Abstract:

The back pains are commun pain which affect 75-85 percent of the population at least once in a lifetime. The Williams Program is a popular non-surgical treatment for low-back pain. The Williams exercises are based on the flexions in order to reduce the pain and increase lower trunk stability. The aim of this paper is to presents the exercises of Williams program and the benefits of this type of exercises for the three back pain stages.

Keywords: back pain, Williams’ program, exercises


1. Introduction

The Williams Program was for many years the standard for non-surgical low back pain treatment. Mechanical LBP is very common, affecting between 70 and 85% of American adults at some point during their lives. An estimated 1.3 billion days a year are lost from work in the United States because of LBP. Back pain complaints are second only to upper respiratory conditions as a cause of work absenteeism. Back pain is also the most common cause of disability in patients younger than 40 years.” [BROZBAN B. 2012].

The back pain forms:

- Acute mechanical low back pain - the pain varies with physical activity and is located in the lumbosacral region, buttocks, and thighs, with no radiation to foot or toes.
- Sciatica or nerve root pain may arise from disc herniation, spinal stenosis, or postoperative scarring. Nerve root pain radiates down one leg in a dermatomal pattern.
- Disc herniation describes the protrusion of the gelatinous material of the disc (nucleus pulposus) through the annulus fibrosis

2. History of williams' flexion exercise

Williams’ flexion exercises are also called Williams lumbar flexion exercises or simply Williams exercises. The program was developed by Dr. Paul Williams. He published this program in 1937 for patients with chronic low back pain in response to his clinical observation that the majority of patients who experienced low back pain had degenerative vertebrae secondary to degenerative disk disease. These exercises were developed for men under 50 and
women under 40 years of age who had exaggerated lumbar lordosis, whose x-ray films showed decreased disc space between lumbar spine segments (L1-S1), and whose symptoms were chronic but low grade. The goals of performing these exercises were to reduce pain and provide lower trunk stability by actively developing the "abdominal, gluteus maximus, and hamstring muscles as well as..." passively stretching the hip flexors and lower back (sacrospinalis) muscles. Williams said: "The exercises outlined will accomplish a proper balance between the flexor and the extensor groups of postural muscles..." [Williams 1965].

Williams’ flexion exercises have been a cornerstone in the management of lower back pain for many years for treating a wide variety of back problems, regardless of diagnosis or chief complaint. In many cases they are used when the disorder’s cause or characteristics were not fully understood by the physician or physical therapist.

3. Williams’ program in back pain stages

Williams’ exercises are a set or system of related physical exercises intended to enhance lumbar flexion, avoid lumbar extension, and strengthen the abdominal and gluteal musculature in an effort to manage low back pain non-surgically. Exercises are performed in the supine position on a floor or other flat surface.

I. FIRST STAGE

The program begins in the subacute stage, when besides relaxation methods, a series of techniques to strengthen the lower torso are being applied. The patient is treated from a kinetic point of view only in supine position, by discharging the weight of the patient’s torso.

Ex. 1: The subject is lying on the back with both legs extended. He executes:
   Time 1. knees flexion
   Time 2. knees extension – returns in the initial position. The exercise is performed with both knees in the same time.

Ex. 2: The subject is lying on the back with both legs extended.
   Time 1. slowly pulls his right knee toward his shoulder and hold 5 to 10 seconds.
   Time 2. lower the knee and repeat with the other knee.

Ex. 3: Idem 2 with both knees in the same time.

Ex. 4: The subject is lying on the back with both legs extended and the hands at his side.
   Time 1. pulls his right knee toward his shoulder;
   Time 2. lower the knee;
   Time 3. pulls his left knee toward his shoulder;
   Time 4. lower the knee;
   Time 5. flexes the both knees toward the shoulder;
   Time 6. extends the knees on the floor.

Ex. 5: The subject is lying on the back with both knees bent, feet flat on floor, the arms are extended by the head.
   Time 1. pulls the pelvic tilt
   Time 2. lower the pelvic tilt

Ex. 6: The subject is sitting on a chair with knees apart.
   Time 1-8. Slowly lower the trunk forward over the legs until the hands meet the floor. Maintain the position 5-10 seconds. Return in the initial position and repeat the exercise.
II. SECOND STAGE

In the second stage of the program, the exercises prepare the backbone to support a heavier weight when in a vertical position. Exercises from the first stage become warm-up exercises for the second stage.

Ex 7: The subject is lying on the back with both knees bent, feet flat on floor. The subject executes:
   Time 1. Lower the both knees on the right side, until the right knee touch the floor;
   Time 2. Return in the initial position.
   Time 3. The same Time 1 for the left side;
   Time 4. Return in the initial position.

Ex. 8: The subject is lying on the back with both legs extended.
   Time 1. Puts the right heel on the left knee.
   Time 2-3. Executes a right hip abduction until the right knee touch the floor.
   Time 4. Return to time 1.
   The same for the left side.

Ex. 9: The subject is lying on the back with both legs extended. He executes:
   Time 1. straight left/right leg raise.
   Time 2. returns in initial position.

Ex. 10. The subject stands with both hands on a chair and executes squats. The trunk is extended and the heel are on the floor permanently.
In this stage is recommandated to do exercises from hang position.

Ex. 11: The subject is hanging on the espalier.
   Time 1. Pulls the both knees on the chest;
   Time 2 Returns in the initial position.

Ex. 12: The subject is hanging on the espalier, pulls the both knees on the chest.
   Time 1. Rotates on the right side both knees flected.
   Time 2. Rotates on the left side both knees flected.

Ex 13: The subject is hanging on the espalier, with the face on the espalier.
   Time 1. Balances the both legs extended on the right side.
   Time 2. Balances the both legs extended on the left side

Ex.14: The subject is hanging on the espalier, with the face on the espalier and the legs on first lattice. He executes.
   Time 1. Hip flection with knees fully extended.
   Time 2. Return in initial position.

III. THIRD STAGE

In the third stage, the clinical remission is already achieved and the purpose of the program is to prevent and improve body outfit control. Physical therapy continues by toning the lumbar area for achieving a neutral position of the pelvis and to create an abdominal pressure capable of taking some of the pressure placed on the lower lumbar intervertebral discs.

Ex.15: The subject is lying on the back with both knees bent, feet flat on floor.
   Time 1. He’s pressing lumbar region on the floor and pushing the sacral region, in this time the lumba stays in contact with floor;
   Time 2. Returns.
Repeats the exercise until the legs are extended.
Ex. 16: The subject is standing near the wall. He puts sacral and lumbar regions on the wall and the heels about 20 cm near the wall. He gradually leads the heels near the wall.

Ex. 17. The subject is lying on the back with both knees bent, feet flat on floor. The subject executes bicycle with the raise pelvis.

4. Benefits

This program benefits are:
- opening of the intervertebral foramen;
- the stretching of ligamentous structures;
- the distraction of the apophyseal joints;
- effective abdominal exercises emphasis lumbar flexion on the abdominal muscles;
- reduce pain;
- hip flexor muscles (iliopsoas) can also perform lumbar flexion.

5. Conclusions

- If you have recurrent lower back problems doing these simple exercises on a daily basis will help prevent reinjury.
- If you follow the program, initially do it gently, and with each day increase the amount of stretch. Start doing them 3 times per day for several weeks until they will become easy. At this point in time you say that have acquired a good habit. Continue the program daily. If you wake up with a sore back, do them before getting out of bed in the morning.
- A concern with this method is that certain flexion maneuvers increase intradiscal pressure, possibly aggravating herniated or bulging discs. According to Nachemson (1981), Williams’ first exercise increases intradiscal pressure to 210% over that in a standing posture. Three of the six exercises increase intradiscal pressure, and these three are contraindicated for patients with acute herniated disc. [Brozban B 2012]

REFERENCES:


BLACKBURN Stan, PORTNEY Leslie, 1981, Electromyographic activity of back musculature during Williams’ flexion exercise, in Physical Therapy, vol 61, no.6, pp. 878-885