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# Medical Disease and Low Back Pain: the Physical Therapy Evaluation

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MEDICAL DISEASE AND LOW BACK PAIN:  
THE PHYSICAL THERAPY EVALUATION

by

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Bachelor of Science in Physical Therapy  
University of North Dakota, 1994

An Independent Study

Submitted to the Graduate Faculty of the

Department of Physical Therapy

School of Medicine

University of North Dakota

in partial fulfillment of the requirements

for the degree of


Master of Physical Therapy


Grand Forks, North Dakota

May  
1995



This Independent Study, submitted by Heather L. Alderson in partial fulfillment of the requirements for the Degree of Master of Physical Therapy from the University of North Dakota, has been read by the Faculty Preceptor, Advisor, and Chairperson of Physical Therapy under whom the work has been done and is hereby approved.

  
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## PERMISSION

Title                    Medical Disease and Low Back Pain:  
                              The Physical Therapy Evaluation

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## ABSTRACT

The heightened level of autonomy currently experienced by the profession of physical therapy demands that, in addition to identifying and managing movement dysfunctions of the musculoskeletal system, physical therapists be knowledgeable of signs and symptoms which may indicate medical disease. Individuals who present with low back pain (LBP) are commonly seen in the physical therapy clinic. While most often the source of a patient's LBP is of mechanical musculoskeletal origin, a great number of differential diagnoses classified as medical diseases also exist that are capable of precipitating low back pain. The purpose of this independent study is to: (a) outline general considerations that should be taken during the physical therapy evaluation of patients experiencing low back pain and (b) review three commonly occurring medical diseases which characteristically cause low back pain: endometriosis, abdominal aortic aneurysm, and prostatitis.

## CHAPTER I

### INTRODUCTION

Physical therapists are currently being granted greater degrees of autonomy in their clinical practice. Such heightened levels of independence are evident by the passage of legislation in many states permitting direct access. Increased autonomy in the profession of physical therapy demands that therapists possess no less than finely tuned evaluation skills and responsible clinical decision-making in order to ensure the well-being of the patient. While physical therapists are highly adept in the management of mechanical movement dysfunctions of the musculoskeletal system as a consequence of increased professional independence, it has become critical that they are also knowledgeable of signs and symptoms which may indicate medical disease. This extension of responsibility is necessary if quality care is to be administered. When pathology is suspected, the therapist is then able to refer the patient to his physician for a thorough medical examination and appropriate treatment, and communicate with the physician in a professional manner as to why the referral is indicated. An awareness of pathological conditions is also necessary in those cases where a patient who is afflicted with an underlying systemic disease presents with additional clinical signs and symptoms which do



indicate a mechanical musculoskeletal dysfunction. In this situation, the commonly prescribed regime of physical therapy may not bring about the expected outcome or may, in fact, be contraindicated.<sup>1</sup> Physician referral is indicated for further medical testing, diagnostic procedures, and appropriate medical management.

Individuals who present with back pain are commonly seen in the physical therapy clinic, accounting for 20-30% of all new referrals to an outpatient orthopedic clinic.<sup>2</sup> This figure does not take into consideration those patients who take advantage of the physical therapist's ability to practice without referral, choosing to seek physical therapy intervention for conservative management of their symptoms without a previous encounter with any other health care professional. Low back pain in itself accounts for an estimated 15-18 billion dollars in ensuing treatment and disability expenditures in the United States alone, and is perhaps society's most debilitating impairment.<sup>3</sup> While most often the source of a patient's LBP is of mechanical musculoskeletal origin for which physical therapy management strategies are appropriate, a number of differential diagnoses classified as medical disease are also capable of causing low back pain.

The purpose of this paper is to discuss general considerations that should be taken when screening for medical disease during the physical therapy evaluation of patients experiencing low back pain, and then focus on

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three commonly occurring medical diseases which may refer pain to the low back.

## CHAPTER II

### MECHANICAL MUSCULOSKELETAL LOW BACK PAIN

Mechanical musculoskeletal imbalance is the primary cause of low back pain for individuals seeking physical therapy intervention. Physical therapy management strategies are entirely appropriate for musculoskeletal imbalance; however, certain medical conditions may also elicit LBP. It is, therefore, vital that the physical therapist be proficient in the identification of the various clinical presentations of mechanical musculoskeletal low back pain, and be able to determine whether any questionable signs and symptoms disclosed in the evaluation are indicative of pathology requiring medical management outside the scope of physical therapy.

A classification system would be ideal for a therapist to organize a patient's signs and symptoms into a clinical presentation which has the ability to guide physical therapy management strategies. Numerous taxonomies have been developed for the classification of musculoskeletal low back pain. However, rather than serving as an aid in identifying the source of pain, inconsistencies in terminology and a lack of mutually exclusive categories has resulted in discrepancies within the profession regarding the diagnosis of mechanical low back pain.<sup>4</sup>

Binkley et al<sup>4</sup> conducted an extensive review of existing low back pain taxonomies prior to surveying a group of expert orthopedic physical therapists regarding diagnoses appropriate for inclusion in a standard LBP classification system. For each diagnoses, the experts were asked to provide signs and symptoms they felt were absolutely necessary for each diagnosis. These were termed "essential" signs and symptoms. The preliminary standard LBP classification system included 25 diagnostic categories. This chapter will review six of the most frequently encountered mechanical musculoskeletal conditions. This information will provide the physical therapist with an overview of LBP dysfunctions which are within the scope of practice for physical therapy management. The following chapters are devoted to screening for medical disease in this patient population. Diagnostic classes addressed here include nerve root adhesion, nerve root irritation, sacroiliac hypermobility, segmental hypermobility, postural syndrome, and disk herniation. "Essential" signs and symptoms according to the Binkley et al taxonomy are included, as well as additional frequently encountered signs and symptoms.

#### Nerve Root Adhesion

The clinical presentation of the patient with a nerve root adhesion includes "essential" signs and symptoms such as pain and/or altered sensation (numbness, tingling, burning) in a radicular distribution aggravated by standing lumbar flexion, with or without side flexion away from pain; a positive ipsilateral or crossed straight-leg raise test between 30 and 70 degrees of hip flexion; and

pain and/or paresthesia which may extend distal to the knee. This individual will also have had at least one former incident of back pain and/or a minimum of two months of current discomfort.<sup>4</sup> In addition, the patient usually will not be limited in flexion of the spine while in sitting or while in supine with knees to the chest, even though a reduction in standing flexion will be evident.<sup>5</sup>

### Nerve Root Irritation

Nerve root irritation is marked by "essential" signs and symptoms consisting of lower extremity pain intensified by one or more lumbar movements, along with complaints of paresthesia.<sup>4</sup> True nerve root pain can be described as deep and burning and limited to the sensory distribution of the affected nerve root. Referred pain, characterized as a diffuse superficial aching encompassing more than one dermatome, may accompany true nerve root pain. An example is in the case of a disc protrusion. Motions which aggravate the patient's pain are dependent upon the origin of the nerve root irritation. For example, irritation precipitated by spinal stenosis is typically aggravated by an extended lumbar spine such as in standing,<sup>5</sup> while a disc protrusion with nerve root irritation (i.e., a posterolateral disc derangement) is aggravated by lumbar flexion.<sup>4</sup>

### Sacroiliac Hypermobility

Unilateral gluteal and/or posterior thigh pain, in addition to positive sacroiliac kinetic tests, are the only "essential" features indicative of sacroiliac hypermobility.<sup>4</sup> However, sacroiliac stress tests, such as the Transverse

Anterior Stress Test, the Transverse Posterior Stress Test, and the Sacrotuberous Ligament Stress Test, may also be positive, indicating a sprain of the anterior sacroiliac ligaments, posterior sacroiliac ligaments, or sacrotuberous ligament respectively, depending on the site of the lesion.<sup>6</sup>

The mechanism of injury is an important clue, as falling backwards, twisting, or lifting without bending at the knees can all result in a sacroiliac injury.<sup>5</sup> Pain is usually constant and unaffected by alterations in position,,; however, activities such as ascending and descending stairs, walking, and moving from sit to stand may intensify the symptoms. Resisted hip flexion, extension, abduction, and adduction, as well as flexion of the spine, stress either the sacroiliac joint or the pubic symphysis and may, therefore, aggravate the patient's pain.<sup>6</sup>

Asymmetry of pelvic levels with the patient in standing, as well as the presence of a functional leg length discrepancy when the Supine-to-Sit Test is performed may be two additional signs of sacroiliac involvement. A passive unilateral straight leg raise (SLR) may intensify the condition after 70 degrees of hip flexion in the case of a sacroiliac dysfunction with neurological involvement. A passive bilateral SLR may also indicate SI involvement if pain is aggravated prior to 70 degrees.<sup>6</sup>

### Segmental Hypermobility

"Essential" signs for diagnosis of segmental hypermobility include pain, which is heightened by sustained postures of even a short duration, and an

increase in accessory and/or active motion.<sup>4</sup> Additional signs and symptoms typical of segmental hypermobility include diffuse soreness which may exist in the low back with pain referred distally into one or both legs. Increased physical activity will aggravate the condition. The patient may relay feelings of instability with movement. The afflicted vertebral levels will be sensitive to palpation. No true neurological signs will be evident, with the exception of extreme cases of hypomobility where a nerve root may be impinged upon by an unstable vertebrae.<sup>5</sup> The patient may also describe a "catching" sensation when returning to an erect posture from a forward flexed position.<sup>7</sup>

#### Disk Herniation

The "essential" signs of disk herniation imply nerve root involvement and include positive neurological findings, such as decreased strength, diminished deep tendon reflexes, sensation deficits, and a positive SLR test prior to 70 degrees of hip flexion.<sup>4</sup> Although disc herniation may certainly be preceded by trauma, most often there is no overt mechanism of injury. Herniation, rather, occurs insidiously, first as a protrusion without nerve root involvement, and gradually progresses until neurological signs are evident.<sup>5</sup> The clinical presentation of a disc herniation will, therefore, in addition to those listed above, usually include signs and symptoms characteristic of disc herniation with nerve root involvement, or what Binkley et al<sup>4</sup> categorize as a posterolateral disc derangement.

"Essential" signs and symptoms of a posterolateral disc derangement merely include initial symptoms precipitated by lumbar flexion, and aggravated by repeated and/or sustained flexion.<sup>4</sup> There is, however, a considerably more complete typical clinical presentation of this dysfunction to aid in its identification. A posterolateral disc derangement is usually not precursed by a single event. Although the patient will often identify a sudden onset, it is typically, even in these cases, the result of repeatedly utilizing poor body mechanics, such as forward bending while lifting and/or a habitually slumped sitting posture.<sup>5</sup>

Upon evaluation, the patient will initially describe his pain to be located in the lower back, or occasionally, referred into the posterior gluteal region and thigh. In the presence of referred pain, symptoms are customarily unilateral and will follow a dermatomal distribution. Leg symptoms typically intensify with prolonged sitting, while standing and walking ameliorate the pain. In this stage of disc involvement, tests for true neurological signs will be negative. Upon observation, the patient may exhibit a flattened lumbar spine, along with a lateral shift of the trunk away from the side of pain. After the shift has been corrected, lumbar flexion commonly propels the pain distally further into the lower extremity, while extension will cause increased symptoms centrally in the low back. Patients will usually be capable of full motion in flexion; however, it may be limited secondary to pain and muscle guarding.<sup>5</sup> In cases of both disc protrusion and disc herniation, coughing, sneezing, and straining all elevate



intra-abdominal pressure and, therefore, will usually intensify back and/or radicular pain.

### Postural Syndrome

Postural Syndrome presents in individuals whose standing or sitting posture routinely exceeds normal limits. This observation, along with pain which is mitigated with activity, are the only "essential" indicators deemed appropriate for the standard classification system.<sup>4</sup> However, as the case in disc herniation, there are numerous characteristic features of postural syndrome, both lumbar flexion syndrome and lumbar extension syndrome, which may be identified in the physical therapy evaluation.

Lumbar flexion syndrome is characterized by an absence or reduction of the normal lordotic curve, hence a flat back while standing or sitting. Pain is intermittent, present after maintaining a single position for a sustained period of time, and is usually ameliorated with activity or even a simple change of posture. Such patients typically are symptom-free upon waking after a night's rest. Range of motion is initially full in individuals who present with lumbar flexion syndrome; however, prolonged poor posture will eventually result in a limitation of lumbar extension. Backache is usually of a bilateral nature and is confined to the lumbar spine, although thigh pain may be present. Shortened hamstring musculature may also contribute to this dysfunction.<sup>5</sup>

Lumbar extension syndrome usually occurs in young, hypermobile individuals, as well as pregnant women, and is characterized by an increase in

the degree of lumbar lordosis. Symptoms include back pain, possibly accompanied by unilateral or bilateral leg pain, which ensues following a prolonged period of standing. These patients will commonly display abdominal weakness in addition to tightness of the hip flexor musculature due to habitually relying on the anterior ligaments of the hip for support while standing in exceeding lumbar lordosis. As in lumbar flexion syndrome, symptoms ensue in the wake of maintaining the assumed poor posture for a sustained length of time and are relieved by rest or a change of position. Initial signs do not include any limitation in range of motion; however, if such behavior continues for an extended duration of time, a restriction in lumbar flexion may eventually result.<sup>5</sup>

In cases where pathology is precipitating pain in the low back area, the mechanical musculoskeletal examination will either be negative or could possibly be positive if both a systemic disease process and a mechanical musculoskeletal dysfunction, such as those outlined above, are present concurrently. Regardless, in order to ensure quality patient care, the physical therapy evaluation must be designed to identify the possibility of the presence of an underlying medical process to the greatest extent possible.<sup>1</sup> The purpose of this paper is to discuss general considerations that should be taken when screening for medical disease in the physical therapy evaluation, and then focus on three commonly occurring medical diseases which characteristically cause low back pain.

## CHAPTER III

### THE PHYSICAL THERAPY EVALUATION

The physical therapy evaluation must be capable of identifying the presence of existing pathology to the greatest degree possible. In order for this to occur, the evaluation itself must be comprehensive in design, and geared toward the possibility of unveiling medical disease. This comprehensive evaluation must then be performed rigorously by an alert therapist who is capable of accurately recognizing red flags associated with systemic pathology. Assuming these criteria are fulfilled, the subjective portion of the evaluation as well as the objective physical examination are, together, powerful tools in detecting medical conditions which may alter the patient's response to concurrently indicated physical therapy treatment techniques. Previously undiagnosed pathological conditions which are appropriate for physician referral may also be identified. Should the therapist conclude physician intervention is indicated, a physical therapy diagnosis would assist the physician in ruling out mechanical musculoskeletal involvement. Communication with the physician will be enhanced and the rationale for referral clear if the therapist is able to provide sound evaluation results justifying the purpose of the referral.<sup>1</sup> Examples of low back evaluations are located in Appendix A. The purpose of

this chapter is to outline the contents of the physical therapy evaluation designed for screening LBP patients for the presence of any existing pathology. The examination format utilized, however, is applicable for all patient populations and, therefore, need not vary from one evaluation to another.

### The Subjective Evaluation

The importance of the subjective portion of the examination cannot be understated as it provides the framework for the course of action that will follow in the remainder of the evaluation. Subjective information can be divided into six key areas: 1) General patient characteristics, 2) Location and description of symptoms, 3) Symptom behavior, 4) Onset of symptoms, 5) History, and 6) Review of systems.<sup>1</sup>

#### General Patient Characteristics

It is important for the therapist to note general patient characteristics, such as the patient's age, sex, race, and occupation, as these variables predispose individuals to the development of various diseases.<sup>1</sup> This is particularly true of conditions which may precipitate pain in the low back region. For example, ankylosing spondylitis, a systemic inflammatory disease which generally produces low back pain, occurs nine times more often in males than in females.<sup>8</sup> Table 1 includes a listing of sex prevalency associated medical conditions which may cause low back pain.<sup>9</sup> The primary influence in the development of osteoarthritis is age, occurring almost entirely in the middle-aged and elderly population.<sup>8</sup> Conversely, 70 percent of patients diagnosed

**Table 1.--Sex Prevalence of Medical Conditions  
Associated with Low Back Pain**

**Male Predominant**

Ankylosing spondylitis  
Reiter's syndrome  
Chordoma  
Gout  
Osteomyelitis  
Discitis  
Pyogenic sacroiliitis  
Paget's disease  
Osteoblastoma

Multiple myeloma  
Diffuse idiopathic skeletal  
hyperostosis  
Abdominal Aneurysm  
Prostatic cancer  
Vertebral sarcoidosis  
Retroperitoneal fibrosis  
Peptic ulcer disease  
Eosinophilic granuloma

**Female Predominant**

Rheumatoid arthritis  
Osteitis condensans ilii  
Polymyalgia rheumatica  
Aneurysmal bone cyst  
Giant cell tumor  
Pregnancy

Osteoporosis  
Ovarian cancer  
Fibrositis  
Sacroiliac lipoma  
Endometriosis

**Equal Frequency**

Inflammatory bowel disease  
Gaucher's Disease

Hemangioma  
Pituitary disease

with a giant cell tumor, a common benign lesion which may become malignant, are between 20 and 40 years of age. Table 2 includes a listing of mechanical and pathological conditions which may precipitate LBP and their corresponding approximate ages of peak incidence.<sup>9</sup> Race is an important consideration, as pancreatic cancer, a grave disease which may refer pain to the low back area, occurs more often in black than white individuals.<sup>10</sup>

#### Location and Description of Symptoms

Priority is given to the location and description of the patient's chief complaint, in this case low back pain, which can be accurately documented by incorporating a body diagram into the subjective evaluation (Appendix B). It is pertinent that the therapist follow-up with questions regarding additional symptoms elsewhere in the body which, if present, should also be noted on the body diagram. Check marks or Xs can be used to denote asymptomatic regions. Often patients overlook the fact that they are even experiencing additional symptoms if they are consumed by disabling back pain. It is also typical that patients may be unaware that other symptoms are present. However, due to an erroneous assumption that these additional symptoms are entirely unrelated to their back pain, they may not be inclined to volunteer such information. Therefore, it is crucial that the therapist actively seek out the location and description of all symptoms the patient is experiencing.<sup>1</sup>

Many visceral structures, when pathologically compromised, are capable of referring pain to the lumbar area. These include kidney disorders such as

**Table 2.** -- Approximate Age at Peak Incidence of Low Back Pain Precipitated by Pathological Conditions.

<p>Ankylosing spondylosis sacroiliitis Herpes zoster Vertebral sarcoidosis Reiter's Syndrome Osteoblastoma</p>	<b><u>20s</u></b>	<p>Aneurysmal bone cyst Pyogenic Inflammatory bowel disease Osteoid osteoma Endometriosis Eosinophilic granuloma Giant cell tumor</p>
<p>Ankylosing spondylosis Herpes zoster Osteoid osteoma Vertebral sarcoidosis Endometriosis Osteoblastoma Giant cell tumor Pancreatitis Ovarian cancer</p>	<b><u>30s</u></b>	<p>Pyogenic sacroiliitis Inflammatory bowel disease Reiter's syndrome Fibrositis Eosinophilic granuloma Gaucher's disease Pituitary disease Osteitis condensans ilii Hemangioma</p>
<p>Pyogenic sacroiliitis Endometriosis Pituitary disease Osteitis condensans ilii Fibrositis Osteoarthritis Paget's disease Sacral lipomata Osteoporosis Peptic ulcer disease Colon cancer Prostate cancer</p>	<b><u>40s</u></b>	<p>Herpes zoster Gaucher's disease Pancreatitis Ovarian cancer Hemangioma D.I.S.H. Osteomyelitis Retroperitoneal fibrosis Metastases Myelofibrosis Polymyalgia rheumatica Spinal stenosis</p>
<p>Herpes zoster Ovarian cancer Osteomyelitis Retroperitoneal fibrosis Metastases Myelofibrosis Prostate cancer Polymyalgia rheumatica</p>	<b><u>50s</u></b>	<p>Gaucher's disease Osteoarthritis Sacral lipomata Osteoporosis Peptic ulcer disease Colon cancer Spinal stenosis Abdominal aneurysm</p>
<p>Ovarian cancer Osteoporosis Abdominal aneurysm Metastases</p>	<b><u>60s</u></b>	<p>Osteomyelitis Colon cancer Spinal stenosis</p>

phelonephritis, perinephric abscess, or nephrolithiasis; gastrointestinal disease such as acute pancreatitis, pancreatic cancer, irritable bowel syndrome, or diverticulitis; abdominal aortic aneurysm; prostatitis; and gynecologic disorders such as endometriosis.<sup>9</sup> Referred pain can be defined as "pain perceived as arising from a region innervated by nerves other than those that innervate the source of pain."<sup>11</sup> True spinal pain of systemic origin can also occur in the lumbar region. Examples include metastatic carcinoma of, most commonly, the breast, lung, kidney, prostate, ovary, and thyroid; primary tumors of the spine, most frequently multiple myeloma; and infectious diseases, such as tuberculosis which, in the spine, most commonly affects the first lumbar vertebral body.<sup>8</sup> Due to the tremendous number of diseases of widely varying origin that may precipitate lumbar pain, a complete review of organ systems should be conducted and will be addressed in this chapter.

A description of the patient's chief complaint entails information related to the quality and intensity of his low back pain. Such characteristics may be of assistance in differentiating the symptom's origin. For example, the quality of pain experienced due to osseous pathology is typically described as dull, deep, and boring while pain secondary to a compression fracture may be relayed as sharp.<sup>8</sup> Crampy, colicky pain located in either the abdomen or referred to the back has been associated with visceral pathology of hollow organs.<sup>1</sup>

Should the patient experience difficulty in locating adjectives that accurately describe the quality of his pain, the therapist can facilitate this



process by providing the patient with options. The McGill Pain Questionnaire<sup>12</sup> (Appendix B) is one example of a comprehensive listing of pain descriptors, encompassing the sensory and affective qualities as well as the autonomic properties of the patient's perceived pain. Pain descriptors are arranged in order of increasing intensity within each list. In addition, pain intensity can be measured on a visual analog scale.<sup>9</sup> Documentation of the patient's pain characteristics, specifically pain intensity, can also be identified on the body diagram. Various descriptors, such as burning, stabbing, numbness, and dullness, can be designated on the diagram by patterns, such as dots, diagonal lines, shading, or hashmarks, in the distribution they are experienced. The McGill Pain Questionnaire also utilizes the body diagram.

Although the patient's description of the quality and intensity of his LBP may, in some instances, be of great help in distinguishing the origin of his pain, this information alone, in many cases, is of limited value. For example, patients suffering from visceral pathology as well as those afflicted with a mechanical musculoskeletal condition often use the same adjectives, ranging from diffuse and dull to severe, stabbing, and localized to describe their pain.<sup>1</sup> Additional information, such as the behavior of the patient's symptoms is critical in distinguishing the origin of the patient's LBP.

#### Symptom Behavior

Variations in the site, intensity, and/or quality of the patient's symptoms as associated with alterations in activity level and body position are referred to

as symptom behavior.<sup>13</sup> This information can be gained by questioning the patient as to factors which aggravate, alleviate, or in some way change their low back pain over the course of 24 hours. Symptoms resulting from a mechanical musculoskeletal dysfunction typically change in either location, intensity, or both with varying degrees of activity or the assumption of specific positions. Specifically, symptoms of mechanical dysfunctions classically will be aggravated by weight bearing postures or increases in activity level. Musculoskeletal dysfunctions typically are also mitigated by rest<sup>1</sup> or recumbency. It should be noted that sustained postures, when contraindicated, can qualify as an increase in activity level, as is the case with extended periods of slumped sitting in the event of a herniated disk. Contrary to a dysfunction which is relieved with rest, severe pain which awakens the patient at night is usually indicative of pathology. Spondyloarthropathies, such as ankylosing spondylitis, are examples. Recumbency also aggravates tumors invading the spinal cord, bone, or muscle.<sup>9</sup>

These are only guidelines. It is crucial that the therapist be mindful of the fact that symptoms which stray from these general features in relation to activity level and body position do not absolutely rule out or indicate the presence of diseases.<sup>1</sup> An example is multiple myeloma, a single malignant osseous lesion or systemic condition caused by a proliferation of plasma cells in the bone marrow. Pain experienced in the presence of this pathology is usually prefaced by movement and does not occur at night except with alterations in position.<sup>8</sup> If

visceral organs are referring pain to the low back, symptoms may indeed be of an uncharacteristically intermittent, wave-like nature as the expression of the symptoms experienced will vary depending on the function of the involved organ.<sup>1</sup> Symptoms of diverticulitis, for instance, are aggravated by food intake.<sup>9</sup> Hence, the possibility of systemic disease should not be discounted in the presence of intermittent symptom behavior.<sup>1</sup> Mechanical musculoskeletal pain associated with the previously described postural syndrome, rather than being mitigated with rest as expected, is actually reduced with activity. This is also the case with segmental hypermobility.<sup>4</sup> Acute infections, as well as compression and pathologic fractures due to metabolic bone disease or tumors respectively, produce pain that is alleviated with recumbency.<sup>9</sup> Such a characteristic is atypical of medical disease.

### Symptom Onset

The mechanism causing the onset of symptoms in a musculoskeletal dysfunction is usually either traumatic or the result of cumulative microtrauma such as that which occurs with repetitive poor lifting technique (i.e., the straw that broke the camel's back). A mechanical dysfunction may also be the consequence of sustained poor postural positions, in which case chronic complaints are likely to exist. A patient's description of truly an insidious onset of symptoms should raise suspicion as to the presence of a medical condition. However, even if the patient does identify a specific incident which precipitated symptom onset, the therapist would be unwise to merely dismiss the possibility

of an existing disease, as a pathological process may still be at the root of their complaints.<sup>1</sup>

Exceptions do exist, in that occasionally manifestations of disease do have a sudden onset. An example is found in the expansion of an asymptomatic abdominal aortic aneurysm. In addition to the insidious onset of LBP identified at the initial evaluation, the physical therapist needs to be alert for the insidious development of additional symptoms during physical therapy intervention, as well as the reoccurrence of previously resolved symptoms for no mechanical reason. Each of these situations are red flags of pathological involvement and indicate physician referral.<sup>1</sup>

### History

Thorough knowledge of the LBP patient's history is vital in identifying factors which may either contribute to or predispose an individual toward the development of medical disease. Components of the patient's history that need to be taken into account in the physical therapy evaluation include social/occupational history, past medical history (PMH), and family history. Prior to gathering this information, whether and, if so, why, the patient is presently under the care of another health care professional for the management of a medical condition, as well as any medications the patient is currently taking, are important to note. Medications taken for a previously diagnosed medical condition may influence the specific treatment technique utilized, demanding that the therapist choose an alternate management strategy

if the patient's LBP is mechanical in nature. A portion of a patient's complaints may also be explained by medication-induced side effects, such as fatigue or lightheadedness. Finally, medication may mask symptoms of medical disease, which become apparent in the form of back pain only after the patient quits taking his medication.<sup>1</sup>

**Social/Occupational History.**--A complete social history should allow for disclosure of the patient's hobbies and recreational activities. An awareness of these activities gives the therapist insight regarding their functional status preceding the onset of their LBP, allowing the therapist to assess whether these activities are limited in degree comparable to occupational tasks. A return to these activities may be a viable means of monitoring the patient's response to physical therapy.<sup>9</sup>

The LBP patient's habits are also of interest to the physical therapist and include diet, exercise, eating and sleeping patterns, the quantity of alcohol, coffee, tea, and tobacco consumed, and drug use.<sup>14</sup> Cardiovascular disease is, in part, attributed to a poor diet. Diet, as well as smoking, is associated with cancer. overindulgence of alcohol, coffee, tea, and tobacco contributes to the development of osteoporosis.<sup>9</sup> Chronic excessive alcohol intake is associated with pancreatitis.<sup>9</sup> Illegal drug use compromises the immune system and promotes the entrance of blood-borne pathogens into the host, thus predisposing the patient to infectious diseases, such as vertebral osteomyelitis.<sup>9</sup> All of these

high risk behaviors may play a role in the development of a medical disease which is capable of causing low back pain.

A disruption of one of the above habits may also indicate the presence of disease. An example is fibromyalgia, a painful condition distinguished by the presence of chronic fatigue and constant pain in distinct tender point areas, one of which is the low back. This disease is characterized in part by a sleep disturbance.<sup>9</sup>

Information obtained regarding the patient's occupational history should include a description of their on-the-job physical responsibilities. Knowledge of the physical demands of the patient's job can assist in assessing the patient's likelihood of developing a mechanical dysfunction. Although workers subject to heavy manual labor are more apt to experience mechanical LBP, sedentary employees are still capable of sustaining a low back injury. The commencement of low back pain can be associated with picking up even a light object from a rotated position. For compensation issues, it is important to determine to the greatest extent possible whether or not the onset of pain is linked to work-related activities. The therapist should be alert to the fact that pain precipitated by a traumatic incident on-the-job rather may be the consequence of an undiagnosed medical disease manifested, for example, by a pathological fracture.<sup>9</sup> In addition, work conditions, mental stress, length of employment, and exposure to industrial toxins, such as lead or asbestos as well

as extremely hot or cold temperatures should all be addressed while gathering the patient's occupational history.<sup>14</sup>

Past Medical History.--The patient's past medical history, which extends from childhood to the onset of symptoms the patient is currently experiencing, may indicate any injuries or illnesses that may assist in defining the origin of the patient's LBP. The past medical history should include in chronological sequence all hospitalizations, surgeries, and any severe low back injuries the patient has previously sustained. The therapist should also inquire as to the presence of any general medical conditions.<sup>9</sup> Certain diseases, such as cancer, have a tendency to reoccur.<sup>1</sup> Pathologies such as diabetes or malignancies may directly influence the status of the spine, while other conditions, due to required medications or related physical sequelae, may require the therapist to modify the management strategy chosen for the patient's dysfunction.<sup>9</sup> Corticosteroids and emphysema are respective examples.

It is important to specifically question the patient regarding his health status just prior or simultaneous to the commencement of his symptoms, particularly if the patient describes an insidious onset of his pain. Infectious processes which are not completely resolved can result in an infection removed from the original site. For example, a kidney infection, which manifests itself as pain in the low back, may be the outcome of an earlier treated, but not completely resolved, bladder infection.<sup>1</sup>

Family History.--A number of diseases which can cause low back pain have a familial predisposition. A patient with a family history of spondyloarthropathies, for example, are at a greater risk for the development of one of these illnesses.<sup>9</sup> Cancer, arthritis, cardiovascular disease, and diabetes, kidney disease, and hypertension are all diseases with a familial component.<sup>15</sup>

### Review of Systems

Due to the great number of potential pathological causes of low back pain, a review of systems is a nonnegotiable component of the subjective portion of the physical therapy evaluation. A screening tool which is complete will provide the therapist with initial information regarding each of the various organ systems upon initial examination. A mechanical clinical impression is supported by an entirely negative review, while positive responses should raise suspicion as to the presence of a medical disease as the source of the patient's LBP.<sup>9</sup> A preliminary review which briefly touches on each system can be utilized as an initial quick screening tool, directing the therapist to pursue further questioning and/or perform specific objective tests and screening measures of the various organ systems in question<sup>1</sup> (Appendix C). Then, if present, these signs and symptoms can be organized into patterns associated with systemic illnesses capable of precipitating low back pain.<sup>9</sup> The review of systems, therefore, ultimately allows for thorough professional communication with the physician should a referral be indicated if an undiagnosed pathology is suspected or for a tailoring of treatment should a previously diagnosed



physician-managed disease process exist concurrently with a musculoskeletal dysfunction.<sup>1</sup> Symptoms associated with involvement of each system are described as follows.

**Constitutional Symptoms.**--Fever, unexplained weight loss, chills, night sweats, extreme fatigue, and malaise are general constitutional symptoms.<sup>9,14</sup> Their presence may be indicative of pathology of a serious nature, such as an infection or cancer.<sup>1</sup> However, a medical disease may not manifest all of these symptoms collectively. An unexplained loss of weight may be one symptom in the clinical presentation of various pathological conditions, such as a gastrointestinal disorder, diabetes, hyperthyroidism, or depression.<sup>15</sup> Similarly, fatigue may be a symptom of numerous disease processes. Examples include depression, diabetes, hypothyroidism, rheumatoid arthritis, fibrositis, polymyalgia, rheumatica,<sup>15</sup> and multiple sclerosis.<sup>16</sup> Fatigue is also a side effect of many medications.<sup>1</sup>

**Integumentary System.**--The status of the integumentary system is of importance in patients with low back pain. Abnormalities of the skin, hair, or nails may assist in identifying the source of the patient's pain. For example, lumbar pain accompanied by scaly silver patches over the elbows or knees may indicate psoriatic arthritis. Opacification of nails may indicate Reiter's syndrome.<sup>9</sup> A patch of hair, fatty tumor, discrete pimple, or hemangioma along the spine may suggest diastematomyelia.<sup>8</sup> Any skin lesion with an irregular margin, an elevated and uneven surface, a hard consistency, or a crusty

ulcerating presentation should be questioned, as they may be indicative of pathology such as carcinoma. Variations in size, shape, and color of any such lesions should be noted.<sup>1</sup>

**Pulmonary System.**--Symptoms of pulmonary disease include dyspnea, pain associated with respiration, cyanosis, cough, night sweats, and hemoptysis. In the cases of LBP, the patient should also be questioned regarding possible exposure to tuberculosis.<sup>14</sup> Decreased functioning of the pulmonary and cardiovascular systems may be due to a spondyloarthropathy or endocrinopathy.<sup>9</sup>

**Cardiovascular System.**--Chest pain, dyspnea, hypertension, and claudication are all potential indicators of cardiovascular disease.<sup>1,14</sup> Syncope, dizziness, and lightheadedness may also be reported.<sup>1</sup> If any of these symptoms are reported, precipitating factors, alleviating factors, and the duration they are experienced should be noted.<sup>14</sup>

**Hematologic System.**--In terms of hematologic involvement, anemia may indicate systemic pathology, iatrogenic gastrointestinal blood loss, or a primary condition, such as sickle cell disease which typically elicits low back pain in adults.<sup>9</sup>

**Gastrointestinal System.**--The gastrointestinal system can give rise to numerous symptoms, such as dysphagia, heartburn, nausea, vomiting, abdominal pain, bloody stools, and a change in bowel habits.<sup>9,14</sup> Involvement of this system in low back pain patients should raise suspicion of a visceral origin.<sup>9</sup>

Nausea and vomiting may also indicate pregnancy or the presence of cancer. Nausea and vomiting may also be a side effect of medication.<sup>1</sup>

Genitourinary System.--Dysuria, frequency changes, sexual dysfunction, hesitancy, and hematuria are all symptoms of genitourinary involvement.<sup>1,9,14</sup> In female patients, irregularities in menses should also be noted. Similar to the SI system, the presence of these symptoms may indicate visceral disease in the LBP patient.<sup>9</sup>

Neurologic System.--A review of the neurologic system should screen for muscle weakness, deficiencies in sensation or coordination, and mental status, such as loss of memory.<sup>9,14</sup> Such symptoms may indicate the presence of a systemic condition, such as decreased sensation in Charcot joint disease which is commonly the consequence of diabetes or syphilis. Nerve compression may result from a growing tumor or retroperitoneal bleeding as well as from disc herniation or spinal stenosis.<sup>9</sup> A review of the nervous system is a component of every complete physical therapy evaluation.

### The Objective Examination

The specific procedures performed during the objective portion of the physical therapy evaluation will depend greatly upon the findings of the subjective examination. However, objective components of a physical therapy evaluation capable of identifying the presence of a musculoskeletal dysfunction routinely include active, passive, and resisted isometric movement testing; a peripheral joint scan; and a functional assessment. In addition, the status of

the neurological system is considered by the performance of reflex, myotomal, and dermatomal testing. Special tests are also performed as appropriate screening for neurological, joint, or muscle dysfunction. Commencement of the objective portion of the physical therapy evaluation is routinely marked by observation of the patient's posture, gait, and body type, while palpation of the low back area concludes the objective portion of the examination.<sup>6</sup>

The purpose of performing these tests is to reproduce or alter the patient's symptoms with postural changes or movement, thereby indicating a mechanical musculoskeletal dysfunction. An inability of the therapist to provoke the patient's low back pain with movement testing, special tests, or palpation introduces the possibility of medical disease. There are exceptions, however, in which pathological processes do mimic mechanical musculoskeletal disorders by responding to such tests. An example is a pathological fracture of the spine occurring secondary to cancer.<sup>17</sup>

Specifically, when screening for pathological conditions, palpation of areas in addition to the low back as well as percussion are important tools. Palpation can be performed to assess the patient's skin temperature, lymph nodes, vascular pulses, and any abnormal masses. Local elevations in temperature are suggestive of an inflammatory process; however, if the skin temperature is exceedingly warm, an infection may be present.<sup>1</sup>

Palpable lymph nodes which are greater than 1 cm in size and/or are secured to surrounding tissues are atypical and may also indicate an active

infection or cancer.<sup>1</sup> Normal lymph nodes do not elicit tenderness upon palpation as tenderness signals inflammation. Lymph nodes plagued by malignancy also lack sensitivity.<sup>18</sup> The submandibular, supraclavicular, anterior and posterior cervical regions, the axilla, and the femoral triangle all house a plethora of lymph nodes and should be included in palpation.<sup>1</sup>

The cardiovascular system can be screened by palpatory assessment of the quality of the arterial pulses. In addition to the peripheral arterial pulses of the extremities, of prime importance in an evaluation of low back pain are central pulses, such as the aorta and the iliac artery. An aortic aneurysm, as previously noted, is capable of precipitating low back pain. The status of the carotid artery should also be assessed, with care taken not to stimulate the carotid sinus reflex.<sup>1</sup>

A disease process or fracture also may be discovered by performing percussion, the application of a vibratory force to bone tissue. In the case of an infection or tumor of the vertebral column, percussion of the spinous processes when the patient is positioned in a forward-flexed posture will elicit either intense pain and tenderness or a deep, dull, pulsating pain that fails to abruptly mitigate once the procedure is completed. Percussion can also be used to locate and assess the health of structures within the abdomen.<sup>1</sup>

A rigorously performed physical therapy evaluation, designed to unveil the presence of medical disease, coupled with a physical therapist capable of recognizing signs and symptoms associated with pathology are vital when

screening the low back pain patient for the presence of medical disease. Such an evaluation will assist in the identification of a previously undiagnosed pathological condition which may precipitate low back pain as well as in the detection of a disease process which may alter the patient's response to concurrently indicated physical therapy management strategies.<sup>1</sup>

## CHAPTER IV

### MEDICAL DISEASES REFERRING PAIN TO THE LOW BACK

Numerous medical conditions can precipitate the development of low back pain. The origin of such diseases may be rheumatologic, infectious, endocrinologic, metabolic, hematologic, or neurologic. In addition, tumors, both benign and malignant, can produce low back pain. Differential diagnosis of LBP can also be due to referred pain secondary to involvement of the vascular, genitourinary, and gastrointestinal systems.<sup>9</sup> It is pertinent that the physical therapist be knowledgeable regarding the clinical presentation of such disease processes in order to provide a patient who may present with indicating signs and symptoms appropriate medical care. Three conditions capable of referring pain to the low back, endometriosis, abdominal aortic aneurysm, and prostatitis<sup>9</sup> are outlined to assist the therapist in recognition of such diseases.

#### Endometriosis

Endometriosis is a disease which occurs when endometrial tissue, which normally lines the inside of the uterus, is also present outside of the uterine cavity. This ectopic tissue responds to the hormonal variations of the menstrual cycle in the same manner as endometrial tissue located inside the uterus, characterized by tissue growth, shedding, and bleeding. The displaced

endometrium, however, unlike its intrauterine counterpart, has no means of expulsion from the body and is forced to remain within, irritating surrounding organs. Sites typically affected in endometriosis include the pelvic organs and structures as well as the gastrointestinal system.<sup>19</sup>

The most commonly held theory surrounding the cause of endometriosis is transplantation of endometrial tissue via retrograde menstruation. The theory proposes that during menstruation, an amount of fluid is propelled counter to its normal path of flow, moving from the uterus, through the fallopian tubes, and into the pelvic cavity.<sup>19</sup>

Endometriosis is a disease which afflicts women in their reproductive as well as immediate post-menopausal years.<sup>20</sup> The majority of cases are diagnosed in the third and fourth decade of life.<sup>21</sup> Studies have demonstrated a familial and possibly genetic predisposition toward the development of endometriosis, where the likelihood of experiencing this condition increases when a first degree relative was also afflicted with the disease.<sup>22,23</sup> In addition, the women with a family history of endometriosis also appear to develop more severe symptoms of the disease.<sup>24</sup> It has also been observed to commonly occur in women who have experienced greater than five years of unremitting cyclic menstruation. Conversely, signs and symptoms of endometriosis mitigate during pregnancy as well as during the induced anovulation which occurs with danazol therapy, a common management strategy.<sup>20</sup>



Symptoms of endometriosis are extremely variable and inconsistent. In one individual, symptoms may be vague, mild, and intermittently occurring at certain times of the month, while in another, complaints may be localized, acute, and unremitting. Up to one-third of the women who have endometriosis may be asymptomatic. Symptoms can progress over a long period of time or may remain steady.<sup>19</sup>

The woman with endometriosis will most commonly complain of dysmenorrhea, or pelvic pain, which may be either associated with menstruation or with a syndrome capable of evoking nausea, vomiting, diarrhea, headache, dizziness, fainting, and backache.<sup>19</sup> This pain may be acute or chronic and, although it generally occurs during the period surrounding menstruation, it may be present throughout the menstrual cycle.<sup>20</sup> Dysmenorrhea may be centrally, unilaterally, or bilaterally located within the abdominal region, with symptoms referred to the low back, rectum, and thighs.<sup>19</sup>

Additional frequent indicators of endometriosis include dyspareunia, which refers to pain with intercourse, as well as menstrual cycle alterations.<sup>20</sup> Cramer et al<sup>25</sup> identified specific menstrual characteristics commonly found in women who develop endometriosis. Women who experienced a menstrual cycle of less than or equal to 27 days and a duration of menses equal to or exceeding one week were twice as likely to have endometriosis than women with extended cycle lengths and shorter menses.<sup>25</sup> Women with endometriosis may also experience intermenstrual spotting.<sup>20</sup> Finally, infertility is strongly

linked to endometriosis, as approximately 30-40 percent of women afflicted with endometriosis are infertile, in contrast to only 15 percent of the general female population.<sup>19</sup> When endometriosis affects other organ systems, additional symptoms may be present. This may, for example, include pain with defecation due to endometriotic tissue implanted on the rectum and sigmoid colon or dysuria and hematuria when the bladder is involved.<sup>20</sup>

If endometriosis is suspected as the origin of the patient's low back pain, the physical therapist can ask several questions regarding the patient's symptoms in order to gain a clearer clinical picture. The classic patient would be a woman 30 or 40 years of age<sup>21</sup> with a family history of endometriosis.<sup>22,23</sup> Characteristics of her menses would include a well-defined<sup>20</sup> and shortened menstrual cycle with periods lasting equal to or longer than one week.<sup>25</sup> She may have experienced an alleviation of her symptoms with pregnancy<sup>20</sup> or she may not be able to conceive at all.<sup>19</sup> Complaints of pelvic pain, possibly accompanied by nausea, vomiting, diarrhea, dizziness, fainting, and backache may be voiced. In addition to the low back, pelvic pain may be referred to the rectum and thighs.<sup>19</sup> Pain with intercourse is also common.<sup>20</sup> Symptoms are extremely variable in intensity, duration, and quality from woman to woman.<sup>19</sup> If a patient presents with these pathological red flags indicating the presence of endometriosis as the origin of her low back pain, referral to a physician is warranted.

### Abdominal Aortic Aneurysm

A permanent localized dilation of an artery is referred to as an aneurysm.<sup>26</sup> Aneurysms have a tendency to form at a site where the artery undergoes routine bending with physical activity or lacks adequate support by skeletal musculature, such as in the thoracic and abdominal aorta, the iliac arteries, and the femoral and popliteal arteries. Aneurysms are most typically caused by arteriosclerosis.<sup>26-28</sup> When this condition is present, distension of the artery occurs distal to the stenosed point as a consequence of turbulence created by a jet-like stream of blood coursing through a narrowed lumen and colliding with slower traveling blood. Such agitation results in a weakened and expanded distal arterial wall subject to a high degree of tension.<sup>28</sup> Once an aneurysm has developed, it will gradually enlarge and a laminated thrombus may occupy the additional space, creating the risk of a thromboembolism. Congenital defects, trauma, infection, and arteritis are less frequently encountered causes of aneurysms.<sup>26</sup> Apparent risk factors for the development of an aneurysm, in addition to those contributing to arteriosclerosis, include smoking, genetic makeup, and hypertension.<sup>29-31</sup> First degree family members are at a significantly higher risk for aneurysmal disease.<sup>9</sup>

Abdominal aortic aneurysm (AAA) is the most frequent type of aneurysm,<sup>32</sup> afflicting approximately two percent of persons over 60 years of age<sup>26</sup> and occurring, similar to other aneurysms, much more frequently in males than females.<sup>9,26,28,32,33</sup> White men between 60 and 70 years of age most

commonly experience abdominal aneurysms<sup>34</sup>; however, this condition may be evident in patients in their early thirties and is not unusual in individuals over 50 years of age.<sup>33</sup> In 1986, aortic aneurysms were responsible for 15,267 deaths in the United States.<sup>35</sup> Not unlike other aneurysms, nearly all those involving the abdominal aorta, in fact greater than 95 percent, are a consequence of atherosclerosis.<sup>32</sup> Factors placing an individual at risk for the development of an AAA appear to be identical to those previously identified for aneurysms in general.<sup>26</sup>

Ninety-eight percent of abdominal aortic aneurysms occur distal to the renal arteries,<sup>32</sup> the majority of which are fusiform-shaped.<sup>27</sup> Anatomically, these aneurysms usually conform to one of three standard patterns, either 1) positioned amidst the nephritic arteries and the bifurcation, 2) comprised of the abdominal aorta and common iliac arteries, unilaterally or bilaterally, or 3) associated with obstruction of at least one of the common iliac arteries. Due to the fact that arteriosclerosis is a nondiscriminatory vascular condition, abdominal aortic aneurysms may be accompanied by multiple additional aneurysmal or occlusive lesions throughout the body.<sup>27</sup>

The clinical presentation of an individual with an abdominal aortic aneurysm is dependent upon whether the lesion is asymptomatic, expanding, or ruptured. Asymptomatic AAAs, those which are stable or gradually expanding,<sup>9</sup> are most typical.<sup>32</sup> These aneurysms are generally discovered by the detection of a distended pulsatile mass upon abdominal palpation.<sup>28</sup> With the patient in a

supine hook-lying position with relaxed abdominals,<sup>9</sup> the clinician applies gentle, continual pressure in a posterior and medial direction on each side of the umbilicus until the dilation of the abdominal aorta is sensed.<sup>28</sup>

Most aortic aneurysms occur to the left, rather than to the right, of midline. It is also possible for an AAA to be palpated inferior to the umbilicus and at the site of either common iliac artery.<sup>28</sup> Pulsations due to a true aneurysm can be distinguished from transmitted pulsations of a mass, such as a tumor, in that the former can be palpated in both the anteroposterior and mediolateral planes, while the latter is only perceived in the anteroposterior direction. An asymptomatic aneurysm may be tender upon palpation.<sup>9</sup> An auditory bruit over an aneurysm is not of any significant diagnostic worth<sup>28</sup> unless it lateralizes with an associated elevated pitch. This may be indicative of renal artery stenosis.<sup>32</sup>

An individual with a symptomatic expanding abdominal aortic aneurysm will typically complain of dull, constant abdominal pain. Diffuse back pain which may radiate to the loins, lower abdomen, thighs, and groin<sup>32</sup> as well as ureteral colic are additional indications of an expanding aneurysm or one in which the integrity of the wall is deteriorating.<sup>28</sup> Back pain is generally accompanied by epigastric discomfort.<sup>9</sup> Pain may be present for days or weeks in the case of an expanding aneurysm.<sup>32</sup> Should the dilation obstruct the duodenum or place strain on the mesenteric root, which occurs in only very large aneurysms, the patient may also experience incidents of piercing pain, nausea, and vomiting.<sup>9</sup>

Palpation of a symptomatic aortic aneurysm will reveal the previously described expansible pulsation as well as complaints of tenderness.<sup>32</sup>

Rupture is the most frequent complication of an abdominal aortic aneurysm, most commonly occurring in aneurysms of 5 cm or greater in diameter.<sup>36</sup> In addition to the size of the aneurysm, the frequency of rupture appears to be related to the presence of hypertension.<sup>29,36,37</sup>

The clinical presentation of a ruptured aortic aneurysm includes severe abdominal or low back pain which radiates in the pattern previously described for an expanding aneurysm, hypotension, and a sensitive epigastric mass. Most often, the pain is of a sudden onset, but it is also possible to develop over a period of several hours.<sup>32</sup> These patients may also demonstrate symptoms of mild to profound shock.<sup>27</sup> A palpable pulsation may or may not be evident in the presence of a ruptured AAA.<sup>9,27,32</sup> Due to the fact that studies demonstrate that 30-60 percent of untreated aneurysms result in rupture,<sup>28</sup> it is of grave importance that any patient who demonstrates signs and symptoms of not only a ruptured, but an expanding abdominal aortic aneurysm as well receive immediate appropriate medical intervention. The presence of an asymptomatic AAA identified by palpation also is an indication for referral.

Physical therapists should be suspicious of the presence of an AAA in middle age to senior men,<sup>33,34</sup> particularly those with a history of smoking,<sup>31</sup> arteriosclerosis,<sup>26,27,28</sup> and hypertension.<sup>29</sup> A family history of aneurysmal disease may also be identified in the subjective evaluation. The presence of a

pulsatile mass in the abdominal region is a red flag for the presence of an aortic aneurysm.<sup>9</sup> This mass, if asymptomatic<sup>9</sup> or symptomatic,<sup>32</sup> is likely to elicit tenderness in response to palpation, while a ruptured aneurysm may or may not be tender.<sup>9,28,32</sup> An expanding AAA is typically characterized by dull, constant abdominal pain which may be accompanied by radiating back pain.<sup>32</sup> Episodes of nausea, vomiting, and piercing pain may also be present in the case of an extremely large AAA.<sup>9</sup> A ruptured aneurysm is manifested by severe pain in the characteristic distribution, hypotension,<sup>32</sup> and shock.<sup>27</sup>

#### Prostatitis

Anatomically, the prostate is located between the bladder and the external urinary sphincter, and envelops the proximal portion of the urethra. Countless small glands within the prostate produce secretions which, during orgasm and ejaculation, travel through prostatic ducts and empty into the prostatic urethra. The prostate gland's primary function is to produce this fluid which acts as a medium for the sperm while driven to the outside of the body during ejaculation and also serves as a source of nourishment for the sperm.<sup>38</sup>

Prostatitis refers to an inflammation of the prostate gland and is a very prevalent affliction among adult men. There are numerous forms of prostatitis, including, most commonly, bacterial prostatitis, both acute and chronic, nonbacterial prostatitis, and prostatodynia.<sup>39</sup>

The pathogens which are responsible for bacterial prostatitis are identical whether the infection is acute or chronic. The infective agents which result in

urinary tract infections (UTIs) may similarly be responsible for acute or chronic bacterial prostatitis. In this case, infection is most likely caused either by an ascending urethral infection or a retrograde flow of infected urine into the ejaculatory and prostatic ducts which converge with the prostatic urethra.<sup>39</sup>

Bacterial prostatitis can also be caused by a lymphatic transmission of rectal bacteria and hematogenous infection. In addition, prostatitis may be associated with sexual relations as well as indwelling urethral catheter and condom catheter drainage systems. The clinical presentations, however, of acute and chronic bacterial prostatitis vary markedly. A patient suffering from an acute bout of prostatitis will usually develop chills, fever, low back and perineal pain, and constitutional symptoms such as fatigue, arthralgias, and myalgias. An irritative voiding dysfunction, consisting of urinary frequency, urgency, nocturia, and terminal dysuria, and an obstructive voiding dysfunction will also typically be present.<sup>39,40</sup>

The presentation of chronic bacterial prostatitis (CBP) is not nearly as dramatic as that of its acute counterpart and is capable of great variability, ranging in form from mild to severe. Acute bacterial prostatitis need not precede CBP. Customarily men with chronic bacterial prostatitis experience an irritative voiding dysfunction as described above and pain or discomfort perceived in the suprapubic, perineal, low back, scrotal, penile, or inner thigh regions. Relapsing recurrent UTI is the foremost feature of CBP. Discomfort



subsequent to ejaculation and periodic hemospermia may also be present; however, chills and fever occur in only isolated instances.<sup>39,40</sup>

Nonbacterial prostatitis is without question the most frequently occurring form of prostatitis. The etiology of this form of inflammation of the prostate is unknown. A man presenting with this condition will have no reported history of urinary tract infection nor will there be any evidence of a bacterial origin. Present research points to either an unknown infectious source or a non-infectious inflammatory process.<sup>39,40</sup> The clinical presentation of nonbacterial prostatitis highly resembles that of CBP and prostatodynia; however, this syndrome's symptoms vary in intensity with time in the same individual, cyclically surging and abating regardless of treatment.<sup>39</sup>

The final cause of prostatitis is prostatodynia. Men with prostatodynia are generally between 20 and 50 years of age. These individuals report symptoms indicative of prostatitis; however, their history is unremarkable for UTI and no infectious or inflammatory process is evident. Irritative and obstructive voiding dysfunction, as well as pain and discomfort in the previously pelvic distribution, are the primary symptoms of prostatodynia.<sup>40</sup>

Theories regarding the etiology of prostatodynia vary. Men with this condition may suffer from pelvic floor tension myalgia, a process associated with sustained chronic contraction and spasm of the musculature comprising the pelvic floor, resulting in pain in these muscles and their sites of origin and insertion.<sup>41,42</sup> In pelvic floor tension myalgia, pain and discomfort are related to

fatigue of the perineal musculature when partaking in physical activities, such as sitting and running, which require the use of these muscles.<sup>40</sup> Research has also posed the possibility of an abnormality of the pelvic sympathetic nervous system in prostatodynia patients in which the neck of the bladder fails to completely relax and a deviant narrowing of the urethra is evident as it passes through the external urinary sphincter muscle.<sup>43</sup> An acquired functional voiding disorder is presumed in these individuals due to the fact that their neurological system is otherwise unimpaired. Stress may also play a role in precipitating the development of prostatodynia. Finally, prostatodynia may be a consequence of an uncoordinated voiding effort in which sphincter contraction, rather than relaxation, occurs as the bladder contracts. This condition is termed internal sphincter dyssynergia.<sup>44</sup>

It is important to be aware of the fact that although cancer of the prostate may also eventually result in low back pain, unlike prostatitis, it is not referred pain. In this case, the origin of the pain is due to metastatic lesions of the bones in the pelvis and lumbosacral spine and, therefore, the pain is primary in nature.<sup>9</sup>

Upon evaluation, physical therapists should question the presence of acute bacterial prostatitis as the origin of LBP if the patient exhibits constitutional symptoms, low back and perineal pain, arthralgias and myalgias, and both irritative and obstructive voiding dysfunctions. Chronic bacterial prostatitis sufferers will have a history of UTIs and experience an irritative

voiding dysfunction; pain or discomfort in the suprapubic, perineal, low back, scrotal, penile, or inner thigh regions; discomfort subsequent to ejaculation; and hemospermia.<sup>39,40</sup> The clinical presentation of nonbacterial prostatitis is similar to CPB; however, symptoms vary in intensity with time in the same individual and there will be no history of urinary tract infection. Prostatodynia patients are generally between 20-50 years of age. Primary symptoms include irritative and obstructive voiding dysfunctions in addition to pain and discomfort in the previously described pelvic distribution. There will be no history of UTI in prostatodynia.<sup>40</sup>

## CHAPTER V

### CONCLUSION

Due to the increased degree of autonomy the profession of physical therapy is experiencing, it is pertinent that physical therapists not only possess the ability to recognize and manage mechanical musculoskeletal dysfunction, but also be knowledgeable of signs and symptoms indicating medical disease. This expanded role of the physical therapist is evident by the passage in many states of legislation permitting direct access, where patients may utilize the physical therapist as their point of entrance into the health care system, thus bypassing the physician. In rural settings, the opportunity to see a physician may not be an option as the physical therapist may be the only health care practitioner in the area. It is critical, therefore, that the physical therapist possess sound evaluation and clinical decision-making skills, with the ability to recognize the presence of pathology, if quality care is to be delivered and the well-being of the patient ensured. With a thorough evaluation, designed and practiced with the intention of identifying the presence of medical conditions, appropriate care can be provided. In instances where pathology is suspected, appropriate intervention is indicative of referral to the physician. This is the professional responsibility of the physical therapist. Upon referral, the physician

can be confident that a mechanical musculoskeletal dysfunction has been ruled out. The therapist-physician relationship can also be enhanced by the provision of sound rationale on the therapist's behalf based on a thorough evaluation justifying the reason for the referral.

Individuals who present with back pain are commonly seen in the physical therapy clinic. Low back pain, in addition to that of mechanical musculoskeletal origin, is also less frequently precipitated by a great number of pathological conditions. Correct diagnosis of these patients is often difficult. In fact, an exact pathoanatomic diagnosis can be identified in only 20 percent of patients experiencing acute back pain,<sup>45</sup> with this percentage falling even further in cases of chronic back pain.<sup>46</sup> Therefore, it is even more pertinent that the therapist be well-equipped in evaluation skills when coming into contact with this patient population.

Quality care provided by the profession of physical therapy can be ensured in LBP patients if two conditions are met. First, an evaluation that is rigorous in screening for the presence of medical disease must be utilized. Second, to be worthwhile, this comprehensive evaluation must be performed by a physical therapist knowledgeable of red flags which may indicate the presence of a pathological process. In the event that pathological red flags are evident during a physical therapy evaluation, physician referral is indicated.<sup>1</sup>

**APPENDIX A**

**McGill Pain Questionnaire**

**McGill-Melzack  
PAIN QUESTIONNAIRE**

Patient's name \_\_\_\_\_ Age \_\_\_\_\_  
File No. \_\_\_\_\_ Date \_\_\_\_\_  
Clinical Category (eg. cardiac, neurological, etc.): \_\_\_\_\_

Diagnosis: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Analgesic (if already administered):

1. Type \_\_\_\_\_
2. Dosage \_\_\_\_\_
3. Time given in relation to this test \_\_\_\_\_

Patient's intelligence: circle number that represents best estimate

1 (low)                      2                      3                      4                      5 (high)

\*\*\*\*\*

This questionnaire has been designed to tell us more about your pain. Four major questions we ask are:

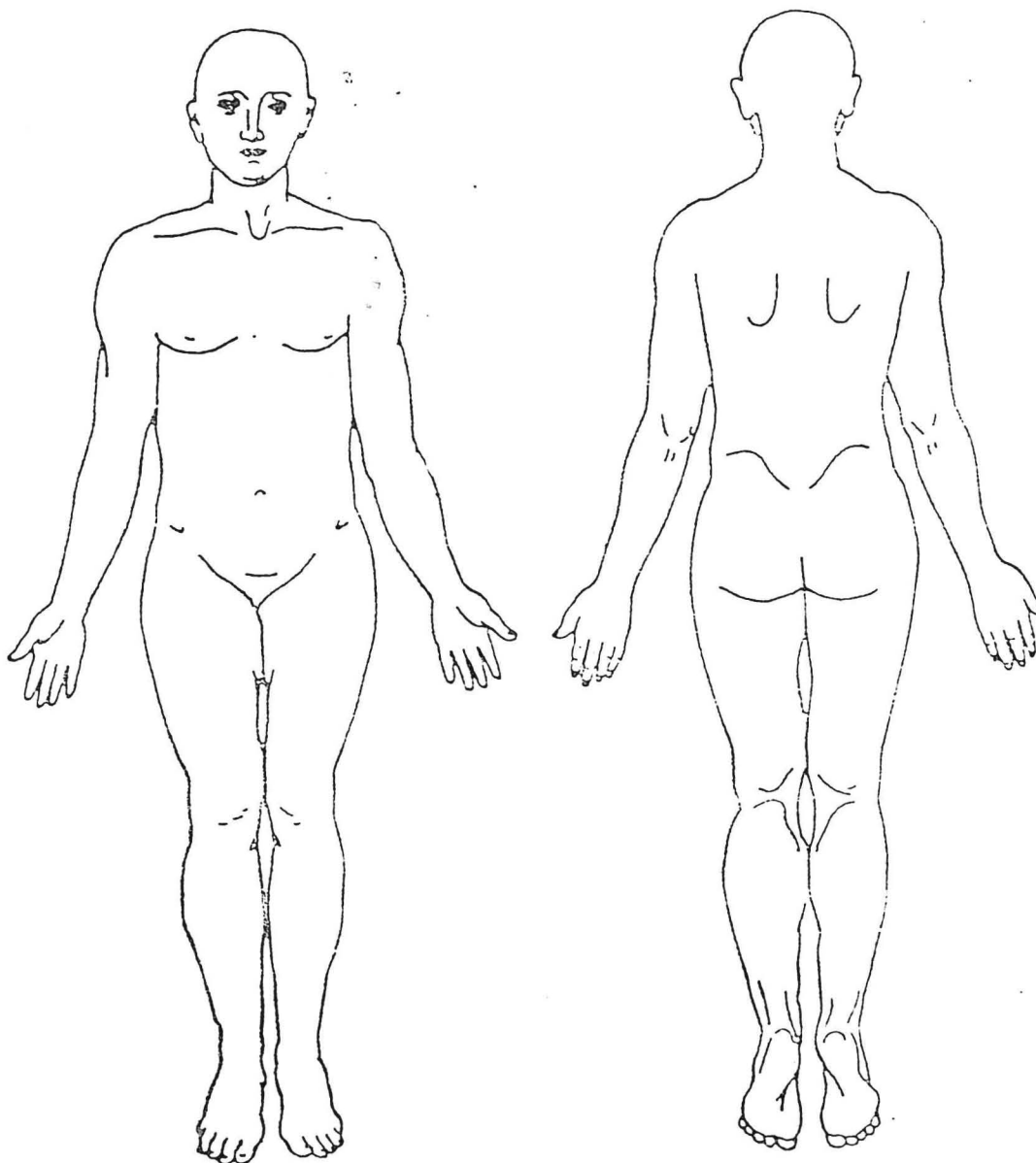
1. Where is your pain?
2. What does it feel like?
3. How does it change with time?
4. How strong is it?

It is important that you tell us how your pain feels now. Please follow the instructions at the beginning of each part.

\_\_\_\_\_

**Part 1.****Where is your Pain?**

Please mark on the drawings below, the areas where you feel pain. Put E if external, or I if internal, near the areas which you mark. Put EI if both external and internal.





## Part 2. What Does Your Pain Feel Like?

Some of the words below describe your present pain. Circle **ONLY** those words that best describe it. Leave out any category that is not suitable. Use only a single word in each appropriate category--the one that applies best.

1  
Flickering  
Quivering  
Pulsing  
Throbbing  
Beating  
Pounding

2  
Jumping  
Flashing  
Shooting

3  
Pricking  
Boring  
Drilling  
Stabbing  
Lancinating

4  
Sharp  
Cutting  
Lacerating

5  
Pinching  
Pressing  
Gnawing  
Cramping  
Crushing

6  
Tugging  
Pulling  
Wrenching

7  
Hot  
Burning  
Scalding  
Searing

8  
Tingling  
Itchy  
Smarting  
Stinging

9  
Dull  
Sore  
Hurting  
Aching  
Heavy

10  
Tender  
Taut  
Rasping  
Splitting

11  
Tiring  
Exhausting

12  
Sickening  
Suffocating

13  
Fearful  
Frightful  
Terrifying

14  
Punishing  
Grueling  
Cruel  
Vicious  
Killing

15  
Wretched  
Blinding

16  
Annoying  
Troublesome  
Miserable  
Intense  
Unbearable

17  
Spreading  
Radiating  
Penetrating  
Piercing

18  
Tight  
Numb  
Drawing  
Squeezing  
Tearing

19  
Cool  
Cold  
Freezing

20  
Nagging  
Nauseating  
Agonizing  
Dreadful  
Torturing

### Part 3. How Does Your Pain Change With Time?

1. Which word or words would you use to describe the pattern of your pain?

1	2	3
Continuous	Rhythmic	Brief
Steady	Periodic	Momentary
Constant	Intermittent	Transient

2. What kind of things relieve your pain?

3. What kind of things increase your pain?

### Part 4. How Strong Is Your Pain?

People agree that the following 5 words represent pain of increasing intensity. They are:

1	2	3	4	5
Mild	Discomforting	Distressing	Horrible	Excruciating

To answer each question below, write the number of the most appropriate word in the space beside the question.

- Which word describes your pain right now? \_\_\_\_\_
- Which word describes it at its worst? \_\_\_\_\_
- Which word describes it when it is least? \_\_\_\_\_
- Which word describes the worst toothache you ever had? \_\_\_\_\_
- Which word describes the worst stomach-ache you ever had? \_\_\_\_\_

**APPENDIX B**

**General Health Review**

## General Health Screen

### 1. Constitutional Symptoms

- |   |                                       |
|---|---------------------------------------|
| <input type="checkbox"/> Fever                                  | <input type="checkbox"/> Night sweats |
| <input type="checkbox"/> Fatigue and lack of energy             | <input type="checkbox"/> Chills       |
| <input type="checkbox"/> Unexplained weight loss or weight gain |                                       |

### 2. Integumentary System

- |   |                                |
|---|--------------------------------|
| <input type="checkbox"/> Abnormal hair growth                           | <input type="checkbox"/> Nails |
| <input type="checkbox"/> Skin (hairy patches, abnormal skin conditions) |                                |

### 3. Pulmonary System

- |  |                                     |
|--|-------------------------------------|
| <input type="checkbox"/> Pain with respiration             | <input type="checkbox"/> Hemoptysis |
| <input type="checkbox"/> Night sweats                      | <input type="checkbox"/> Cough      |
| <input type="checkbox"/> Previous exposure to Tuberculosis | <input type="checkbox"/> Dyspnea    |
| <input type="checkbox"/> Cyanosis                          |                                     |

### 4. Cardiovascular System

- |                                       |                                    |
|---------------------------------------|------------------------------------|
| <input type="checkbox"/> Chest pain   | <input type="checkbox"/> Syncope   |
| <input type="checkbox"/> Hypertension | <input type="checkbox"/> Dizziness |
| <input type="checkbox"/> Claudication |                                    |

### 5. Gastrointestinal System

- |   |  |
|---|--|
| <input type="checkbox"/> Dysphagia              | <input type="checkbox"/> Nausea        |
| <input type="checkbox"/> Heartburn              | <input type="checkbox"/> Bloody stools |
| <input type="checkbox"/> Abdominal pain         | <input type="checkbox"/> Vomiting      |
| <input type="checkbox"/> Change in bowel habits |  |

### 6. Genitourinary System

- |  |                                    |
|--|------------------------------------|
| <input type="checkbox"/> Menstrual irregularities  | <input type="checkbox"/> Hesitancy |
| <input type="checkbox"/> Urinary frequency changes | <input type="checkbox"/> Hematuria |
| <input type="checkbox"/> Sexual dysfunction        | <input type="checkbox"/> Dysuria   |

### 7. Nervous System

- |  |   |
|--|---|
| <input type="checkbox"/> Weakness                | <input type="checkbox"/> Sensation deficiency |
| <input type="checkbox"/> Coordination deficiency | <input type="checkbox"/> Impaired cognition   |

8. Medications \_\_\_\_\_
9. Currently under care of another health care professional \_\_\_\_\_
10. Habits (diet, exercise, eating and sleeping patterns, quantity of coffee, tea, alcohol and tobacco consumed) \_\_\_\_\_
11. Occupation \_\_\_\_\_
12. Past illnesses and operations \_\_\_\_\_
13. Family History \_\_\_\_\_

## APPENDIX C

### Low Back Evaluations

**PRESCRIPTION, TREATMENT AND PROGRESS NOTES**

**Low Back Evaluation**

Name: \_\_\_\_\_

Age: \_\_\_\_\_ Sex: M F Height: \_\_\_\_\_ Weight: \_\_\_\_\_ Race: \_\_\_\_\_

Type of Insurance: Private: \_\_\_\_\_ Comp/No Fault: \_\_\_\_\_ Non-Private (MCD, MCR, None) \_\_\_\_\_

**History:**

What is the chief complaint? \_\_\_\_\_

Onset of this episode? \_\_\_\_\_

Commenced as a result of: \_\_\_\_\_

Where did pain begin? \_\_\_\_\_

Where did pain spread to? \_\_\_\_\_

Where is pain now (past 48 hours)? \_\_\_\_\_

Do you have "pins and needles," etc? \_\_\_\_\_

Do you have pain or numbness in the genital area? \_\_\_\_\_

What aggravates the pain? \_\_\_\_\_

What improves the pain? \_\_\_\_\_

*Worse:* bending sitting/rising standing walking lying AM/as day progresses/PM stationary/on the move

*Better:* bending sitting/rising standing walking lying AM/as day progresses/PM stationary/on the move

Disturbed Sleep \_\_\_\_\_

Sleeping postures \_\_\_\_\_

First episode? Yes No Number of episodes: \_\_\_\_\_ Frequency of episodes: \_\_\_\_\_

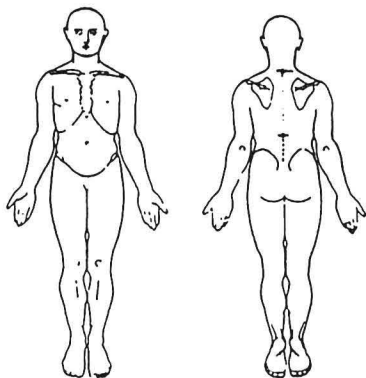
Past medical history: \_\_\_\_\_

Past surgical history: \_\_\_\_\_

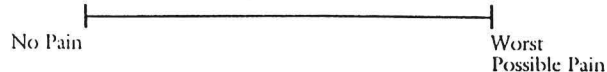
Prior treatment for this problem: \_\_\_\_\_

Social history/occupation: \_\_\_\_\_

Where is your pain? Please mark, on the drawings below, the areas where you feel your pain.



PAIN SCALE



Medication: \_\_\_\_\_

Diagnostic Tests: \_\_\_\_\_

Bladder + - Cough + - Bowel + - Sneeze + -

**OBSERVATION**

Gait: \_\_\_\_\_

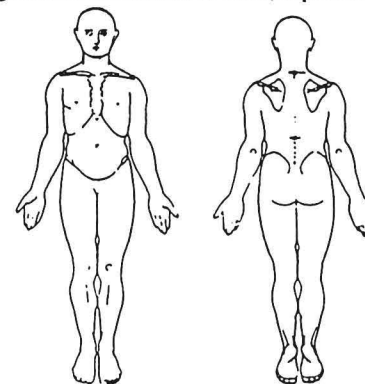
Sitting posture: \_\_\_\_\_

Standing posture: \_\_\_\_\_

**POSTURE/STRUCTURAL EXAM**

(Draw arrows on body chart indicating whether landmark is elevated, depressed; toward or away from the midline)

- Head tilt
- Scapula - Elevated
- Winged
- Abducted
- Shoulder - Elevated
- Forward



- Scoliosis
- Iliac crest
- PSIS
- ASIS
- Greater trochanter
- Gluteal fold
- Popliteal fold
- Calcaneal deviation
- Medial arch

Comments \_\_\_\_\_

**ROM - FLUID GONIOMETER READINGS**

Note: When measuring with the fluid goniometer, please indicate whether angle is negative or positive to correctly calculate ROM.

**Flexion**

STANDING	FLEXED	ROM
L1 _____	- _____	= _____ (Trunk and hip flexion)
S2 _____	- _____	= _____ (Hip flexion)
L1 (ROM)	S2 (ROM)	True lumbar flexion
_____	- _____	= _____

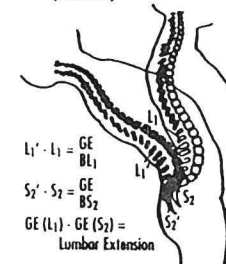
**Extension**

STANDING	EXTENDING	ROM
L1 _____	- _____	= _____ (Trunk and hip extension)
S2 _____	- _____	= _____ (Hip extension)
L1 (ROM)	S2 (ROM)	True lumbar Extension
_____	- _____	= _____

**Lordosis**

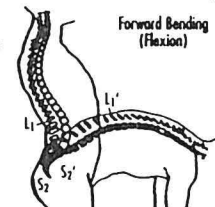
180°	-	(Standing S2-Standing L1)	=	Lordosis
180°	-	_____	=	_____

Backward Bending (Extension)



$L1' - L1 = GE_{BL1}$   
 $S2' - S2 = GE_{BS2}$   
 $GE(L1) - GE(S2) = \text{Lumbar Extension}$

Forward Bending (Flexion)



$L1' - L1 = \text{Gross flexion below } L1 \text{ spinous process}$   
 $S2' - S2 = \text{Gross flexion below } S2 \text{ spinous process}$   
 $GE(L1) - GE(S2) = \text{Lumbar flexion}$

**ROM - OBSERVATION and SYMPTOM REPRODUCTION**

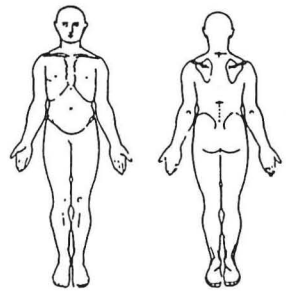
UE ROM \_\_\_\_\_ LE ROM \_\_\_\_\_

	Quantity	Quality	Symptom
<i>Standing</i>			
Flex	_____	_____	_____
Rep flex	_____	_____	_____
Ext	_____	_____	_____
Rep ext	_____	_____	_____
Side glide R	_____	_____	_____
Rep side glide R	_____	_____	_____
Side glide L	_____	_____	_____
Rep side glide L	_____	_____	_____
Rot R	_____	_____	_____
Rep rot R	_____	_____	_____
Rot L	_____	_____	_____
Rep rot L	_____	_____	_____
Lat flex R	_____	_____	_____
Rep lat flex R	_____	_____	_____
Lat flex L	_____	_____	_____
Rep lat flex L	_____	_____	_____
<i>Lying</i>			
Flex	_____	_____	_____
Rep flex	_____	_____	_____
Ext	_____	_____	_____
Rep ext	_____	_____	_____

Muscle Strength	Right	Left
UE - Gross	_____	_____
Iliopsoas (L1,2)	_____	_____
Quadriceps (L3)	_____	_____
Tibialis ant (L4)	_____	_____
EHL (L5)	_____	_____
Peroneous L & B (S1)	_____	_____
Hamstrings (S2)	_____	_____
Heel walk	_____	_____
Toe walk	_____	_____

Neurological	Right	Left
<i>DTRs</i>		
Quadriceps (L4)	_____	_____
Achilles (L5,S1)	_____	_____

*Sensory*  
 Light Touch ///////////////  
 Pin Prick XXXXXXXXXXXXX



Special Tests	Right	Left
1. SLR	+ - _____	+ - _____
2. Lesaques	+ - _____	+ - _____
3. Neck flexion	+ - _____	+ - _____
4. FABERE	+ - _____	+ - _____
5. Hip scouring	+ - _____	+ - _____
6. SIJ compression	+ - _____	+ - _____
7. SIJ distraction	+ - _____	+ - _____
8. LLD	+ - _____	+ - _____
9. Prone knee flex	+ - _____	+ - _____
10. Standing flexion	+ - _____	+ - _____
11. Long sitting test		
Supine _____		
Long sitting _____		

**Palpation**

Skin temp & sweating \_\_\_\_\_  
 Soft tissue \_\_\_\_\_

**PIVM - Passive intervertebral mobility**  
 (P=pain, Hy=hypermobile, Ho=hypomobile, Sx=symptoms)

<i>Flexion</i>	Right	Left
L5-S1	_____	_____
L4-L5	_____	_____
L3-L4	_____	_____
L2-L3	_____	_____
L1-L2	_____	_____
T12-L1	_____	_____
<i>Lateral Flexion</i>		
L5-S1	_____	_____
L4-L5	_____	_____
L3-L4	_____	_____
L2-L3	_____	_____
L1-L2	_____	_____
T12-L1	_____	_____

**PAs on Spinous Processes**  
 (P=pain, Hy=hypermobile, Ho=hypomobile, Sx=Symptoms)

<i>Flexion</i>	Sacrum
L5	_____
L4	_____
L3	_____
L2	_____
L1	_____
T12	_____

**ASSESSMENT** \_\_\_\_\_

\_\_\_\_\_  
 \_\_\_\_\_

STG \_\_\_\_\_

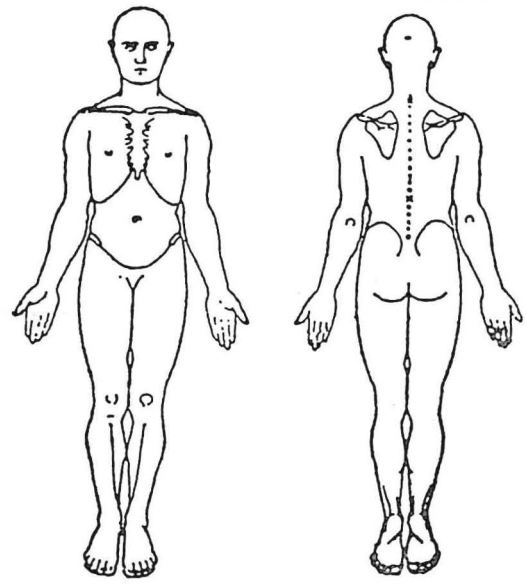
LTG \_\_\_\_\_

Plan \_\_\_\_\_

Signature \_\_\_\_\_

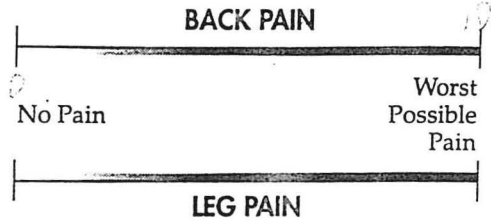


Date.....  
 Name.....  
 Address.....  
 Telephone.....  
 Date of birth.....  
 Occupation.....  
 Postures/stresses.....  
 Doctor.....



**HISTORY**

Symptoms now.....  
 Present for.....  
 At onset.....  
 Improving/unchanged/worsening.....  
 Commenced as a result of.....



Commenced for no apparent reason

Symptoms constant..... Intermittent.....

**WORSE**

bending sitting/rising standing walking lying  
 a.m./as day progresses/p.m. stationary/on the move  
 other.....

**BETTER**

bending sitting/rising standing walking lying  
 a.m./as day progresses/p.m. stationary/on the move  
 other.....

Disturbed sleep.....

Sleeping postures..... prone/supine/side

Surface..... firm/soft/sagging/waterbed

Cough/sneeze/strain..... +ve/-ve

Bladder..... Gait.....

Previous history.....

Previous treatment.....

X-rays.....

General health..... Weight loss.....

Meds..... Steroids.....

Recent surgery.....

Accidents.....



**POSTURE**

Posture sitting ..... Posture standing .....  
 Lordosis ..... red/acc/normal ..... Lateral shift ..... right/left/nil .....  
 Structural scoliosis .....  
 Leg length .....

**MOVEMENT LOSS**

	maj	mod	min	nil
Flexion .....				
Extension .....				
S. Gliding Right .....				
S. Gliding Left .....				

Deviation in Flexion ..... right/left/nil .....  
 Deviation in Extension ..... right/left/nil .....

**TEST MOVEMENTS**

	Symptoms prior to testing	Symptoms after testing	Pain during motion	End range pain
FIS .....				
Rep FIS .....				
EIS .....				
Rep EIS .....				
SGIS (R) .....				
Rep SGIS (R) .....				
SGIS (L) .....				
Rep SGIS (L) .....				
FIL .....				
Rep FIL .....				
EIL .....				
Rep EIL .....				

**NEUROLOGICAL**

Muscle strength ..... Reflexes .....  
 Dural signs ..... Sensation .....

**OTHER**

Hip joints .....  
 SI joints .....

**CONCLUSION**

Posture ..... Dysfunction ..... Derangement no. ....  
 Other .....

**PRINCIPLE OF TREATMENT**

Posture Correction ..... Extension ..... Flexion .....  
 Other .....

# The Rehab

*Here When You Need Us Most...*

To help us assess the cause of your problem, we ask you to complete this form before being seen by a physical therapist. Please answer as completely as possible.

To be completed by Patient - PLEASE COMPLETE BOTH SIDES

NAME \_\_\_\_\_ DATE OF BIRTH \_\_\_\_\_

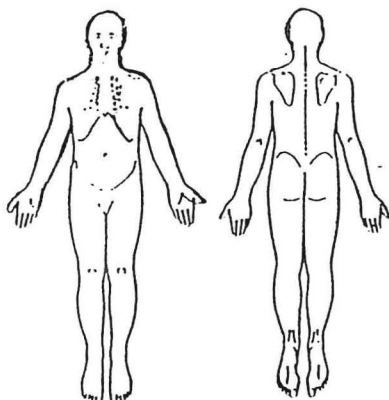
**Complaint**  
What is your main complaint or problem?

\_\_\_\_\_

How and when did this start?

\_\_\_\_\_

Please indicate problem areas by (shading) these models.



**KEY**

Pain:    Sharp/severe:    X  
          Dull/moderate:    0  
          Tightness:        ///  
          Shooting pain:    ↓  
          Numbness/tingling:  ::

It is important that we have a measure of your pain. Please circle the level of your pain on a scale of 0-10.

	None			Moderate				Agony			
	0	1	2	3	4	5	6	7	8	9	10
Worst Pain	0	1	2	3	4	5	6	7	8	9	10
Best Pain	0	1	2	3	4	5	6	7	8	9	10

Which of these words describe your pain? (Circle all that apply)

Sharp    Dull    Burning    Aching    Tingling    Numb    Radiating (moves)

Is your pain constant? Yes \_\_\_ No \_\_\_

Please circle those words which describe positions or activities that make your pain worse:  
 bending (forward/backward), sitting, stairs, standing, walking, lying, stationary, on the move, mornings, evenings, sneezing, coughing, deep breathing, other: \_\_\_\_\_

Please circle those words which describe positions or activities which lessen your pain:  
 bending (forward/backward), sitting, stairs, standing, walking, lying, stationary, on the move, mornings, evenings, other: \_\_\_\_\_



1. Are you currently working? Yes No If yes, any restrictions? Yes No

Restrictions: Weights\_\_\_ Tasks\_\_\_ Hours\_\_\_ Other\_\_\_\_\_

0. What are your current physical demands?

Home: \_\_\_\_\_  
\_\_\_\_\_

Work: \_\_\_\_\_  
\_\_\_\_\_

1. Have you had this problem before? Yes No

If yes, number of episodes \_\_\_ Dates of episodes: \_\_\_\_\_

What tests or treatment: \_\_\_\_\_

2. What tests or treatment have you had for this episode?

\_\_\_\_\_

3. Please list any medications you are taking for this problem:

\_\_\_\_\_

4. Other medications you are taking:

\_\_\_\_\_

5. Past medical history: (please check yes or no for the following)

	Yes	No	Comments
fever, chills, sweats	___	___	_____
unexplained weight change	___	___	_____
nausea/vomiting	___	___	_____
bowel Dysfunction	___	___	_____
stiffness	___	___	_____
weakness	___	___	_____
syncope (fainting)	___	___	_____
dyspnea (difficult, painful breathing)	___	___	_____
dizziness/lightheadedness	___	___	_____
joint pain	___	___	_____
hematuria (difficult, painful urination)	___	___	_____
urinary frequency changes	___	___	_____
sexual dysfunction	___	___	_____
history of smoking	___	___	_____
history of substance abuse	___	___	_____

Please list your past medical problems

\_\_\_\_\_

Please circle all that apply to family medical history:

Diabetes      Heart Disease      High Blood Pressure      Arthritis      Cancer

Other: \_\_\_\_\_

Patient signature: \_\_\_\_\_

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

If patient is unable to sign: \_\_\_\_\_

Relationship: \_\_\_\_\_

MEDICAL CENTER REHABILITATION HOSPITAL  
 Box 9017, 1300 South Columbia Road  
 Grand Forks, ND 58202

**PHYSICAL EXAMINATION FORM**

NAME: \_\_\_\_\_

CASE NO.: \_\_\_\_\_ DATE: \_\_\_\_\_

BLOOD PRESSURE: \_\_\_\_\_ WEIGHT: \_\_\_\_\_

PULSE: \_\_\_\_\_ HEIGHT: \_\_\_\_\_

GAIT:

1) \_\_\_\_\_  
 2) \_\_\_\_\_  
 3) \_\_\_\_\_

POSTURE:

1) \_\_\_\_\_  
 2) \_\_\_\_\_  
 3) \_\_\_\_\_

COORDINATION:

\_\_\_ Within Normal Limits  
 \_\_\_ Other (explain) \_\_\_\_\_

BALANCE:

\_\_\_ Within Normal Limits  
 \_\_\_ Other (explain) \_\_\_\_\_

MOVEMENT CHARACTERISTICS (speed, smoothness, posturing):

\_\_\_ Within Normal Limits  
 \_\_\_ Other (explain) \_\_\_\_\_

	Normal	RANGE OF MOTION		MUSCLE STRENGTH	
		Right	Left	Right	Left
NECK					
Flexion	45	_____	_____	_____	_____
Extension	45	_____	_____	_____	_____
Lateral flexion	45	_____	_____	_____	_____
Rotation	90	_____	_____	_____	_____
TRUNK:					
Flexion	80	_____	_____	_____	_____
Extension	30	_____	_____	_____	_____
Lateral Flexion	35	_____	_____	_____	_____
Rotation	45	_____	_____	_____	_____

SHOULDER:	Normal	Right	Left	Right	Left
Forward Flexion	180	_____	_____	_____	_____
Extension	60	_____	_____	_____	_____
Abduction	180	_____	_____	_____	_____
Internal rotation	70	_____	_____	_____	_____
External rotation	90	_____	_____	_____	_____
HIP:	Normal	Right	Left	Right	Left
Flexion (K.ext.)	90	_____	_____	_____	_____
Flexion (k.flex.)	120	_____	_____	_____	_____
Abduction	45	_____	_____	_____	_____
Adduction	30	_____	_____	_____	_____
Extension	30	_____	_____	_____	_____
Internal rotation	45	_____	_____	_____	_____
External rotation	45	_____	_____	_____	_____
ELBOW:	Normal	Right	Left	Right	Left
Flexion	150	_____	_____	_____	_____
Extension	0	_____	_____	_____	_____
Pronation	70	_____	_____	_____	_____
Supination	70	_____	_____	_____	_____
WRIST:	Normal	Right	Left	Right	Left
Flexion	80	_____	_____	_____	_____
Extension	70	_____	_____	_____	_____
Ulnar Deviation	30	_____	_____	_____	_____
Radial deviation	20	_____	_____	_____	_____
FOREARM:	Normal	Right	Left	Right	Left
Pronation	80	_____	_____	_____	_____
Supination	80	_____	_____	_____	_____
KNEE:	Normal	Right	Left	Right	Left
Flexion	135	_____	_____	_____	_____
Extension	0	_____	_____	_____	_____
ANKLE:	Normal	Right	Left	Right	Left
Plantar Flexion	50	_____	_____	_____	_____
Dorsiflexion	20	_____	_____	_____	_____
Inversion	35	_____	_____	_____	_____
Eversion	15	_____	_____	_____	_____

TOE RISES (10) - \_\_\_\_\_ Reps Right      \_\_\_\_\_ Reps Left

KNEE SQUATS (5) - \_\_\_\_\_ Reps

COMMENTS:

Page 3

ATROPHY/EDEMA:

- No deficiency noted
- Deficiency noted

GIRTH MEASUREMENTS

Body Part	Involved	Uninvolved
_____	_____	_____
_____	_____	_____
_____	_____	_____

MUSCLE TONE/SPASMS:

\_\_\_\_\_

\_\_\_\_\_

NEUROLOGICAL TESTING:

Sensory Testing:

- No obvious reports or problems
- Other (explain) \_\_\_\_\_

Reflex Testing:

- No obvious problems
- Suspected neurological involvement
  - Knee Jerk - \_\_\_\_\_
  - Ankle Jerk - \_\_\_\_\_
  - Upper extremities - \_\_\_\_\_

Balance:

Right foot (10 seconds)

- No obvious problems
- Other (explain) \_\_\_\_\_

Left foot (10 seconds)

- No obvious problems
- Other (explain) \_\_\_\_\_

Other Special Tests: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Page 4

FIRST DAY SUMMARY OF PHYSICAL ASSESSMENT:

- 1. \_\_\_\_\_
- 2. \_\_\_\_\_
- 3. \_\_\_\_\_
- 4. \_\_\_\_\_
- 5. \_\_\_\_\_

PHYSICAL ASSESSMENT CHANGES NOTED ON SECOND DAY:

Items tested or repeated:

- 1. \_\_\_\_\_
- 2. \_\_\_\_\_
- 3. \_\_\_\_\_
- 4. \_\_\_\_\_
- 5. \_\_\_\_\_

FINDINGS ON SECOND DAY:

- 1. \_\_\_\_\_
- 2. \_\_\_\_\_
- 3. \_\_\_\_\_
- 4. \_\_\_\_\_
- 5. \_\_\_\_\_

\_\_\_\_\_  
FCE THERAPIST

### LOW BACK PAIN EVALUATION

**MEDICAL HISTORY**

Name: \_\_\_\_\_ Sex: M \_\_\_\_\_ F \_\_\_\_\_ Date: \_\_\_\_\_  
Address: \_\_\_\_\_ Date of Birth: \_\_\_\_\_  
Occupation: \_\_\_\_\_ Workmen's Compensation: Y \_\_\_\_\_ N \_\_\_\_\_  
Self-employed: Y \_\_\_\_\_ N \_\_\_\_\_

**FAMILY HISTORY**

Family members with back pain: Y \_\_\_\_\_ N \_\_\_\_\_  
Describe: \_\_\_\_\_

Other familial illness: \_\_\_\_\_

**SOCIAL HISTORY**

Working Y \_\_\_\_\_ N \_\_\_\_\_ Labor: Heavy \_\_\_\_\_ Moderate \_\_\_\_\_  
Sedentary \_\_\_\_\_ Light \_\_\_\_\_  
Smoking: \_\_\_\_\_ Alcohol: \_\_\_\_\_ Recreational Drugs: \_\_\_\_\_  
Leisure time activities: \_\_\_\_\_ Hobbies: \_\_\_\_\_ Sports: \_\_\_\_\_

Education: \_\_\_\_\_

**PAST MEDICAL HISTORY**

Current Medical Illnesses:  
Diabetes \_\_\_\_\_ Vascular/Hypertension \_\_\_\_\_  
Arthritis \_\_\_\_\_ Cancer \_\_\_\_\_ Other \_\_\_\_\_

Current Medications: \_\_\_\_\_

Severe injuries: \_\_\_\_\_

Hospitalizations/Operations: \_\_\_\_\_



## REVIEW OF SYSTEMS

## Constitutional:

Fever \_\_\_\_\_ Weight loss \_\_\_\_\_

Anorexia \_\_\_\_\_ Severe fatigue \_\_\_\_\_

## Skin:

Psoriasis \_\_\_\_\_ Nail changes \_\_\_\_\_ Nodules \_\_\_\_\_

## Head/Neck:

Conjunctivitis \_\_\_\_\_ Iritis \_\_\_\_\_

Oral ulcers \_\_\_\_\_ Thyroid \_\_\_\_\_

## Cardiopulmonary:

Dyspnea \_\_\_\_\_ Cough \_\_\_\_\_

Hemoptysis \_\_\_\_\_ Chest pain \_\_\_\_\_

## Gastrointestinal:

Abdominal pain \_\_\_\_\_ Blood in stool \_\_\_\_\_

Nausea/Vomiting \_\_\_\_\_ Change in bowel \_\_\_\_\_ Ulcers \_\_\_\_\_  
habits

## Genitourinary:

Frequency \_\_\_\_\_ Burning \_\_\_\_\_ Hematuria \_\_\_\_\_

Hesitancy \_\_\_\_\_ Sexual \_\_\_\_\_ Menses \_\_\_\_\_  
dysfunction

## Hematologic:

Anemia \_\_\_\_\_ Bleeding disorder \_\_\_\_\_

## Neurologic:

Mental status \_\_\_\_\_ Muscle weakness \_\_\_\_\_ Sensation \_\_\_\_\_

## Personality:

Obsessive \_\_\_\_\_ Passive \_\_\_\_\_

Depressive \_\_\_\_\_ Anxious \_\_\_\_\_

## Musculoskeletal:

Arthritis \_\_\_\_\_

## CHIEF COMPLAINT:

## BACK PAIN:

Onset: Acute \_\_\_\_\_ Gradual \_\_\_\_\_ With activity \_\_\_\_\_  
 Twist \_\_\_\_\_ Fall \_\_\_\_\_ Bending \_\_\_\_\_  
 Lifting \_\_\_\_\_ Pulling/pushing \_\_\_\_\_  
 Increasing \_\_\_\_\_ Decreasing \_\_\_\_\_ Same \_\_\_\_\_  
 Direct blow/trauma \_\_\_\_\_

Duration: Days \_\_\_\_\_ Weeks \_\_\_\_\_ Months \_\_\_\_\_

Frequency: Daily \_\_\_\_\_ Episodic \_\_\_\_\_  
 Weekly \_\_\_\_\_ Continuous \_\_\_\_\_  
 Monthly \_\_\_\_\_  
 Other \_\_\_\_\_

Location and Radiation:

Paraspinous	R _____	L _____
Sacroiliac	R _____	L _____
Buttocks	R _____	L _____
Thighs	Anterior _____	Posterior _____
Lower leg	R _____	L _____
Leg paresthesias	_____	Leg weakness _____

Time of Day: AM \_\_\_\_\_ PM \_\_\_\_\_

AGGRAVATING FACTORS:

Standing \_\_\_\_\_ Walking \_\_\_\_\_  
Sitting \_\_\_\_\_ Driving \_\_\_\_\_  
Recumbency: Supine \_\_\_\_\_ Prone \_\_\_\_\_  
AM Stiffness: Y \_\_\_\_\_ N \_\_\_\_\_ Duration \_\_\_\_\_  
Movements: Flexion \_\_\_\_\_ Extension \_\_\_\_\_  
Other: Coughing \_\_\_\_\_ Valsalva \_\_\_\_\_  
Sneezing \_\_\_\_\_

ALLEVIATING FACTORS:

Standing \_\_\_\_\_ Walking \_\_\_\_\_  
Sitting \_\_\_\_\_  
Recumbency: Supine \_\_\_\_\_ Prone \_\_\_\_\_  
Movements: Flexion \_\_\_\_\_ Extension \_\_\_\_\_  
Medications: Antiinflammatories \_\_\_\_\_ Narcotics \_\_\_\_\_  
Muscle relaxants \_\_\_\_\_  
Supports: Brace \_\_\_\_\_

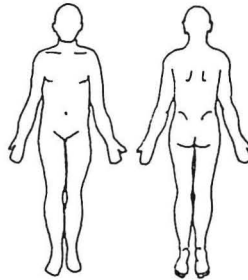
VISUAL PAIN SCALE

Severe |-----| None

 Numbness

 Burning

 Dull



 Pins & Needles

 Stabbing

## LUMBOSACRAL SPINE

## STANDING:

Posterior view:

Pigmentation \_\_\_\_\_ Hair tufts \_\_\_\_\_

Scoliosis \_\_\_\_\_ Bone prominence \_\_\_\_\_

Sacroiliac joint motion R \_\_\_\_\_ L \_\_\_\_\_

Trendelenburg sign R \_\_\_\_\_ L \_\_\_\_\_

Lateral view: Lordosis: Normal \_\_\_\_\_ Decreased \_\_\_\_\_ Increased \_\_\_\_\_

Kyphosis: Normal \_\_\_\_\_ Decreased \_\_\_\_\_ Increased \_\_\_\_\_

Lower extremity deformities \_\_\_\_\_

Anterior view: Pelvic tilt \_\_\_\_\_

Motion: Flexion \_\_\_\_\_<sup>o</sup> Finger to floor \_\_\_\_\_ cmExtension \_\_\_\_\_<sup>o</sup>

Lumbosacral rhythm Normal \_\_\_\_\_ Reversed \_\_\_\_\_

Lateral bending R \_\_\_\_\_<sup>o</sup> L \_\_\_\_\_<sup>o</sup>Rotation R \_\_\_\_\_<sup>o</sup> L \_\_\_\_\_<sup>o</sup>

Toe walking \_\_\_\_\_ Heel walking \_\_\_\_\_ Squat \_\_\_\_\_

Tenderness: Midline \_\_\_\_\_ Paraspinous \_\_\_\_\_ Iliac crest \_\_\_\_\_

Posterior iliac spine \_\_\_\_\_ Greater trochanter \_\_\_\_\_

Sciatic notch \_\_\_\_\_ Posterior thigh \_\_\_\_\_ Spasm \_\_\_\_\_

KNEELING: Ankle reflex R \_\_\_\_\_ L \_\_\_\_\_

Forward flexion \_\_\_\_\_<sup>o</sup>

SEATED IN CHAIR: Foot dorsiflexor strength R \_\_\_\_\_ L \_\_\_\_\_

## BENT FORWARD OVER

EXAM TABLE:

Gait: Normal \_\_\_\_\_ Abnormal \_\_\_\_\_

Antalgic \_\_\_\_\_ Shuffling \_\_\_\_\_ Wide based \_\_\_\_\_

Sacroiliac tenderness R \_\_\_\_\_ L \_\_\_\_\_

## SEATED-LEGS DANGLING:

	Tripod sign	R _____	L _____
	Knee reflex	R _____	L _____
	Thigh pain _____	Knee pain _____	
SUPINE:	Leg lengths	R _____	L _____
	Passive straight leg	R _____ <sup>o</sup>	L _____ <sup>o</sup>
	Lasègue test	R _____	L _____
	Bilateral straight leg		
	Hip motion Flexion	R _____ <sup>o</sup>	L _____ <sup>o</sup>
	Extension	R _____ <sup>o</sup>	L _____ <sup>o</sup>
	Abduction	R _____ <sup>o</sup>	L _____ <sup>o</sup>
	Adduction	R _____ <sup>o</sup>	L _____ <sup>o</sup>
	Int. Rot.	R _____ <sup>o</sup>	L _____ <sup>o</sup>
	Ext. Rot.	R _____ <sup>o</sup>	L _____ <sup>o</sup>
	Patrick test	R _____	L _____
	Hoover test _____		
	Pelvic compression	Inward _____	Outward _____
Reflexes:	Abdominal (T12-L2)		
	Cremasteric (L1-L2)	R _____	L _____
	Adductor (L2)	R _____	L _____
	Patellar (L4)	R _____	L _____
	Ankle (S1)	R _____	L _____
	Bulbocavernosus (S2-S3)	R _____	L _____
Sensory:	Medial thigh (L4)	R _____	L _____
	Anterior tibia (L5)	R _____	L _____
	First web space (L5)	R _____	L _____
	Posterior calf (S1)	R _____	L _____
	Lateral foot (S1)	R _____	L _____
	Perineum (S2-S5)	R _____	L _____
Motor strength: (0-5, 5 = Normal)			
	Hip flexion (L2-L3)	R _____	L _____
	Hip extension (L4-L5)	R _____	L _____
	Knee flexion (L3-L4)	R _____	L _____
	Knee extension (L5-S1)	R _____	L _____
	Ankle dorsiflexion (L4-L5)	R _____	L _____
	Ankle plantar flexion (S1-S2)	R _____	L _____
	Ankle inversion (L4)	R _____	L _____
	Ankle eversion (L5-S1)	R _____	L _____

Long tract signs:

Babinski sign	R _____	L _____
Oppenheim's sign	R _____	L _____
Clonus	R _____	L _____

PRONE:	Femoral stretch test (L2-L4)	R _____	L _____
	Gluteus maximus strength (L5-S1)	R _____	L _____
	Sensory: Posterior upper leg (S1-S2)	R _____	L _____
	Posterior lower leg (S3-S4)	R _____	L _____
	Perianal (S4-S5)	R _____	L _____

Rectal exam: Rectal tone _____	Rectal masses _____
Testicles _____	Pelvic organs _____

OTHER

TESTS:	Schober's test _____ cm	Voluntary release _____
	Well leg straight leg raising _____	Bow-string sign _____
	Naffziger test _____	Valsalva test _____
	Milgram test _____	Kneeling bench test _____ Stoop test _____

Waddell test:	Appropriate	Inappropriate
1. Tenderness	_____	_____
2. Simulation: axial loading rotation	_____	_____
3. Distraction: seated straight leg	_____	_____
4. Regional disturbances	_____	_____
5. Overreaction	_____	_____

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