistic aspects in their treatment (Table XVI). Love *et al.* (1989) suggest that some patients attempt to please the therapist by reporting more favourable results. This was a major problem with these questionnaires as they evaluated the treatment received directly, and could reflect on the researcher. Very early in the study some patients reported that they did not want to compromise the researcher in the teaching institution; they were subsequently assured that this would not be the case. Although the questionnaires were done in private and despite assurances that the measurements would not influence the researcher in the teaching institution, some patients still admitted to giving more positive responses to this questionnaire, e.g. in group B many patients marked that they had received hand-outs and exercises, when they had not. This will account for the higher percentage of holistic aspects received by group B according to the questionnaire.

Group A became asymptomatic on average after 6.267 treatments, and group B after 8.733 treatments (Table XVII).

This correlates with the other questionnaires which demonstrates that group A recovered more than group B, and that they stayed better for longer, i.e. chiropractic care in association with a wellness approach is not only more time effective but also cost effective in the long term.

Love et al. (1989) state that the patients' perception of pain and their response to questionnaires are very much influenced by their current and immediate environment. Although Jamison (1991b) suggests that subjective improvement is regarded as valid wellness indicators, algometer measurements were done in an attempt to exclude some of these influences. Algometer measures the pain tolerance and cannot influence the responses on questionnaires.

Love et al. (1989) state that some patients' judgements could also be influenced by their initial expectations of improvement and their actual level of improvement; i.e. if they are satisfied with the treatment they may feel better sooner and report more positive results in the questionnaires. This could have been an influencing factor especially in group A, where patients stated that they were very impressed by the treatment received at the Technikon Natal Chiropractic Clinic as more time was spent with them and they received thorough examinations. For group B the same theory could be applied; in order to treat a patient in the clinic the patient must be thoroughly examined, and this also leads to more time spent with the patient than they would normally have received anywhere else. In this study, this then was similar to group A and could have lead to the same responses.

The first objective was to evaluate the response of patients to chiropractic care alone (adjustments and trigger point therapy) in comparison with chiropractic care in association with a wellness approach in terms of objective assessment and in order to determine which approach was more effective in the management of Mechanical Low Back Pain.

This study has demonstrated that chiropractic care in association with a wellness approach in terms of objective assessment is more effective than chiropractic care alone.

The second objective was to evaluate the response of patients to chiropractic care alone (adjustments and trigger point therapy) in comparison with chiropractic care in association with a wellness approach in terms of subjective assessment in order to determine which approach was more effective in the management of Mechanical Low Back Pain. In terms of subjective assessment chiropractic care in association with a wellness approach has been demonstrated to be more effective than chiropractic care alone.

The third objective was to integrate the results of the first and second objectives in order to determine which approach was more effective in the management of Mechanical Low Back Pain. On integration of the results it was demonstrated that chiropractic care in association with a wellness approach was more effective for the treatment of Mechanical Low Back Pain.

Using a holistic approach to health problems has been shown to be of great benefit. Although there have been many books written on the subject, and many practitioners claim to be using it, it is in fact not being practised to its full extent. Visits are usually short and uninformative. (Jamison 1991a.) The results of this study demonstrated that with the correct attitude and approach the patients improve dramatically. They recover quicker on average and stay better for longer, i.e. they still showed improvement at the follow-up visit.

No changes were made to the structure and design of the study, although some problems were experienced. The patients in group B tended to be non-compliant, and because their conditions did not improve very rapidly, it was difficult to get them to complete the twelve treatment period. It was even more difficult to get them to come back for the one month follow-up consultation.

The scope of treatment tended to be too broad, and it is suggested that only one condition be chosen for future studies concerned with a wellness approach, in order to limit the number of variables in the study.

Problems experienced with the Wellness Approach (Appendix I) and the Follow-up Wellness Approach (Appendix J) questionnaires were that they were too personal in evaluating the care given, as the patients perceive it as evaluating the care giver. The statistician (Mr J. de Klerk) noted that the other questionnaires, i.e. NRS 101 (Appendix F), Oswestry (Appendix E), McGill (Appendix G) and General Well-being Schedule (Appendix H) questionnaires would have been sufficient to determine whether the one group improved more than the other, and thus the conclusion that the groups have received different types of treatment can be made. The Wellness Approach and the Follow-up Wellness Approach questionnaires did not demonstrate the same trends as the other questionnaires, i.e. significant improvement for group A. In fact, they showed that group B received more of a wellness approach than group A. It is important to do the NRS 101 (Appendix F) more often. Love et al. (1989) state that patients forget the intensity of the pain at the beginning of the treatment, and thus if the questionnaires are completed infrequently, they do not give realistic reflections of how much their pain has improved.

To do a study which measures a wellness or holistic approach, a much larger sample size is necessary. Jamison (1991b) states that the number of subjects may discriminate against therapies which offer a marginal benefit to some patients.

As this study was conducted in a teaching clinic where many other studies were conducted at the same time, much of the equipment was shared. This influenced the flow of the treatments and could have influenced the results. It is suggested that equipment be assigned to one study only.

In order to evaluate the long-term effect of the treatment, a one month follow-up consultation was done. However, it is recommended that this period be followed by a three month follow-up period to further evaluate whether the improvement noted in any group at the one month follow-up visit would still be evident.



# CHAPTER 6

## CONCLUSIONS AND RECOMMENDATIONS

This study indicated that Mechanical Low Back Pain improves significantly by using chiropractic care in association with a wellness approach. The group that received chiropractic care alone showed improvement during the treatment period, but during the one month follow-up period as well as during the whole period of the study (first to follow-up visit) there was no statistically significant improvement in this group. Subjective and objective assessments showed improvement for both groups, however the psychological testing as tested by the General Well-Being Schedule showed no significant difference between the groups; i.e. the patients were not psychologically influenced by a wellness approach. As patients' in group B's perceptions could have been biased towards the researcher when they completed this particular questionnaire, it is recommended that further studies be undertaken to explore this particular issue.

Based on the findings of this study, it is suggested that Mechanical Low Back Pain be treated by taking the whole patient as well as their interactions with the environment into consideration. When considering the alarming statistics for low back pain, it is essential that each practitioner contributes all his/her efforts and knowledge to combat this problem. Tardif (1994) states that better care of low back pain does not lie in more adjustments, but rather in consideration of the whole patient.

It is recommended that similar studies be done with larger sample sizes. Application of these principles to certain occupations where patients often suffer from low back pain can also be investigated.

Lastly, more emphasis on the psychology of low back pain should be studied, as it may enable the practitioner to treat low back pain more effectively.

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Appendix A

TECHNIKON NATAL CHIROPRACTIC DAY CLINIC

CASE HISTORY

Patient: \_\_\_\_\_ Date of \_\_\_\_\_

File #: \_\_\_\_\_

X-ray #: \_\_\_\_\_

Age: \_\_\_\_\_ Sex: \_\_\_\_\_ Occupation: \_\_\_\_\_

Intern: \_\_\_\_\_ Signature: \_\_\_\_\_

FOR CLINICIAN'S USE ONLY

Initial visit clinician: \_\_\_\_\_

Signature: \_\_\_\_\_

Case History:

Examination:

Previous:      TN  
                 Other

Current:      TN  
                 Other

X-ray Studies:

Previous:      TN  
                 Other

Current:      TN  
                 Other

Clinical path. lab.:

Previous:      TN  
                 Other

Current:      TN  
                 Other

Case status:

PTT:      Conditional:

Signed off:

Final sign out:

Recommendations:



Informant's Case History

1. Source of history:
2. Chief complaint: (patient's own words)

3. Present illness:

Location

Onset

Duration

Frequency

Pain (character)

Progression

Aggravating factors

Relieving factors

Associated S & S

Previous occurrences

Past treatment and outcome

6. Current health status and life-style:

Allergies

Immunizations

Screening tests

Environmental hazards  
(home, school, work)

Safety measures  
(seat belts, condoms)

Exercise and leisure

Sleep patterns

Diet

Current medication

Tobacco

Alcohol

Social drugs

7. Family history:

Immediate family:

Age

Health

Cause of death

DM

Heart disease

TB

HBP

Stroke

Kidney disease

CA

Arthritis

Anaemia

Headaches

Thyroid disease

Epilepsy

Mental illness

Alcoholism

Drug addiction

Other

Genital

Vascular

Musculoskeletal

Neurologic

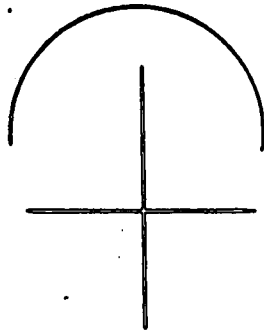
Haematologic

Endocrine

Psychiatric.

TECHNIKON NATAL CHIROPRACTIC DAY CLINICREGIONAL EXAMINATION - LOW BACKStanding:

Minor's sign  
 posture  
 skin  
 muscle tone  
 spinous percussion  
 Schober's test (6cm)  
 Treadmill  
 P.O.M.



Flexion 15cm from floor.

Extension 30°

	R. Lat flex 35°	Fingers to knees
	L. Lat flex 35°	" " "
/ painless limitation	R. rot. 30°	
// painful limitation	L. rot. 30°	

Gait:

rhythm  
 on toes (or while standing)  
 on heels (or while standing)  
 half-squat on one leg.

Motion Palpation:

sacro-iliacs (see below for findings)

Sitting:

Posture

Dermatomes:

T12  
 L1  
 L2  
 L3  
 L4  
 L5  
 S1  
 S2  
 S3



leg length:  
    actual  
    apparent  
Patrick FABER  
Gaenslen's  
gluteus max stretch  
hip medial rotation  
psoas test  
Thomas' test:  
    hip joint  
    rectus femoris.

Lateral recumbent:

S-I compression  
Ober's test  
femoral nerve stretch  
myotomes:  
    QL  
    glut.med

Prone:

gluteal skyline  
skin rolling  
iliac crest compression  
facet joint challenge  
S-I tenderness  
Erichsen's test  
Pheasant's test  
myotomes:  
    glut. max.  
trigger points:  
    QL  
    glut. med  
    glut. max  
    piriformis  
    hamstrings  
    TFL

Non-organic signs:

pin-point pain  
axial compression  
trunk rotation  
Burn's bench test  
flip test  
Hoover's test  
ankle dorsiflexion test  
pin-point pain.

TECHNIKON NATAL CHIROPRACTIC DAY CLINICPHYSICAL EXAMINATION

Underline abnormal findings in RED and elaborate on back of relevant page, if necessary.  
Mark "HAD" if normal.

Patient: \_\_\_\_\_ Pile # \_\_\_\_\_

Last name

First name

Clinician: \_\_\_\_\_ Signature: \_\_\_\_\_

Intern: \_\_\_\_\_ Signaturo: \_\_\_\_\_

Date: \_\_\_\_\_

Height: \_\_\_\_\_ Weight: \_\_\_\_\_ Temp: \_\_\_\_\_

Rates: Heart: \_\_\_\_\_ Pulse: \_\_\_\_\_ Respiration: \_\_\_\_\_

Blood pressure: Arms: L / R /

Legs: L / R /

General appearance:

## STANDING EXAMINATION.

Minor's sign

Skin changes

Posture

orocet

Adam's

"Ranges of motion:

T/L spine: Flexion: 90 Fingers to floor

Extension: 50

R.lat.flex.: 30 Fingers down leg

L.lat.flex.: 30 Fingers down leg

Rot.to R.: 35

Rot.to L.: 35

Flex:

L.Rot.

R.Rot.

L.lat  
flex.

R.lat.  
flex.

Ext.

/ = pain-free limitation; // = painful limitation.

Reberg's sign.

Pronator drift.

Trendelenburg's sign.

Gait.

rhythm

balance

pendulousness

on toes

on heels

tandem

Half squat.

Scapular winging.

Muscle tone.

Spasticity/Rigidity.



Shoulder:

skin

symmetry

ROM - glenohumeral

scapulo-thoracic

acromioclavicular

elbow

wrist

Chest measurement

inspiration

expiration

Visual acuity

Breast examination:

Inspection:

skin

size

contour

nipples

arms overhead

hands against hips

leaning forward.

Palpation:

axillary lymph nodes.

SEATED EXAMINATION.

Spinal posture

Head

scalp

skull

face

skin

Eyes

conjunctiva

sclera

eyebrows

eyelids

lacrimal gland

nasolacrimal duct

alignment

corneal reflex

ocular movement

L

III IV VI

R

III IV VI

visual fields

accommodation

iris

pupils

red reflex

optic disc

Neurological:

Dermatomes

C5

C6

C7

C8

T1

Tendon reflexes

biceps

triceps

brachioradialis

Muscle strength

C5

C6

C7

C8

T1

Coordination:

point-to-point

dysdiadochokinesia

Thorax:

Chest:

Inspection:

skin

shape

respiratory distress

rhythm (respiratory)

depth "

effort: "

intercostal/supraclavicular retractions

Palpation:

tenderness

masses

respiratory expansion

tactile fremitus

Percussion:

lungs (posterior)

diaphragmatic excursion

kidney punch

Auscultation:

breath sounds

vesicular

bronchial

adventitious sounds

crackles (rales)

wheezes (rhonchi)

voice sounds

bronchophony

whispered pectoriloquy

egophony

ROM:

Flexion: 45 chin to larynx  
 chin to sternum  
 Extension: 55 forehead parallel  
 to floor  
 L.lat.flox: 40  
 R.lat.flox: 40  
 L.rot.: 70  
 R.rot.: 70

Flox.

L.Rot.

R.Rot.

L.Lat.  
 flox.

R.lat.  
 flox.

Ext.

lymph nodes  
 trachea  
 thyroid  
 carotid arteries (thrills, bruit)

CN V

CN VII

CN VIII (vestibular)

CN IX

CN XI

TMJ

Inspection

ROM

deviation

Palpation

crepitus

tenderness

vessels  
general background  
macula  
vitreous  
lens

Ears:

auricle  
ear canal  
drum  
auditory acuity  
Weber test  
Rinne test

Nose:

external  
internal  
septum  
turbinates  
olfaction  
Sinuses (frontal & maxillary):  
tenderness  
transillumination

Mouth and pharynx:

lips  
buccal mucosa  
gums and tooth  
roof  
tongue  
inspection  
examination  
taste  
palpation  
pharynx  
inspection  
C X

Throat:

posture  
size  
swallowing  
sore  
discoloration  
hair line

Cardiovascular:

auscultation (aortic murmurs)

Allen's test

SUPINE EXAMINATION

JVP

PMI

auscultation heart (L. lat. recumbent).

respiratory excursion

percussion chest (anterior)

breast palpation

The abdomen:

Inspection:

skin

umbilicus

contour

peristalsis

pulsations

hernias (umbilical/incisional)

Auscultation:

bowel sounds

bruit

Percussion:

general

liver

spleen

Palpation:

superficial reflexes

cough

light

rebound tenderness

deep

liver

spleen

kidneys

aorta

inter-/retro-abdominal wall mass

shifting dullness

fluid wave

Acute abdomen:

where pain began and now

cough

tenderness

guarding/rigidity

rebound tenderness

Rovsing's sign

psaos sign

obturator sign

cutaneous hyperaesthesia

rectal exam

Murphy's sign.

Male genitalia and hernias.

Inspection:

skin  
prepuce  
glans  
meatus  
nits/lice  
scrotum  
inguinal/femoral bulges

Palpation:

penis (tenderness/induration)  
testes  
epididymis  
inguinal canal  
femoral canal  
cremasteric reflex

Auscultation:

scrotal mass.

Periphereal vasculature:

Inspection:

skin  
nail beds  
pigmentation  
hair loss

Palpation:

pulses - radial, brachial, femoral, popliteal, post.tibial,  
dorsalis pedis  
lymph nodes - epitrochlear, femoral (horizontal & vertical)  
temperature (foot & leg)

Manual compression test

Retractor filling (Trendelenburg) test

Arterial insufficiency test

Musculoskeletal:

ROM

hip

flex. 90/120

ext. 15

abd. 45

add. 30

int rot 40

ext rot 45

knee

flex. 130

ext. 0/15

ankle

plantar flex 45

dorsiflex 20

inversion 30

eversion 20

leg length

Neurological:

dormant ones

L1

L2

L3

L4

L5

S1

muscle strength

hip flexion

knee extension

ankle dorsiflexion

plantar flexion

tendon reflexes

patellar

Achilles

plantar reflex

Rectal examination:

Inspection

sacrococcygeal & perianal areas

Palpation

sphincter tone

tenderness

induration

nodules

prostate

seminal vesicles

Mental status

Appearance and behaviour:

level of consciousness

posture and motor behaviour

dress, grooming, personal hygiene

facial expression

affect

Speech and language:

quantity

rate

volume

fluency

aphasia (prn)

Mood

Thought processes (logical, relevant, organized)

Memory and attention:

orientation (time, place, person)

remote memory

recent memory

new learning ability

Higher cognitive functions:

information and vocabulary (general & specialised knowledge)

abstract thinking.

Appendix D

LETTER OF INFORMED CONSENT

I ..... understand the conditions of taking part in this project. I will complete the questionnaires to the best of my ability. I undertake to keep all the appointments, and if this is not possible I will notify the intern as well as reschedule for another appointment. I undertake to complete the treatment as well as to attend the one month follow-up appointment that will be required of me.

.....

signature

.....

date



**OSWESTRY LOW BACK PAIN DISABILITY QUESTIONNAIRE**

This questionnaire has been designed to give the intern information as to how your back pain has affected your ability to manage in everyday life. Please answer every section, and mark in each section only the ONE BOX which applies to you. We realise you may consider that two of the statements in any one section relate to you, but please just MARK THE BOX WHICH MOST CLOSELY DESCRIBES YOUR PROBLEM.

**Section 1 — Pain Intensity**

- ☐ I can tolerate the pain I have without having to use pain killers.
- ☐ The pain is bad but I manage without taking pain killers.
- ☐ Pain killers give complete relief from pain.
- ☐ Pain killers give moderate relief from pain.
- ☐ Pain killers give very little relief from pain.
- ☐ Pain killers have no effect on the pain and I do not use them.

**Section 2 — Personal Care (Washing, Dressing, etc)**

- ☐ I can look after myself normally without causing extra pain.
- ☐ I can look after myself normally but it causes extra pain.
- ☐ It is painful to look after myself and I am slow and careful.
- ☐ I need some help but manage most of my personal care.
- ☐ I need help every day in most aspects of self care.
- ☐ I do not get dressed, wash with difficulty and stay in bed.

**Section 3 — Lifting**

- ☐ I can lift heavy weights without extra pain.
- ☐ I can lift heavy weights but it gives extra pain.
- ☐ Pain prevents me from lifting heavy weights off the floor, but I can manage if they are conveniently positioned, eg on a table.
- ☐ Pain prevents me from lifting heavy weights but I can manage light to medium weights if they are conveniently positioned.
- ☐ I can lift only very light weights.
- ☐ I cannot lift or carry anything at all.

**Section 4 — Walking**

- ☐ Pain does not prevent me walking any distance.
- ☐ Pain prevents me walking more than 1 mile.
- ☐ Pain prevents me walking more than ½ mile.
- ☐ Pain prevents me walking more than ¼ mile.
- ☐ I can only walk using a stick or crutches.
- ☐ I am in bed most of the time and have to crawl to the toilet.

**Section 5 — Sitting**

- ☐ I can sit in any chair as long as I like.
- ☐ I can only sit in my favourite chair as long as I like.
- ☐ Pain prevents me sitting more than 1 hour.
- ☐ Pain prevents me from sitting more than ½ hour.
- ☐ Pain prevents me from sitting more than 10 mins.
- ☐ Pain prevents me from sitting at all.

**Section 6 — Standing**

- ☐ I can stand as long as I want without extra pain.
- ☐ I can stand as long as I want but it gives me extra pain.
- ☐ Pain prevents me from standing for more than 1 hour.
- ☐ Pain prevents me from standing for more than 30 mins.
- ☐ Pain prevents me from standing for more than 10 mins.
- ☐ Pain prevents me from standing at all.

**Section 7 — Sleeping**

- ☐ Pain does not prevent me from sleeping well.
- ☐ I can sleep well only by using tablets.
- ☐ Even when I take tablets I have less than six hours sleep.
- ☐ Even when I take tablets I have less than four hours sleep.
- ☐ Even when I take tablets I have less than two hours sleep.
- ☐ Pain prevents me from sleeping at all.

**Section 8 — Sex Life**

- ☐ My sex life is normal and causes no extra pain.
- ☐ My sex life is normal but causes some extra pain.
- ☐ My sex life is nearly normal but is very painful.
- ☐ My sex life is severely restricted by pain.
- ☐ My sex life is nearly absent because of pain.
- ☐ Pain prevents any sex life at all.

**Section 9 — Social Life**

- ☐ My social life is normal and gives me no extra pain.
- ☐ My social life is normal but increases the degree of pain.
- ☐ Pain has no significant effect on my social life apart from limiting my more energetic interests, eg dancing, etc.
- ☐ Pain has restricted my social life and I do not go out as often.
- ☐ Pain has restricted my social life to my home.
- ☐ I have no social life because of pain.

**Section 10 — Travelling**

- ☐ I can travel anywhere without extra pain.
- ☐ I can travel anywhere but it gives me extra pain.
- ☐ Pain is bad but I manage journeys over two hours.
- ☐ Pain restricts me to journeys of less than one hour.
- ☐ Pain restricts me to short necessary journeys under 30 minutes.
- ☐ Pain prevents me from travelling except to the doctor or hospital.

NUMERICAL RATING SCALE 101

No..... tx.....

Please indicate on the line below the number between 0 and 100 that best describes the pain of your major problem when it is at its worst. A zero would mean "no pain at all" and one hundred (100) would mean "pain as bad as it could be". Please write only one number.

\_\_\_\_\_

0 100

Please indicate on the line below, the number between 0 and 100 that best describes the pain of your major problem when it is at its least. A zero (0) would mean "no pain at all" and one hundred would mean "the pain as bad as it could be". Please write only one number.

\_\_\_\_\_

0 100

Appendix G

SHORT-FORM MCGILL PAIN QUESTIONNAIRE

Please answer every section, and mark in each section only the ONE BOX which applies to you.

Tx. ....

	<u>NONE</u>	<u>MILD</u>	<u>MODERATE</u>	<u>SEVERE</u>
THROBBING	0) _____	1) _____	2) _____	3) _____
SHOOTING	0) _____	1) _____	2) _____	3) _____
STABBING	0) _____	1) _____	2) _____	3) _____
SHARP	0) _____	1) _____	2) _____	3) _____
CRAMPING	0) _____	1) _____	2) _____	3) _____
GNAWING	0) _____	1) _____	2) _____	3) _____
HOT-BURNING	0) _____	1) _____	2) _____	3) _____
ACHING	0) _____	1) _____	2) _____	3) _____
HEAVY	0) _____	1) _____	2) _____	3) _____
TENDER	0) _____	1) _____	2) _____	3) _____
SPLITTING	0) _____	1) _____	2) _____	3) _____
TIRING-EXHAUSTING	0) _____	1) _____	2) _____	3) _____
SICKENING	0) _____	1) _____	2) _____	3) _____
FEARFUL	0) _____	1) _____	2) _____	3) _____
PUNISHING-CRUEL	0) _____	1) _____	2) _____	3) _____

---

GENERAL WELL-BEING SCHEDULE

Tx. no. ....

READ - This section of the examination contains questions about how you feel and how things have been going with you. For each question, mark (X) the answer which best applies to you.

1. How have you been feeling in general? (DURING THE PAST MONTH)

1. (001) 1 ☐ In excellent spirits  
 2 ☐ In very good spirits  
 3 ☐ In good spirits mostly  
 4 ☐ I have been up and down in spirits a lot  
 5 ☐ In low spirits mostly  
 6 ☐ In very low spirits

2. Have you been bothered by nervousness or your "nerves"? (DURING THE PAST MONTH)

2. (002) 1 ☐ Extremely so -- to the point where I could not work or take care of things  
 2 ☐ Very much so  
 3 ☐ Quite a bit  
 4 ☐ Some -- enough to bother me  
 5 ☐ A little  
 6 ☐ Not at all

3. Have you been in firm control of your behavior, thoughts, emotions OR feelings? (DURING THE PAST MONTH)

3. (003) 1 ☐ Yes, definitely so  
 2 ☐ Yes, for the most part  
 3 ☐ Generally so  
 4 ☐ Not too well  
 5 ☐ No, and I am somewhat disturbed  
 6 ☐ No, and I am very disturbed

4. Have you felt so sad, discouraged, hopeless, or had so many problems that you wondered if anything was worthwhile? (DURING THE PAST MONTH)

4. (004) 1 ☐ Extremely so -- to the point that I have just about given up  
 2 ☐ Very much so  
 3 ☐ Quite a bit  
 4 ☐ Some -- enough to bother me  
 5 ☐ A little bit  
 6 ☐ Not at all

5. Have you been under or felt you were under any strain, stress, or pressure? (DURING THE PAST MONTH)

5. (005) 1 ☐ Yes -- almost more than I could bear or stand  
 2 ☐ Yes -- quite a bit of pressure  
 3 ☐ Yes -- some - more than usual  
 4 ☐ Yes -- some - but about usual  
 5 ☐ Yes - a little  
 6 ☐ Not at all

6. How happy, satisfied, or pleased have you been with your personal life? (DURING THE PAST MONTH)

6.

- (006)
- 1 ☐ Extremely happy -- could not have been more satisfied or pleased
  - 2 ☐ Very happy
  - 3 ☐ Fairly happy
  - 4 ☐ Satisfied -- pleased
  - 5 ☐ Somewhat dissatisfied
  - 6 ☐ Very dissatisfied

7. Have you had any reason to wonder if you were losing your mind, or losing control over the way you act, talk, think, feel, or of your memory? (DURING THE PAST MONTH)

7.

- (007)
- 1 ☐ Not at all
  - 2 ☐ Only a little
  - 3 ☐ Some -- but not enough to be concerned or worried about
  - 4 ☐ Some and I have been a little concerned
  - 5 ☐ Some and I am quite concerned
  - 6 ☐ Yes, very much so and I am very concerned

8. Have you been anxious, worried, or upset? (DURING THE PAST MONTH)

8.

- (008)
- 1 ☐ Extremely so -- to the point of being sick or almost sick
  - 2 ☐ Very much so
  - 3 ☐ Quite a bit
  - 4 ☐ Some -- enough to bother me
  - 5 ☐ A little bit
  - 6 ☐ Not at all

9. Have you been waking up fresh and rested? (DURING THE PAST MONTH)

9.

- (009)
- 1 ☐ Every day
  - 2 ☐ Most every day
  - 3 ☐ Fairly often
  - 4 ☐ Less than half the time
  - 5 ☐ Rarely
  - 6 ☐ None of the time

10. Have you been bothered by any illness, bodily disorder, pains, or fears about your health? (DURING THE PAST MONTH)

10.

- (010)
- 1 ☐ All the time
  - 2 ☐ Most of the time
  - 3 ☐ A good bit of the time
  - 4 ☐ Some of the time
  - 5 ☐ A little of the time
  - 6 ☐ None of the time

11. Has your daily life been full of things that were interesting to you? (DURING THE PAST MONTH)

11.

- (011)
- 1 ☐ All the time
  - 2 ☐ Most of the time
  - 3 ☐ A good bit of the time
  - 4 ☐ Some of the time
  - 5 ☐ A little of the time
  - 6 ☐ None of the time

12. Have you felt down-hearted and blue? (DURING THE PAST MONTH)

12.

- (012)
- 1 ☐ All of the time
  - 2 ☐ Most of the time
  - 3 ☐ A good bit of the time
  - 4 ☐ Some of the time
  - 5 ☐ A little of the time
  - 6 ☐ None of the time

13. Have you been feeling emotionally stable and sure of yourself? (DURING THE PAST MONTH)

13.

- (013) 1 ☐ All of the time  
2 ☐ Most of the time  
3 ☐ A good bit of the time  
4 ☐ Some of the time  
5 ☐ A little of the time  
6 ☐ None of the time

14. Have you felt tired, worn out, used-up, or exhausted? (DURING THE PAST MONTH)

14.

- (014) 1 ☐ All of the time  
2 ☐ Most of the time  
3 ☐ A good bit of the time  
4 ☐ Some of the time  
5 ☐ A little of the time  
6 ☐ None of the time

15. How concerned or worried about your HEALTH have you been? (DURING THE PAST MONTH)

15.

(015)

For each of the four scales below, note that the words at each end of the 0 to 10 scale describe opposite feelings. Circle any number along the bar which seems closest to how you have generally felt DURING THE PAST MONTH.

0	1	2	3	4	5	6	7	8	9	10
Not concerned at all										Very concerned

16. How RELAXED or TENSE have you been? (DURING THE PAST MONTH)

16.

(016)

0	1	2	3	4	5	6	7	8	9	10
Very relaxed										Very tense

17. How much ENERGY, PEP, VITALITY have you felt? (DURING THE PAST MONTH)

17.

(017)

0	1	2	3	4	5	6	7	8	9	10
No energy AT ALL, listless										Very ENERGETIC, dynamic

18. How DEPRESSED or CHEERFUL have you been? (DURING THE PAST MONTH)

18.

(018)

0	1	2	3	4	5	6	7	8	9	10
Very depressed										Very cheerful

## WELLNESS APPROACH QUESTIONNAIRE

Please answer this questionnaire honestly! It is designed to assess your opinion of the treatment you have received. You will remain anonymous.

- 1 = Totally Agree  
 2 = Agree  
 3 = Neither Agree nor Disagree  
 4 = Disagree  
 5 = Totally Disagree

State to what degree you agree/disagree with the following statements.  
 Please note that there are no wrong or correct answers.

1. My expectations of the treatment were met. .... 

1	2	3	4	5
---	---	---	---	---

2. a) My condition was explained to me in detail. .... 

1	2	3	4	5
---	---	---	---	---

b) I understand the nature of my condition completely. .... 

1	2	3	4	5
---	---	---	---	---

c) I could explain to my family what my condition was and how I was going to be treated. .... 

1	2	3	4	5
---	---	---	---	---

3. My condition was explained to me with: Pictures, Models, X-rays, etc.: 

1	2	3	4	5
---	---	---	---	---

4. a) Exercises and muscle stretching were explained and demonstrated to me during the treatment. .... 

1	2	3	4	5
---	---	---	---	---

b) I do them everyday. .... 

1	2	3	4	5
---	---	---	---	---

c) The intern made sure I knew how to do the exercises at follow-up visits. .... 

1	2	3	4	5
---	---	---	---	---

d) I understand why it is important for me to do them. .... 

1	2	3	4	5
---	---	---	---	---

5. a) Lifestyle changes were suggested to me: eg. diet, stress management, posture, habits, medication, etc. .... 

1	2	3	4	5
---	---	---	---	---

b) I made these changes permanent. .... 

1	2	3	4	5
---	---	---	---	---

7. a) I received information sheets from the intern. .... 

1	2	3	4	5
---	---	---	---	---

b) I found the information to be of great value to me. 

1	2	3	4	5
---	---	---	---	---

8. a) I think it is important for me to take an active role in the  
treatment of my condition. .... 

1	2	3	4	5
---	---	---	---	---

b) I have actively taken part in the treatment of my condition.  

1	2	3	4	5
---	---	---	---	---

9. I will take more responsibility for my own good health in the  
future. .... 

1	2	3	4	5
---	---	---	---	---

10. a) The intern educated my on how to prevent my condition from  
recurring. .... 

1	2	3	4	5
---	---	---	---	---

b) I think that I am now more aware of the factors that cause and  
aggravate my condition. .... 

1	2	3	4	5
---	---	---	---	---

11. I think I will be able to prevent my condition from  
recurring in the future. .... 

1	2	3	4	5
---	---	---	---	---

12. I think that the intern sees me as a unique individual and  
not just another patient. .... 

1	2	3	4	5
---	---	---	---	---



## FOLLOW-UP WELLNESS APPROACH QUESTIONNAIRE

Please answer this questionnaire honestly! It is designed to assess your opinion of the treatment you have received. You will remain anonymous.

- 1 = Totally Agree
- 2 = Agree
- 3 = Neither Agree nor Disagree
- 4 = Disagree
- 5 = Totally Disagree

State to what degree you agree/disagree with the following statements. Please note that there are no wrong or correct answers.

1. The treatment relieved my condition. .... 

1	2	3	4	5
---	---	---	---	---

2. I did not have any recurrence of my condition during the last month. .... 

1	2	3	4	5
---	---	---	---	---

3. Lifestyle changes suggested to me during the treatment were helpful and I still use them. .... 

1	2	3	4	5
---	---	---	---	---

4. I have been doing the exercises and muscle stretching every day in the month since my last treatment. .... 

1	2	3	4	5
---	---	---	---	---

5. I still find the information sheets the intern has given me very helpful. .... 

1	2	3	4	5
---	---	---	---	---

6. I think that the advice I received during the treatment will help prevent me from re-injuring my back. .... 

1	2	3	4	5
---	---	---	---	---

Appendix K

Dear Patient

Welcome to this research project. I need to complete this project by the end of this year, in order to receive my Masters Degree in chiropractic. During the treatment you will receive chiropractic care which will be relevant and best suited to your condition. The questionnaires you will be completing, will be to evaluate your perception of the treatment. Please be very honest when answering the questions. Do not fill in what you think I might want to hear!!

I would like you to be very strict about keeping the appointments. This is not only vital to my project, but it is of utmost importance to the progress of your condition.

I would like to thank you for taking the time to take part in this project.

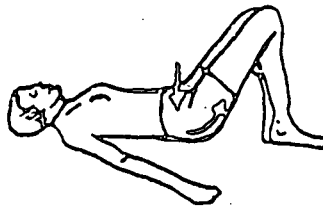
Your sincerely

Estelle

## EXERCISES

### 1. Pelvic tilt

Lie flat on your back on the floor, with your knees bent and your feet flat. Flatten your whole spine against the floor, and keep it in this position throughout the exercise. Raise your buttocks to the ceiling by contracting your stomach and buttock muscles. Repeat 10 times.



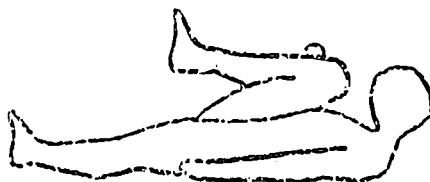
### 2. Low back stretch

Lie on the floor on your back. Hug your thighs to your chest while lifting your head to your knees. Hold for the count of 5, relax and repeat 5 times.



### 3. Iliopsoas stretch

Lie flat on the floor on your back, with both legs flat. Bring your right knee to your chest while the left leg stays straight. Press your back firmly against the floor. Straighten the right leg and bring the left leg to your chest. Repeat 5 times per leg.



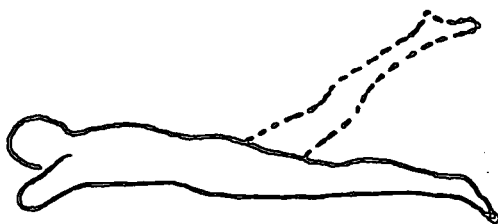
#### 4. Strengthening the stomach muscles

Lie on the floor on your back. Flatten your stomach, with your knees bent curl up slowly, feeling your upper back peeling of the floor. Pull your stomach towards the floor. Your lower back should stay on the floor.



#### 5. Strengthening the back muscles

Lie on your stomach with your arms folded under your chin. Lift one leg at a time and lower it in a slow continuous movement. Repeat 6-8 times per leg, rest and repeat.

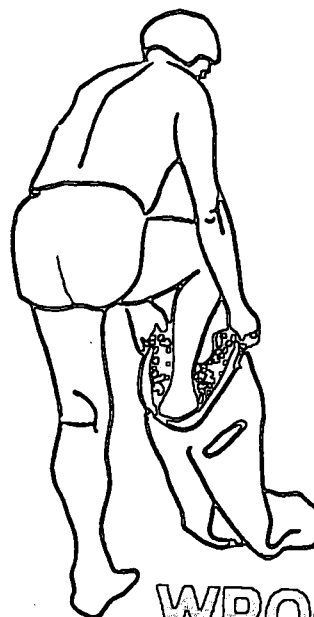


## HOW TO TREAT YOUR TRIGGER POINTS

### Gluteus Medius muscle

If you sleep on your side place a pillow between your knees. Do not sit still for too long. Set a timer for about 20 minutes and place it on the opposite side of the room, when it rings stand up, walk to it and reset it. Do not keep your wallet in your back pocket. When sitting do not cross your legs. Sit or lean against the wall while getting dressed, because the sudden jerk of a near fall could worsen your condition.

RIGHT



RIGHT

WRONG

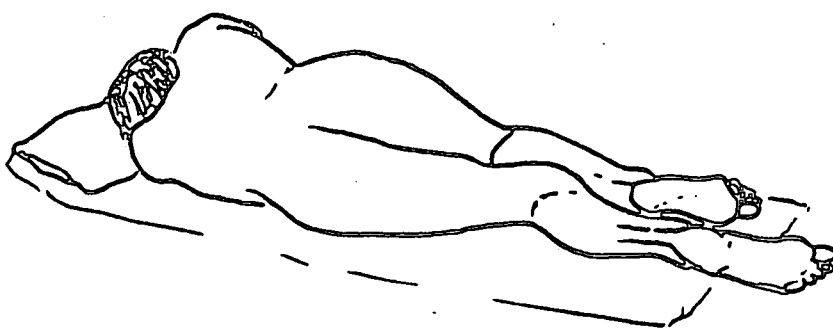
### Exercises

1. Lie on your side and place your left\right leg in front of the bottom leg with the knee straight. Your thigh should be at about 30 degrees to your hip. Stabilise yourself by holding on to the edge of the table. Slowly inhale and then exhale while letting your top leg relax and allowing it to descend towards the floor. Repeat about 5 times twice per day.
2. Lie on a hard surface, on a tennis ball over the tender area. Roll around as to massage the area.

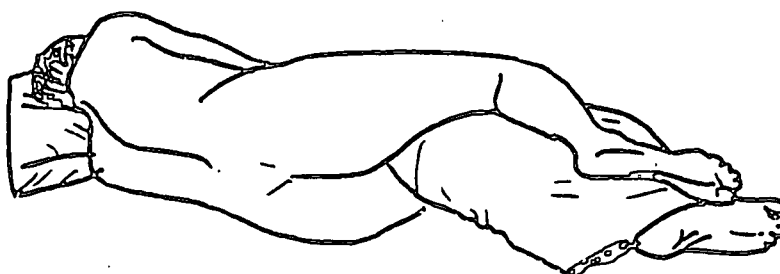
## HOW TO TREAT YOUR TRIGGER POINTS

### Piriformis muscle

Sleep on your side with your hips and knees bent. Place a pillow between your thighs and knees so that the upper thigh is horizontal with the surface of the bed. Do not sit



WRONG



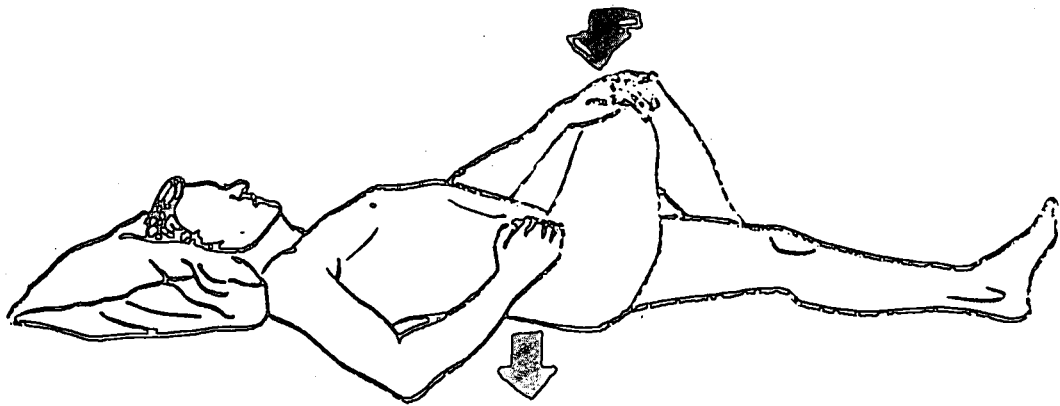
RIGHT

for prolonged periods, set a timer for about 20 minutes and place it on the opposite side of the room, when it rings stand up, walk to it and reset it. If you have to drive long distances stop at least every hour to walk around. Avoid making sudden rotational movements with your weight balanced on one leg, eg. in tennis, soccer etc.

### Exercises

1. Lie on your back. Bend your left\right leg to 90 degrees at the hip and place it over the opposite thigh.

Rest the Left\right (opposite) hand on this knee and your other hand on the hip (same side) pressing down. Pull in opposite directions with your hands. Pull outwards with



your left\right leg against the resistance of your hand. Hold for a few seconds and relax pull the left\right leg as far as possible to the left\right (opposite) side.

2. Lie on a hard surface, on a tennis ball over the tender area. Roll around as to massage the area.

## HOW TO TREAT YOUR TRIGGER POINTS

### Gluteus Minimus muscle

Keep your body warm at all times. Sit when ever you can. If you have to stand shift your weight often from one foot to the other. When you have to stand for a long time, rest one foot on a block of about 10-15cm high. Alternate your feet at regular intervals. Do not sit for prolonged periods, set a timer for about 20 minutes and place it on the opposite side of the room, when it rings stand up, walk to it and reset it. It is best to sleep on your side with your hips and knees bent. Place a pillow between your thighs and knees so that the upper thigh is horizontal with the surface of the bed.

Do not keep a wallet in the back pocket of trousers.

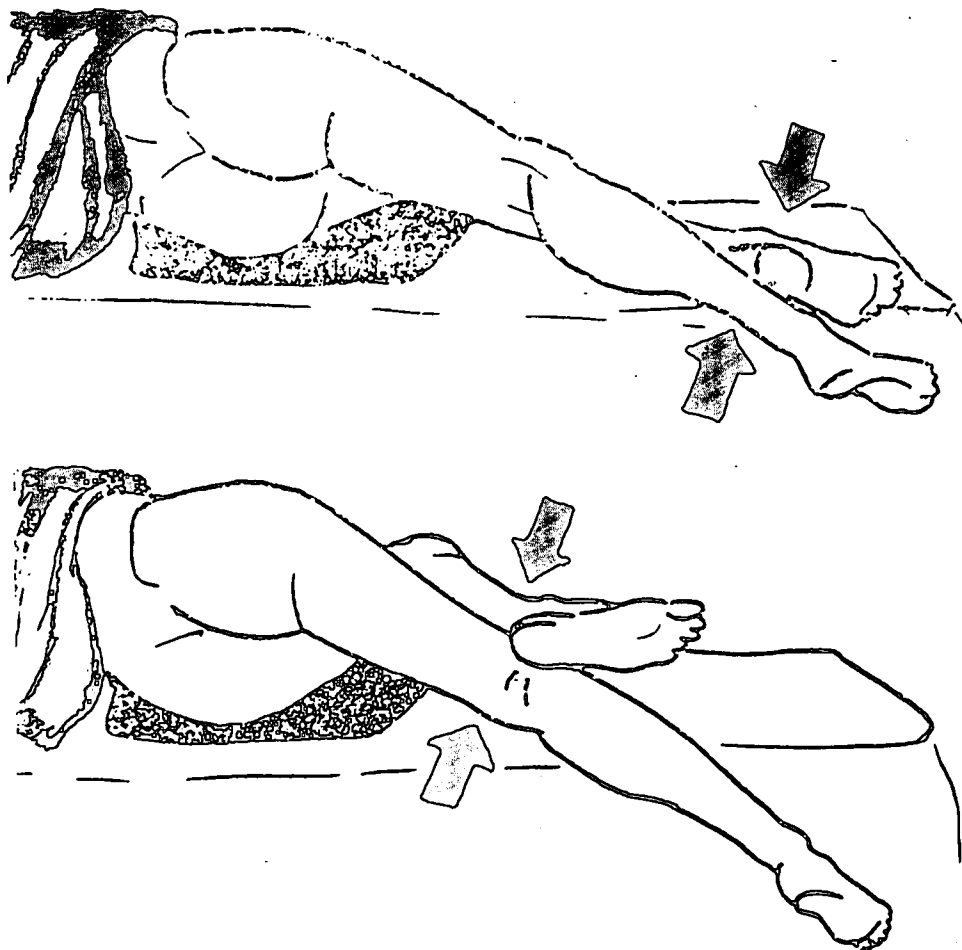
### Exercise

1. Lie on the floor and place a tennis ball under the tender area closest to the hip. Slide the body slowly downward towards the opposite shoulder or towards the midline. Follow this by putting hot towels on the area. Do this every day until the tenderness disappears,, and then every other day if the tenderness develops again.

2. Lie on your side close to the edge of the bed (with your back to the edge) with your left/right leg on top. Then move to top leg backward from the hip. Bend the bottom leg and place the heel on the ankle of the top leg.

Press up gently with the left\right leg while pressing down with the other leg (legs press against each other). Hold for 5 seconds. Relax and allow the left\right leg to drop downward over the edge of the bed.





Now move the other leg's heel upward towards the knee of the left\right leg, until the excess slack is taken up. Then repeat this whole procedure. Repeat until you can reach the knee of the left\right leg.

3. Lie on the edge of the bed, facing the edge. Let your top leg move forward, and hang off the edge of the bed until you feel a stretch in your buttock. Hold for a few seconds and relax. Repeat 4-5 times, twice per day.

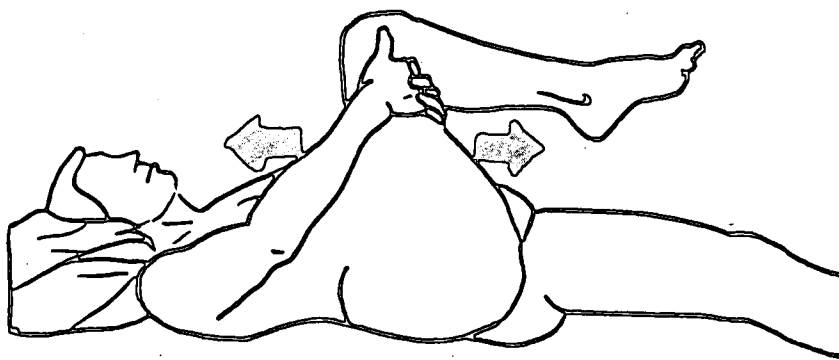
## HOW TO TREAT YOUR TRIGGER POINTS

### Gluteus Maximus muscle

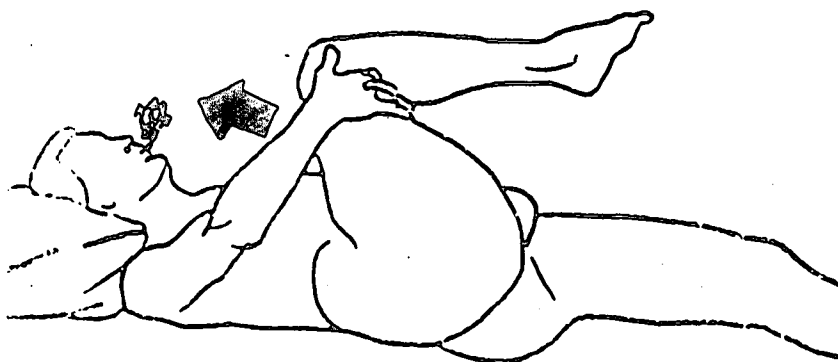
Do not sit still for too long. Set a timer for about 20 minutes and place it on the opposite side of the room, when it rings stand up, walk to it and reset it. If you sleep on your back place a small pillow under the knees, and if you sleep on your side place a pillow between your knees. Avoid hiking up steep hills or working in a forward leaning position as this will place too much stress on the affected muscle.

### Exercises

1. Lie on your back. Lift the left/right knee to your chest (about 90 degrees) holding on to the thigh. Pull towards your feet with your thigh while resisting this movement with your hands. Hold for a few seconds.



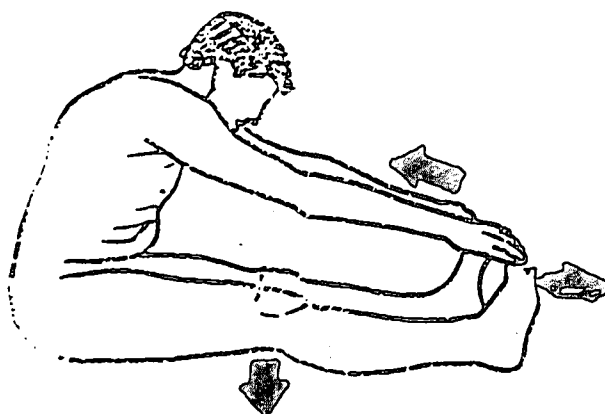
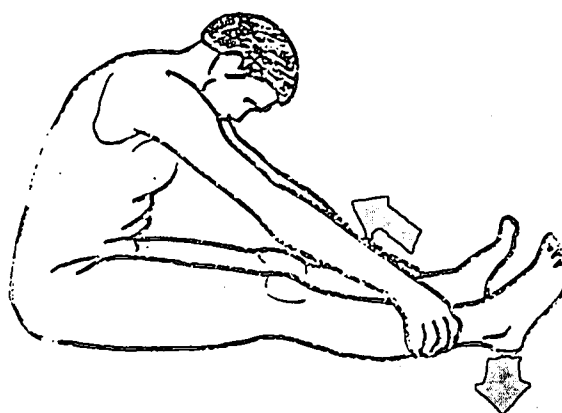
While slowly exhaling through pursed lips relax your leg and slowly pull it as close to your chest as possible with your hands. Repeat 5 times, twice per day.



2. Sit on the floor with your legs straight in front of you. Reach forward as far as possible with only slight discomfort. Firmly grasp your legs. At the same time push your heels and knees down against the floor. Gently pull upwards against your legs with your hands. Hold for a few seconds and relax while exhaling slowly. While relaxing reach forward to take up any slack that has developed. Repeat until you can reach your toes.

3. Lie on a hard surface, on a tennis ball over the tender area. Roll around as to massage the area.

4. Swimming is very good exercise but do only backstroke and sidestroke.



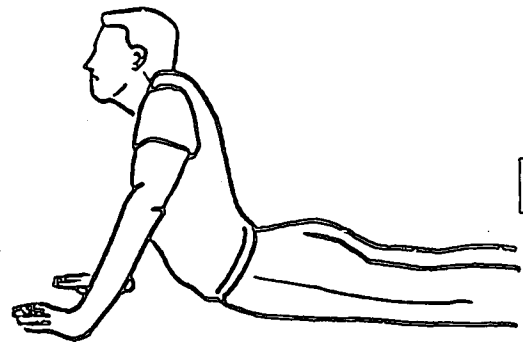
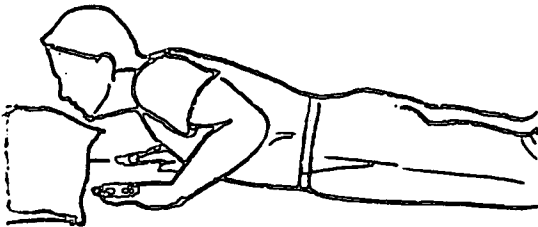
## HOW TO TREAT YOUR TRIGGER POINTS

### Iliopsoas muscle

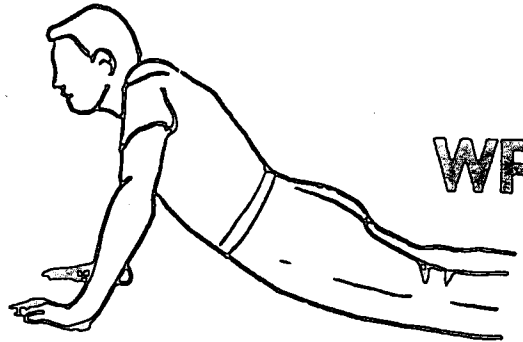
Do not sit still for prolonged periods. Set a timer for about 20 minutes and place it on the opposite side of the room, when it rings stand up walk to it and reset it. Breathe with your stomach and with your chest. Sleep on your back with a small pillow under your knees. Avoid sleeping on your side in a tight curled-up position. Sleep on a firm mattress.

### Exercise

1. Lie on your stomach, and push up with your hands keeping your pelvis and thighs solidly against the floor. Repeat 5-6 times, twice per day.



RIGHT



WRONG

2. Lie on your back on your bed with your buttocks on the edge. Let your left/right leg hang freely over the edge with your knee bent, pull the other knee to the chest. Relax and repeat 3-4 times, twice per day.
3. In the office: a) Grasp a file cabinet with one hand, then place one foot well behind the other. Lean forward

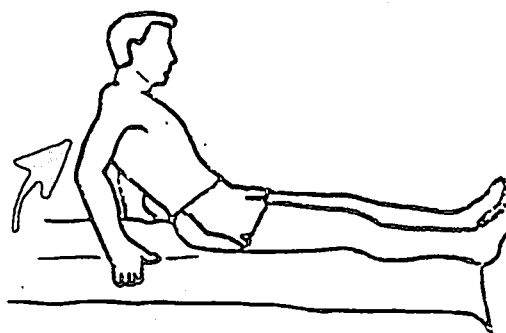
with your body while bending your front knee and hold it for a few seconds, relax and repeat.

b) Sit on the edge of a chair with no armrests, with left\right buttock off the seat edge. Bend the left\right knee and slide it backwards. Hold for a couple of seconds.

#### 4. Slow sitback:

- Lie on your back.

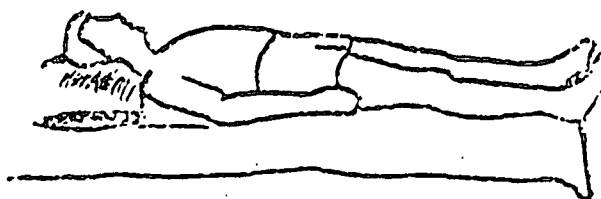
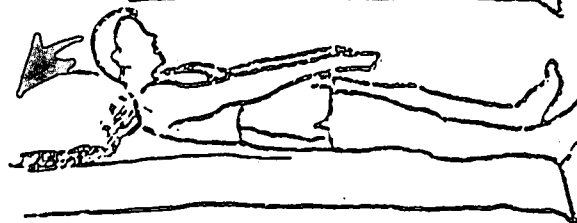
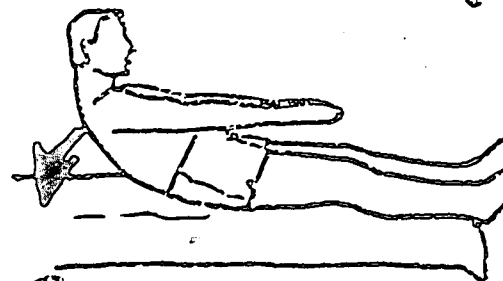
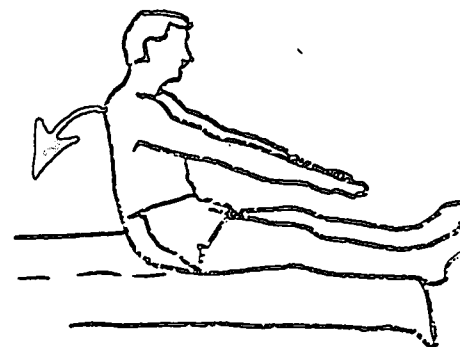
- Push your body up with your arms, until you are in the seated position.



- Slowly sit back rolling your back down onto the table.

- Rest and breath with your abdomen

- Do about 3 cycles per day.

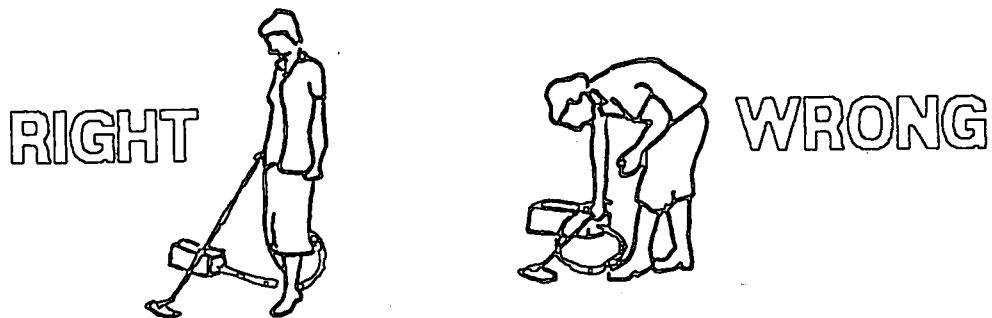


## HOW TO TREAT YOUR TRIGGER POINTS

### Quadratus Lumborum:

Always sleep on a firm mattress. Do not sleep flat on your back with your knees straight, place a small pillow or rolled towel under your knees. It is best to sleep on your side with your hips and knees bent. Place a pillow between your thighs and knees so that the upper thigh is horizontal with the surface of the bed.

AVOID twisting motions of bending forward and sideways to lift or pull an object. Always face the object and only bend forward then while standing upright turn around. Use an upright vacuum cleaner and long handled broom. Lift



objects from the floor by bending your knees and keeping your back straight. Learn to avoid unnecessary stooping, make the bed by standing and walking on your knees around the bed. When leaning over a table or when brushing your teeth, support your weight on the surface with your free hand. Sit down or lean against heavy furniture while getting dressed, to prevent a near fall or jerking movements.

When sitting up in bed follow the procedure in the posture handout.

When ascending or descending stairs, turn your body to 45 degrees.

While working at a low level eg. gardening, sit on a low

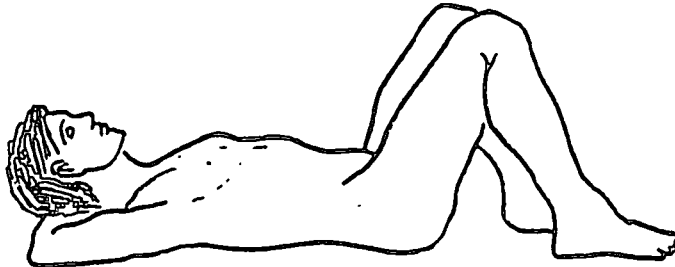
box or stool, this will prevent you from bending forward. Learn how to slide and roll your hips rather than lifting them when turning over in bed at night.

### Exercises

1. -Lie on your back with your hips and knees bent.

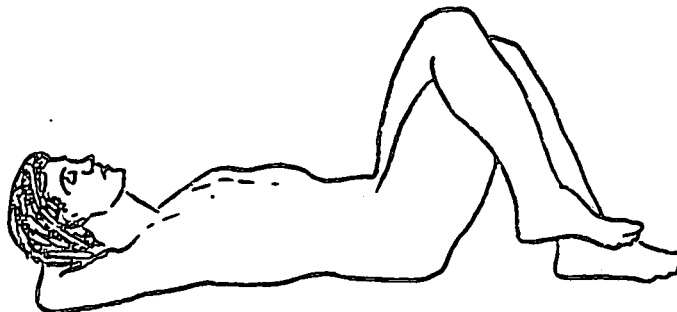
-Place your hands behind your head.

-Move your left/right leg as far as possible to the middle.

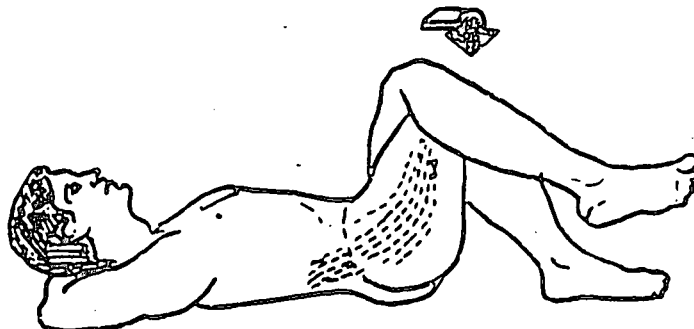


-Cross the other leg over it.

-Press with the left/right leg outward while resisting it with the top leg (in the opposite direction). This is done while inhaling slowly.



-When while exhaling slowly, relax the left/right leg and gently pull it down and to the middle with the top leg.

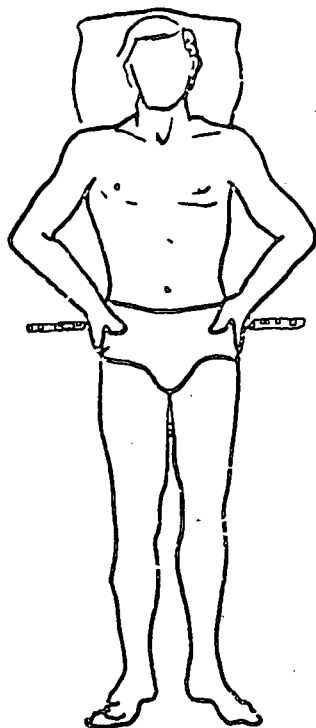


-Release the left/right leg while keeping it supported by the top leg.

-Repeat 6-7 times, twice per day.

2. -Lie on your back with your legs straight.

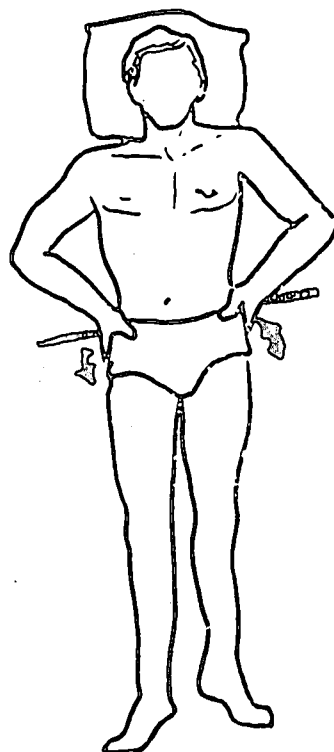
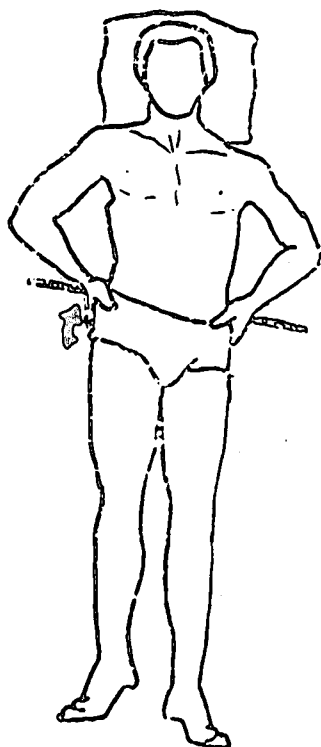
-Place your hands on your hips.



-Lower left\right hip away from the shoulder.

-While slowly breathing in elevate the other hip towards the shoulder and breath out while lowering it.

-Relax, breath normally and repeat 8-10 times, twice per day.

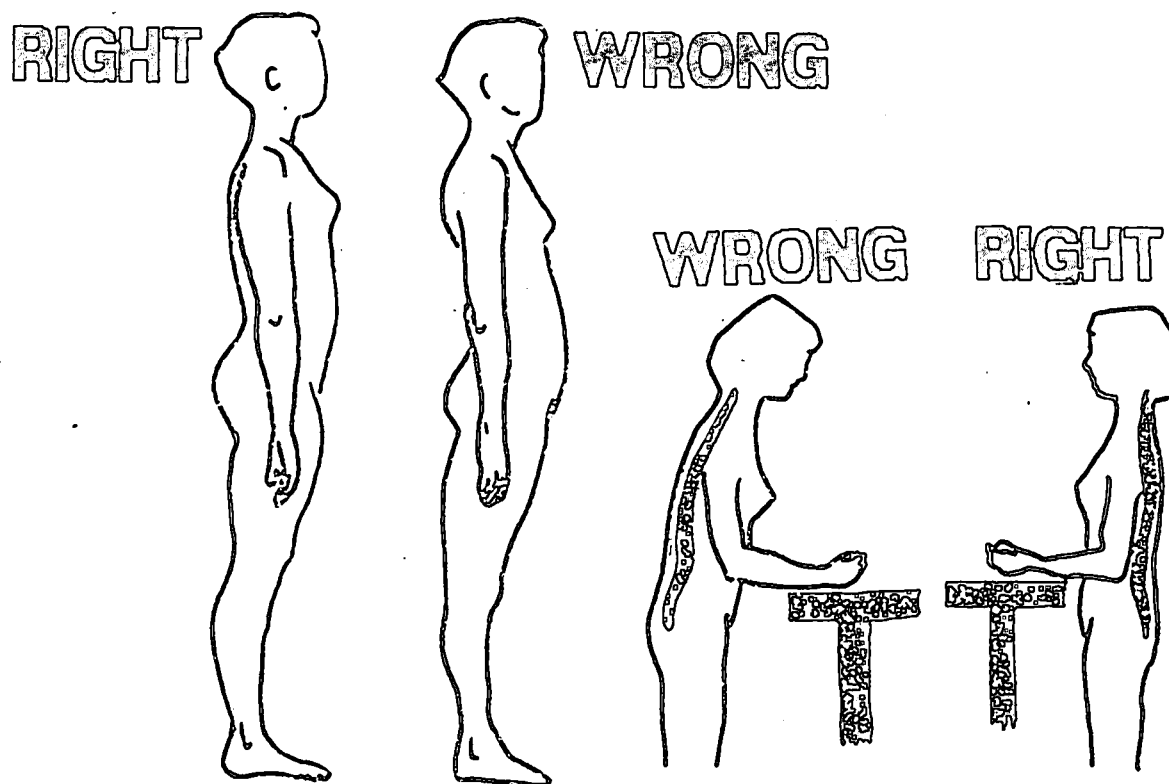




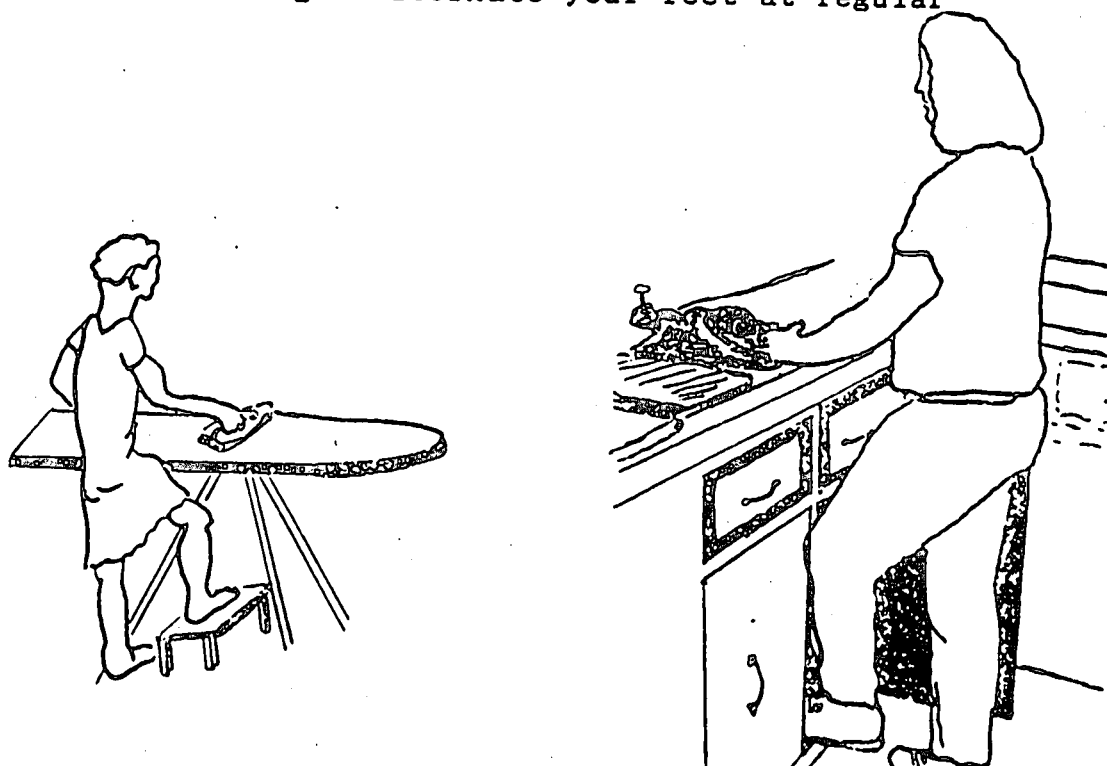
## IMPROVE YOUR POSTURE

### 1. Standing

Always stand upright by tightening your stomach muscles, tuck your buttocks under your body by squeezing them tight together, and slightly bend your knees.



If you have to stand for a long time, rest one foot on a block of about 10-15cm high. Alternate your feet at regular intervals.



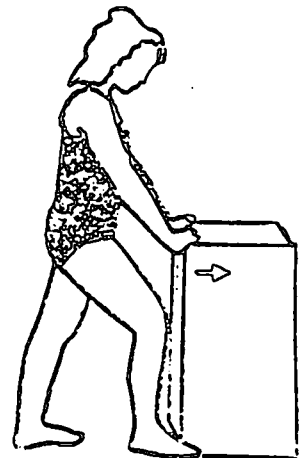
When leaning over a table, lean with one hand on the table\sink to relieve the tension placed on your lower back.(Russell et al. 1990) If your working surface is not high enough for you to stand upright while you are working, sit down to do this task. When moving furniture or other large objects, rather push it while keeping your back straight and using your legs to do the work, than pulling it.

RIGHT

RIGHT



WRONG



When doing sweeping, mopping, vacuuming or raking do not do it for prolonged periods. Only work in the area directly in front of you and use your arms and legs to do the sweeping motion. Spread your feet apart and place one foot in front, shift your weight from one foot to the other while doing the sweeping motion. Use short strokes, the broom or rake must never be more than an arm's length away from you.

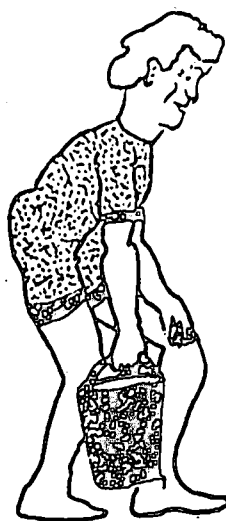
WRONG



RIGHT



Rinse the mop out in a sink rather than in a bucket. Kneel properly to use the dustpan or pick up leaves.

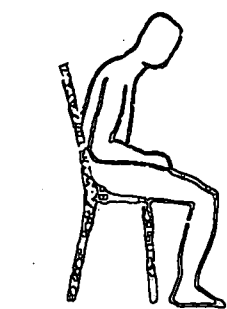


## 2. Sitting

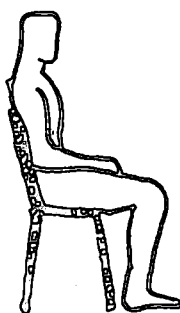
Always sit upright with your buttocks against the back of the chair. The backrest of the chair should be at 110 degrees to horizontal, and your lower back must be directly supported. When sitting your knees must be on the same height or slightly above the level of your hips, with both feet on the floor.

If you are short place

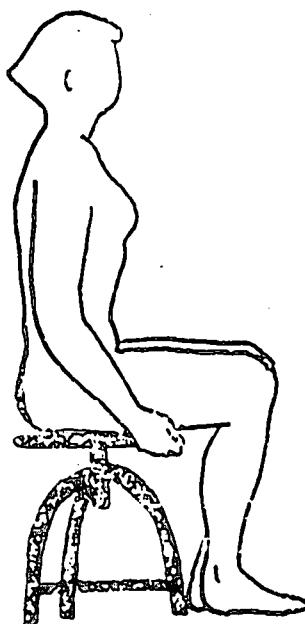
your feet on a block.



**WRONG**

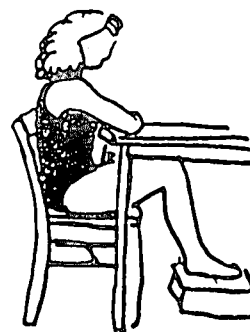


**RIGHT**



**RIGHT**

**RIGHT**



**WRONG**

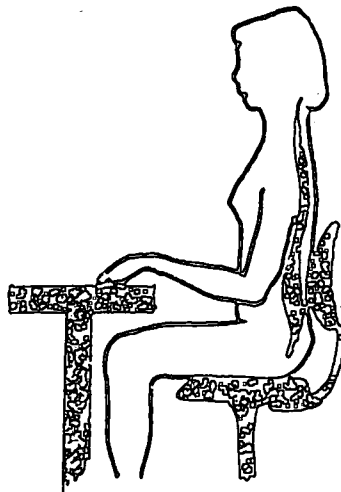


Never cross your legs or knees. Avoid high stools.

When sitting at a table to write, lean forward from your hips and not from your shoulders.

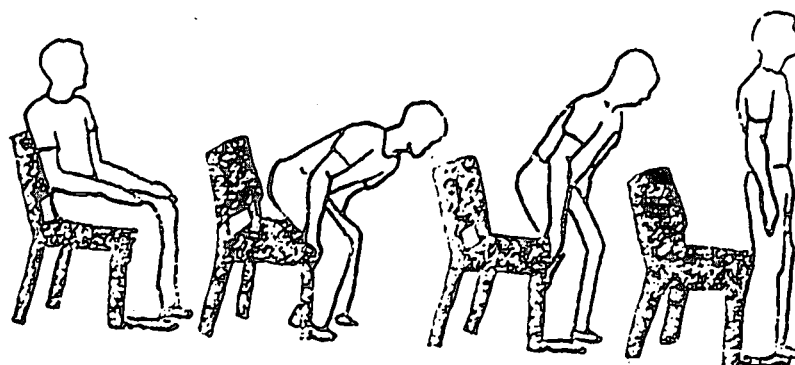
The height of the table is determined when you sit upright and your elbows lean freely on the desk surface. The desk should preferably have a sloped surface or your book must rest on a support.

If you have to sit for a long time, set a timer for about 20 minutes and place it on the opposite side of the room, if it goes off stand up, walk to it and reset it.

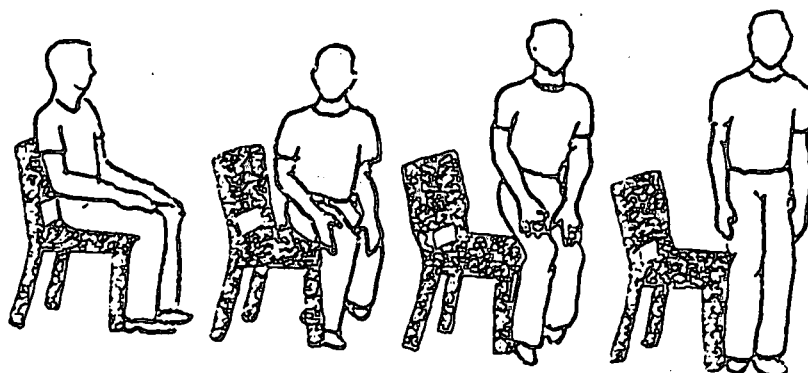


To stand up from any chair, move your buttocks to the end of the seat by rotating your knees to touch the corner of the chair (body at 45 degrees). Place one foot under the chair under your body. Lift your body by holding it straight and using your thighs to do the work. Push with your hands on your thighs to help with standing up. Reverse this process to sit down.

WRONG

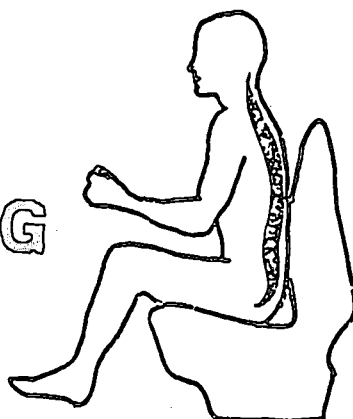


RIGHT

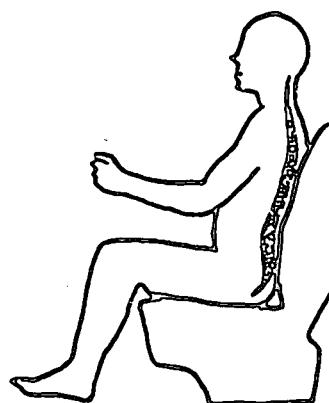


When driving pull your seat forward so that your knees are slightly higher than your hips. Try to keep your low back flat. If you are on a long drive stop at least once an hour and walk around.

WRONG



RIGHT

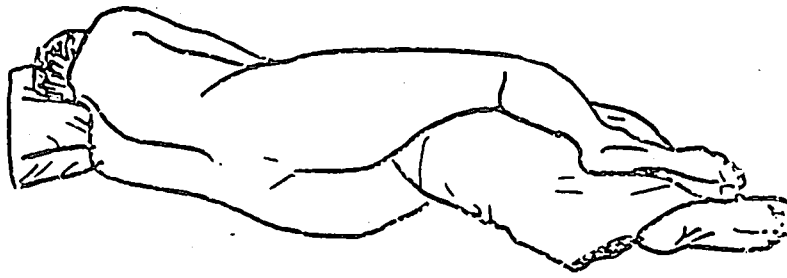


When working at a low level eg. gardening, kneel or sit on a low bench.

### 3. Lying

Never lie on your stomach. Preferably lie on your side, with one pillow under your head which supports your head and neck and keeps it aligned with the rest of your spine.

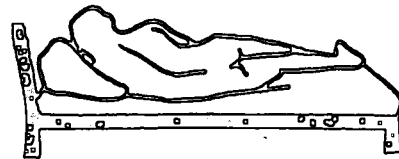
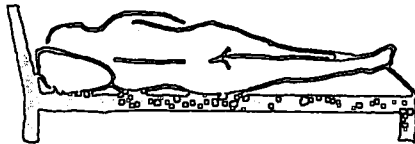
Bend your hips and knees.



Try to keep your arms under shoulder level.

If you have a rest during the day, lie on your back with a pillow under your knees. Always sleep on a firm (not hard) mattress.

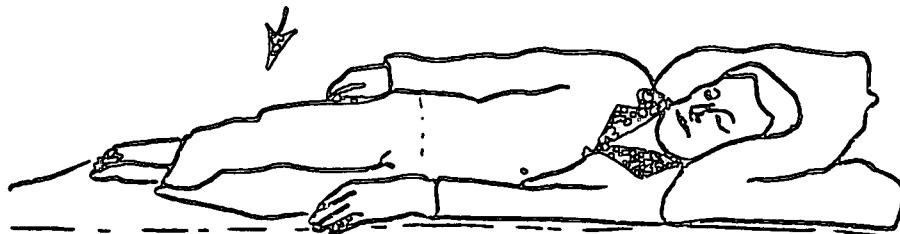
RIGHT



WRONG

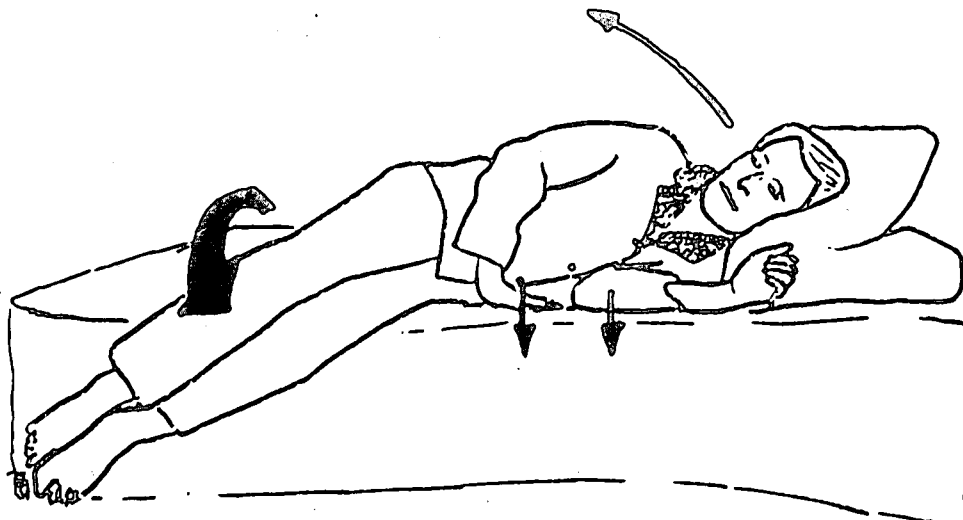
Follow these instructions to get up from bed properly:

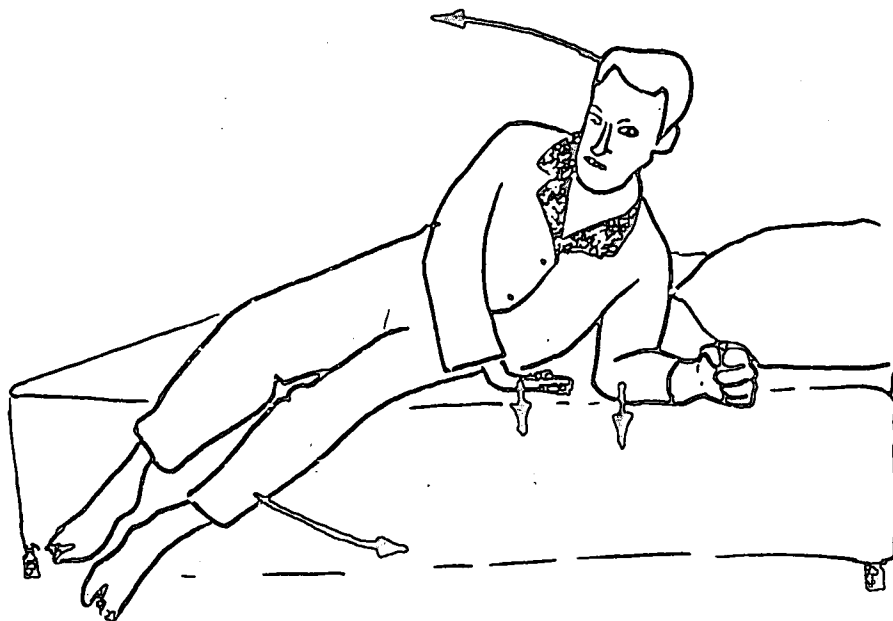
1. Lie on your side. Begin to shift your legs to the side of the bed with your knees bent.



2. While lowering both legs, at the same time, begin to push yourself up with your hands. Continue to do this until you are sitting on the bed.

3. Stand up as described above.





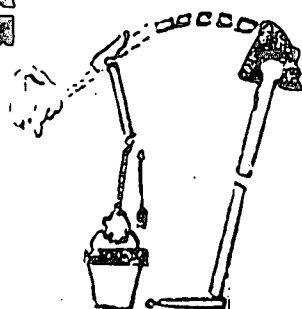
#### 4. Bending

Always bend at your hips and knees, and place one foot on a box to tie your shoelaces.

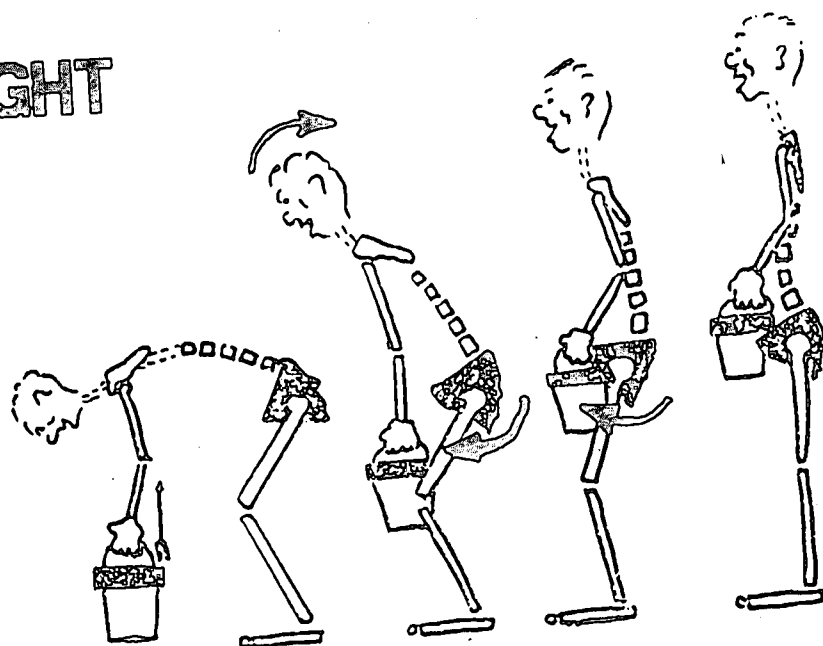


For waist high work always bend at the hips and knees and keep your back straight. If you bend to the floor, do it in the squatting position with your back upright. Let your legs do the work, this applies for big and small objects.

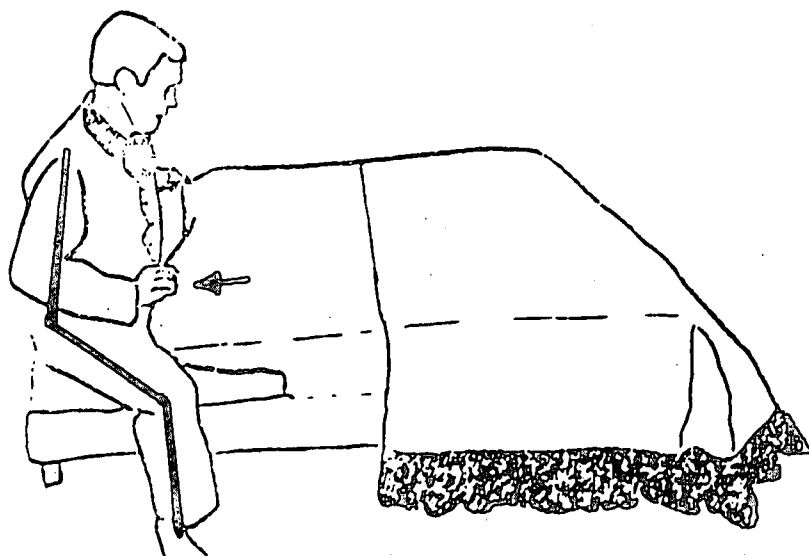
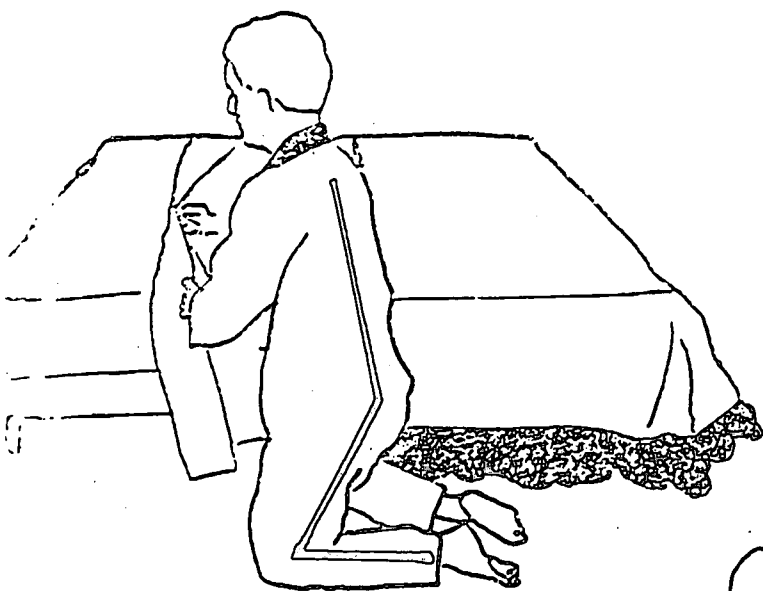
**WRONG**



**RIGHT**



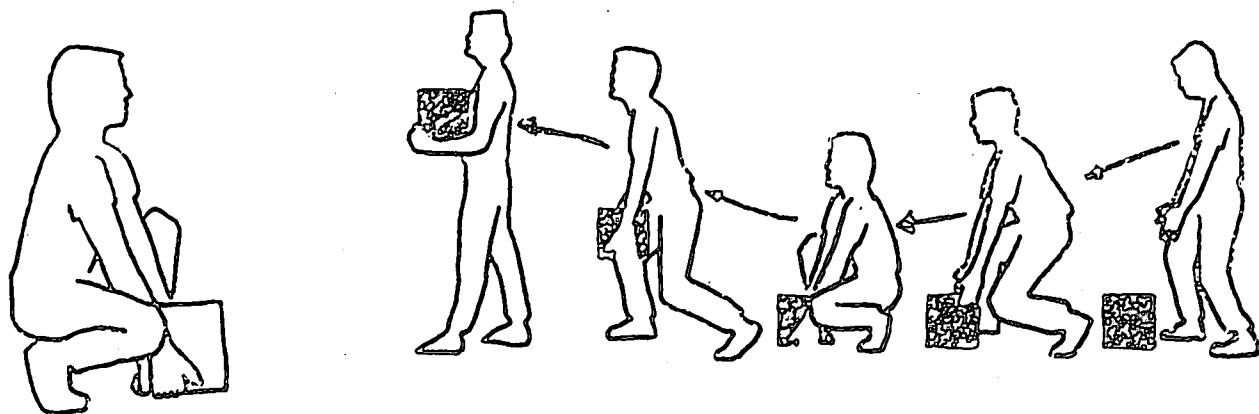
When working at a low level eg. making the bed, washing the bath or the dog etc. kneel down on one or both knees, DO NOT bend down.



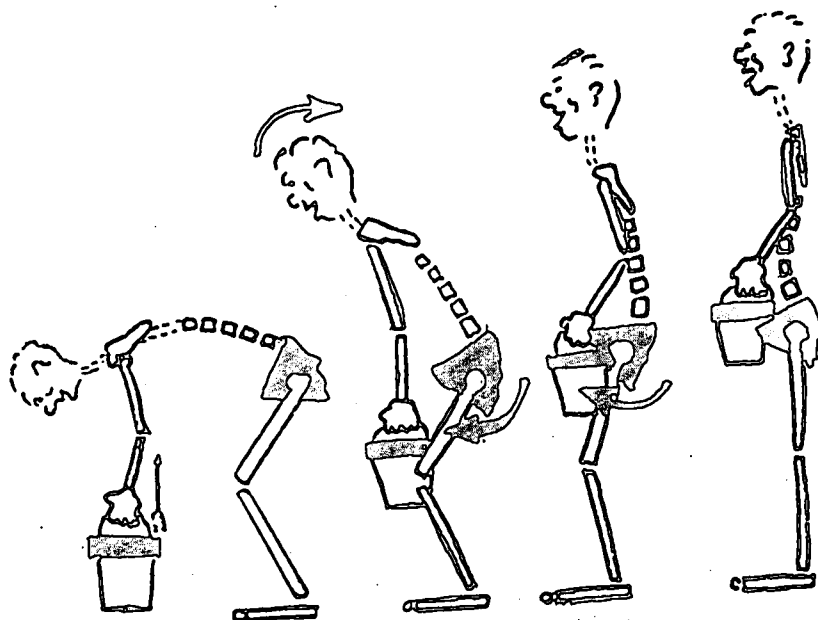


## 5. Lifting

Bend hips and knees, keeping the back straight. Preferably pick objects up from the squatting position.



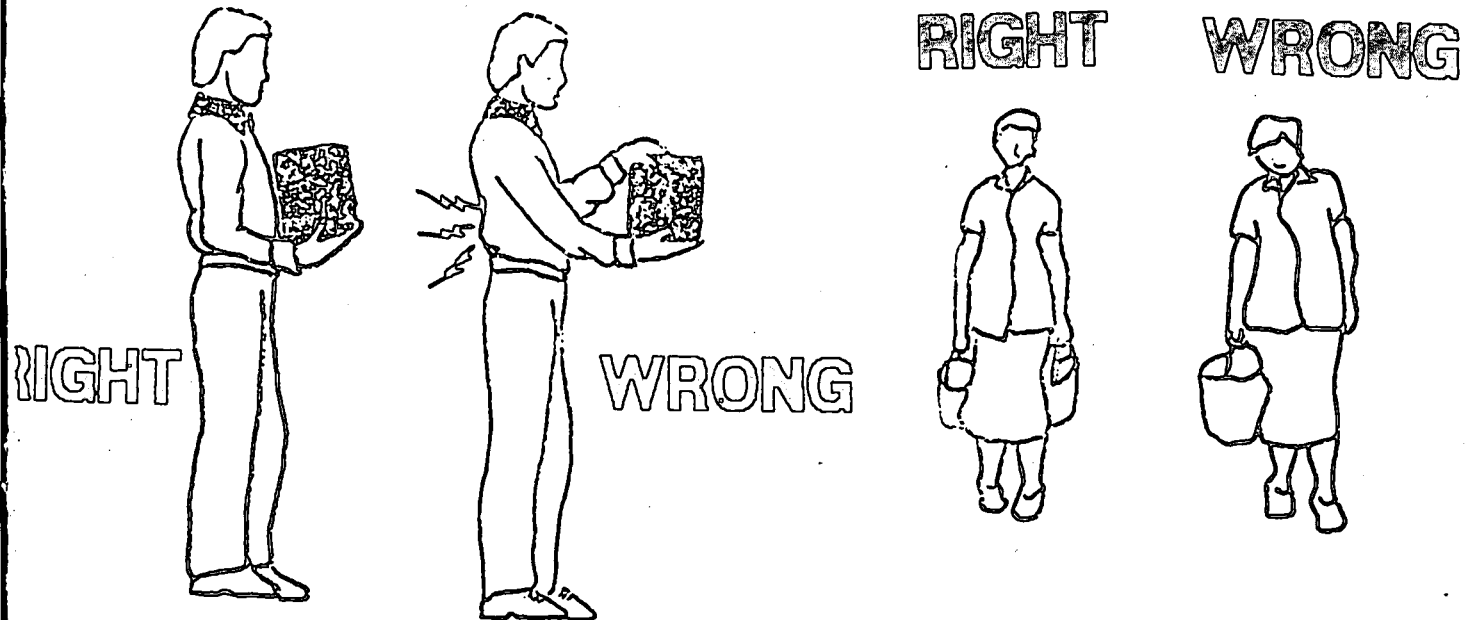
If have to bend forward, round your back, and keep your knees bent. When erecting tilt your pelvis forward and let your thighs do the lifting. **KEEP YOUR KNEES BENT** and only when your body is upright do you straighten them.



Stand well balanced with your feet apart and face the load. While lifting keep the object close to your body. Grip the object well, and lift without any jerking. Get help if the load is too heavy.

## 6. Carrying

Always carry your load close to your body, not at arms length or above shoulder height. Balance the weight equally



between both hands. Avoid loads of more than 10kg. If you carry an object on one shoulder, one hip or in one hand, alternate sides regularly. Get help with heavy or awkward loads.

## 7. Twisting

Never do any twisting motion when lifting even if it is a slip of paper. If you have to do it keep your shoulders and hips in the same plane facing the object (obeying the rules for bending). Stand up with the object and turn around by moving the feet.

## 8. Crouching

Always keep your back straight and work with your hands close to your body.

(Finneson 1975: 228-233; Calliet 1988: 189-198; Grieve 1988: 696-705; Kirkaldy-Willis 1988: 268-282; Kenna & Murtagh 1989: 319-337; Russell & Highland 1990: 72-131; Jamison 1991a: 70-128; Tilscher & Eder 1991: 1-73; Travell & Simons 1992 2: 79-211.)