Chapter 5 Therapeutic value Pilates for Bharatanatyam Dancers

5.1 Introduction:

In a previous chapter, we saw how Pilates exercise integrated into Bharatanatyam to prevent injury and strengthen the muscles, but if a dancer is injured, they also get benefitted from Pilates therapy. "The love story between the Pilates method and dance started in the 1930s, when Martha Graham used to send her pupils to Uncle Joe's studio in New York. Since then, dancers of different styles have adopted the method, aiming to improve their performance in scene. Several of the names from the first generation of Pilates instructors, trained by Joseph Pilates, were dance professionals, like Eve Gentry, Ron Fletcher, Carola Trier, Kathy Grant, Lolita San Miguel, Jay Grimes, and Romana Kryzanowska. This fact leads to the conclusion that the method, since its origins, contributes positively to the performance of the dance professional, either as a way to prevent injuries or as a way to maintain health or to promote the rehabilitation."[1] While conducting this research, the researcher learned that Mr Joseph Pilates successfully ran a rehabilitation program for injured soldiers during World War I. Later, he taught Pilates to ballet dancers in various dance studios and owned his own studio where he trained dancers and professional athletes. The Pilates method has been introduced to many dance companies and dance schools over the years, including Ballet British Columbia and the National Ballet School. Pilates exercise classes have been added to the dance curricula at colleges and high schools like Goucher College, Harid Conservatory etc. Several physiotherapists have written entire books on Pilates for rehabilitation. We read that first-generation Joseph Pilates students opened their own studios in the US. The given information indicates that physiotherapists as well as dancers adopted Pilates exercise, benefited from it, and then opened their own studio. "The Pilates method is a complete and through program of mental and physical conditioning with an expanding orbit of potential exercises. Many of the small therapeutic movements designed to help people recovering from injuries can be intensified to challenge seasoned athletes. This is what makes the Pilates method so attractive to the general public, as well as dancers and athletes."[2]

When recovering from an injury, building strength, or avoiding injuries, Pilates helps people with stability, flexibility, strength, body awareness, and coordination. "In Bharatanatyam knee,

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1. Debora Pereira Bolsanello, Sai Tapikar, Debashree Marathe, Smita Patil, Is Pilates a Somatic Education Method, Brazilian Journal on Presence Studies vol.5, jan-April 2015, page 101-126
2. Craig, Colleen. Pilates on the ball, Pg 10.

calf muscles, hip muscles engaged, working out and strengthening these muscles are very much important. To protect these muscles it is important to develop certain kind of an exercise which will work very strongly on knee, hip and calf, that is why some of the best choice of supplementary exercise for Bharatanatyam is Pilates exercise."[1] To aware Bharatanatyam dancers about Pilates exercise and its therapeutic value, researcher wants to draw attention towards Pilates exercise as a therapy in this chapter, which will be explained with case studies conducted by physiotherapists and Pilates exercise experts.

5.2 Why Pilates is a Rehabilitation and Preventative exercise?

In Pilates exercise the whole body muscles are used and exercised in various ways which leads to tissue healing, building strength of the muscles, coordination and postural awareness. Another function of Pilates exercise is that it works with mind-body coordination and breathing which enhances your concentration and awareness and it is very important to breathe properly for your physical and mental health. It oxygenates your brain tissues which may help in reduce stress and relax. Because it repairs tissue and strengthens muscles, it is useful in the rehabilitation of an injury and, if practiced without injury, can aid in the prevention of injuries.

5.2.1 Preventive Pilates:

Prevention is always better than cure. A piano is an instrument, and a piano player will always take care of his instrument, just as a Bharatanatyam dancer will always take care of their body. They must lengthen and strengthen their muscles in order to prevent injury. Pilates exercise can not only help you recover from an injury, but regular practice under the proper supervision can help you avoid injuries and extend your career. Due to its low-impact nature, Pilates helps dancers to maintain their healthy muscular tone, core strength, and flexibility while protecting them from injury. Additionally, when dancers are healthy, it helps to prevent injuries by enhancing supportive muscles and resolving imbalances brought on by regular training. Its been said by the physiotherapists that from several decades, the value of Pilates exercises for prevention of an injury is undisputed[2].

The body's muscle imbalance can be caused by a number of factors. It is significantly influenced by things like walking, sitting, bending, sleeping, running, and exercising. The daily activities could result in some injuries because of wrong muscle movements. When we move incorrectly, we put a lot of stress on our muscles. Incorrect muscle movement causes our

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1. Chakroborty, Surjeet. physiotherapist and Pilates instructor, zoom meeting Interview, 8-03-2022,
2. Geweniger & Bohlander, Pilates: A teacher's manual, chapter 12, Pg.293.

muscles to weaken over time, which may eventually result in imbalance and then injury. It puts less stress on body and whole body get exercised evenly which is the best way to prevent an injury. "Pilates is one of the fastest growing workout routines in the United States and around the world. This popularity is due to the many benefits of Pilates like enhanced strength, flexibility, and agility due to regular practice. More than just a regular exercise, Pilates is recommended by physicians for rehabilitation treatment after an injury. If you are experiencing a horrible back ache, you can try Pilates, since it has proven to be beneficial for moderate to severe spinal conditions."[1]

5.2.2 A Flexible Treatment Option:

Pilates is a flexible therapeutic method. The way a specialist uses the Pilates principles will determine how effective Pilates is as a "healing treatment." A Pilates routine offers more flexibility when compared to other conventional rehabilitation techniques. It can be done twice or thrice a week, anytime during the day also half an hour to 45 minutes are sufficient. As per the condition of the patient the level of Pilates is chosen by the therapists. In order to maximize the benefits, how to properly care for your body and adopt the best posture is taught by Pilates exercise that is why Pilates exercise is a very flexible option.

5.2.3 An excellent workout option:

Its qualities like strength, focus, Centering, control, precision, fluidity, breathing, and flow makes it an excellent workout option and that is the reason it is widely used in physical therapy. No matter where you practice Pilates, these factors are constant and help your body grow and get stronger. The main aims of the Pilates exercise are to increase your spine's flexibility and range of motion. It also encourages the practitioner to focus more intently on how to pose while performing various movements and tasks in order to avoid further injuries. This can assist Bharatanatyam dancers in understanding which muscle they are using and where they are lacking while performing any kriti. The challenging but beneficial exercise helps to develop and safeguard the muscles that support your spine. All the muscles that have weakened as a result of an injury or poor posture will be strengthened by a thorough Pilates workout. Keeping your breathing rhythm under control while exercising is also good for your muscles. Regular Pilates practice promotes the growth of your body's flexibility and strength.

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1. https://ocwellnessphysicians.com/pilates-a-great-physical-therapy-alternative-for-injury-rehabilitation/

5.2.4 The Advantages of a Pilates Exercise:

Pilates has many benefits, but only when done properly; otherwise, injuries may take place. An expert or therapist's advice will guarantee that you are getting the right amount of exercise to recover from any injuries and prevent further issues. Pilates is a much targeted exercise that helps to increase endurance, coordination, and focus. Improved breathing, balance, spine stabilization, and shoulder movement are just a few additional advantages. These are a few advantages of regularly performing Pilates exercise under the guidance of a professional. Pilates ideas are great for recovering from injuries, but if not combined with specific therapeutic methods, they can make things worse. Pilates is a wonderful form of exercise if you are healing from an injury. Select the top Pilates instructors to aid in the recovery of injuries and the reduction of pain.

5.2.5 Pilates as rehabilitation method:

Joseph Pilates developed an exercise method and named it Contrology, he used his method on injured soldiers of World War I, proved that his method is effective and can be used as rehabilitation method. “Pilates is a great tool to assist or even enhance a physiotherapy program when someone is recovering from an injury. By strengthening the deepest muscles of the core, optimizing alignment, and creating correct movement patterns, we can also help to prevent re-aggravation of those injuries and the development of new ones. Physiotherapists are always searching for a system that can take patients from the early stages of rehabilitation to the long-term goal of a conditioned, efficiently functioning body. Pilates is that system!”[1]

The entire body is engaged. Pilates exercise addresses these issues and makes the necessary corrections, allowing your body to realign and achieve balance. As a result, you can avoid further pain or injury in addition to recovering from one. It will also help you retrain your body's movement patterns, teach you how to move more effectively, and build your strength and agility. It places a strong emphasis on spinal and pelvic stability, which promotes mobility and endurance. Regularly practicing Pilates exercise enhances overall health, athletic performance, and injury recovery. Pilates teaches you about your body and how it moves, enabling you to manage your own recovery. Patients can move at their own pace and gradually

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1. Pilates for rehabilitation- Recover from injury and optimize function by Samantha Wood, foreword by Rael Isacovitz. Pg 23,

increase the incline of activity to match their capabilities with Pilates exercise because they are so adaptable.

While researching about Pilates technique and dance, the researcher found that At St. Francis Hospital in San Francisco, the first dance medicine clinic made the actual inroads of Pilates' method into the therapeutic area. Around 1983, a surgeon named Dr. James Garrick established the clinic. He enabled Los Angeles-based Pilates instructor Ron Fletcher to train the clinic's staff members.[1]

- **Pilates Help with Spinal Diseases:**

If suffering from poor posture, especially if the muscle strain is left untreated for a long time, back and shoulder ligaments, tendons, and muscles suffering from poor posture. This may result in pain from unnatural movement patterns, as well as injury. Pilates exercise enables you to align your shoulders and spine correctly for ideal posture and to reduce some of the stress on your spine by strengthening your back and core muscles. Along with teaching you how to recognise when your spine is out of alignment, Pilates exercise also gives you the mental tools you need to become more conscious of your movements and posture. This kind of mental awareness can be very helpful for Bharatanatyam dancers who have spinal diseases.

- **It works on core strength, promoting muscular symmetry and spinal health:**

One's core gets stronger with Pilates exercise. Bharatanatyam stances like araimandi and adavus require strong core muscles. They control the balance and stability, enhancing the ability to perform and lowering the risk of injury. Pilates exercise helps you build stronger core muscles, which keeps the body away from compensating for awkward movements and getting stiff and exhausted. It keeps the posture correctly supported while enabling muscles to move freely and productively. By reducing stress and needless strain on the spinal discs, it can help treat and even prevent injuries. Additionally, Pilates exercise will equally work both sides of your body, improving its symmetry and preventing overuse and injury both of which are more likely to affect your performance.

- **Pilates exercise is proper rehabilitation technique:**

Pilates exercise is flexible as well as uses your own body as a resistance so there are very less chance of putting burden on your body muscles. And it was used on the soldiers and proven effective. Professional dance Ron Fletcher and Kathy Grant shared that while exercising with

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1. http://www.fletcherpilates.com

Joseph Pilates, even with their injuries they performed better and recovered faster. It focuses on core muscles, works on stability as well as mobility, it includes both- open kinetic chain (where hands or legs move freely in space) and closed kinetic chain (where hand and legs remains in constant touch with the surface), Pilates exercises are functional, emphasises on breathing, adaptable for many diseases, also works on mental conditioning. These all points achieve a goal of a physiotherapists who wants to bring change in patient's condition. That is why Pilates exercise is proper rehabilitation technique.

- **One of The Best Benefits of Pilates Is That It Increases Flexibility:**

Pilates exercise also focus on dynamic stretching. Pilates exercise routines include stretches and exercises that are intended to lengthen and strengthen the muscles. Your range of motion will increase as your muscles' dynamically functional flexibility increases, which will help you perform better. Therefore, Pilates can be a fantastic way to treat joint stiffness and other injuries related to flexibility. The body's capacity to move the joint with a greater range of motion and without pain gradually increases with stretching and strengthening of the muscles surrounding the joints.

- **Pilates is a more active rehabilitative approach:**

Because of its rehabilitative nature Pilates exercise are more effective than physical therapy. Physical therapy can seem restrictive to some, whereas Pilates is a very adaptable form of exercise. Physical therapy may concentrate on a particular body part, such as the knee following knee replacement surgery. Pilates, on the other hand, works every muscle in the body. In order to stop further harm, it not only targets the injured area but also other parts of the body. "Today, millions of people use Pilates as not only a form of therapy, but also as a main component of their training program. What a great testament to Joseph Pilates. He really was someone who was ahead of his time."[1] Pilates not only strengthens muscles but also the mind by boosting motivation and igniting feelings of hope, it has motivated many people to stay on the track to recovery. "By starting Pilates, my fitness level, core strength, and flexibility have greatly increased. This has helped my overall quality of life and with my hobbies of tennis, kayaking, and biking. Combining my Pilates sessions with my conditioning program has helped my overall leg strength, mobility, and recovery from knee surgery."[2] Joseph Pilates aimed to create a proper training system that would restore patients' and clients' inner and outer

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1. Pg. 11, Pilates and conditioning for athletes- an integrated approach to performance and recovery by Amy Lademann and Rick Lademann
2. Terry North, client, and lifelong athlete

strength and confidence, according to the publications the researcher looked at. By promoting awareness of movement from the inside out, the Pilates method encourages internal mobility.

5.3 Therapeutic Pilates and its application to Bharatanatyam:

There is a difference between normal Pilates exercise and therapeutic Pilates exercise. Therapeutic Pilates is used to treat patients after an injury or surgery. In therapeutic Pilates an individual's particular medical conditions and physical needs rather than having many people complete the same Pilates exercise. It started gaining popularity because of its effectiveness. Ballet dancers, players, and athletes are already applying it, so why shouldn't Bharatanatyam dancers? Most used muscles in Bharatanatyam are core muscles like pelvis muscles, abdominal muscles, inner thigh muscles, shoulder girdle. Pilates exercise primarily target these muscles, and the researcher's personal experience suggests that Bharatanatyam dancers can benefit if utilized correctly. Pilates training must have been effective; at the inaugural conference of the Pilates Method Alliance, professional dancers Ron Fletcher and Kathy Grant recalled that, despite their injuries, they danced better and healed faster after working with Joseph Pilates.[1] Pilates training is becoming increasingly popular among dancers due to conceptual parallels, anatomical correlations, and tactile linkages between Pilates and dance movements. The Pilates exercise routine and Bharatanatyam are linked in the following way.

5.3.1 Alignment and Core Stability:

Proper spine and pelvic positioning is must for Bharatanatyam dancers. Pilates exercise emphasis on the spine as well as pelvic muscle. Which build up core stability and alignment of the body. Pilates can give Bharatanatyam dancers the core strength they need to move, with stability, control, and a full range of motion by working the abs, lower back, and gluts throughout all exercises. Maintaining neutral spinal-pelvic alignment, or core stability, also provides central control for movement, effective weight transfer, and shock absorption to prevent injury.[2] Dancing in neutral position reduces the risk of injury. This "neutral" spine and pelvic position necessitates pulling in the abdominals, engaging the back extensors, and maintaining a balance of strength and flexibility between the hip flexors and extensors.[3]

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1. (Pg. 8, chapter 1, Pilates- A teacher's manual by Geweniger and Bohlander)
2. Clippinger, 2007, p.112-113; Smith, 2009). Clippinger, K. (2007). Dance anatomy and kinesiology. Champaign, IL: Human Kinetics.
3. (Ahearn, 2006, p.93; Fitt, 1996, p.163) Ahearn, Elizabeth Lowe. (2006). The Pilates method and ballet technique: Applications in the dance studio." Journal of Dance Education, 6(3), 92-99.

5.3.2 Posture and the Shoulder Girdle:

The shoulder girdle is another key muscle for Bharatanatyam dancers to concentrate on because the shoulders are used continuously when performing. Core stability, alignment, and shoulder girdle all contribute to appropriate posture and, if exercised properly, it may lower the risk of injury. Pilates can assist Bharatanatyam dancers in maintaining good shoulder girdle placement and correcting postural difficulties caused by rounded shoulders by strengthening and engaging the muscles of the "secondary powerhouse". Pilates emphasizes excellent posture and shoulder and chest opening. Throughout all movements, keep the shoulders down and back and the chest open. As a result, the shoulder girdle musculature functions as a "secondary powerhouse," with the muscles that stabilise the shoulder complex, depress and adduct the scapula, externally rotate and extend the shoulder, and expand the chest engaging throughout all motions.[1]

5.3.3 Symmetry:

Pilates' emphasis on symmetry can assist Bharatanatyam dancers in maintaining shoulder and hip alignment, promoting bilateral muscle application, and minimizing disparities in muscle strength and flexibility. As a result, there is a greater chance that no injuries will occur to the body.

5.3.4 Lengthening to Avoiding Hyperextension:

"Keep lengthening your muscles as you straighten them"[2] The forceful extension of a limb or joint beyond its normal limits, either for exercise or therapy, or in order to injure oneself. Pilates exercises emphasize lengthening, especially of the spine, and can assist Bharatanatyam dancers in locating and maintaining complete muscle length without locked or tight joints. This emphasis, which is an overarching image in all Pilates training, can educate hyperextended dancers the patterns of muscular activation required for appropriate extension, minimizing their risk of injury.

5.3.5 Integrated and Full-Body Muscle Engagement:

Pilates and Bharatanatyam dance movements both incorporate full-body muscle actions, including lengthening, contracting, and full range of motion. As a result, Pilates exercises allow Bharatanatyam dancers to focus on alignment and muscular sensations while strengthening and stretching.

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1. (Massey, 2009, p.12). Massey, P. (2009). The anatomy of Pilates. Berkeley, CA: North Atlantic Books.
2. (Siler 21). Siler, B. (2000). The Pilates body. New York, NY: Broadway Books

5.3.6 Injury Rehabilitation:

Pilates is especially popular among dancers for injury rehabilitation due to these kinesthetic parallels. Pilates' emphasis on good alignment, "total integration of the body," and strength training through a full range of motion, as well as its ability to replicate dance moves with resistance control, making it unique. “Ideally suited to use with dancers in the rehabilitation of an isolated joint”[1]

Given the evidence that Pilates can benefit Bharatanatyam dancing technique in a variety of ways. It is essential to introduce Pilates exercises gradually to Bharatanatyam students in order to help them identify their centers, concentrate their minds, improve their warm-up, and clearly tie Pilates exercises to the core Bharatanatyam motions. “As physiotherapist I will always choose Pilates over Yoga, yoga has fantastic aspects but strength training component is much higher in Pilates then Yoga.”[2]

5.4 Injuries and its rehabilitation through Pilates exercise- Body part wise for Bharatanatyam dancers:

It should be noted that the information given below is by the physiotherapists, intended to be general for patients with the associated diagnoses. However, because each person is different and has different issues, it is important to assess each client individually and choose the appropriate modification. Exercises should not be included in the programme if the client lacks the strength, flexibility, or control to perform them correctly. Examples of diagnoses are provided merely as a guide for Bharatanatyam dancers to understand the therapeutic benefits of Pilates exercise.

5.4.1 The Neck:

Neck pain is extremely common in Bharatanatyam dancers and can be caused by a variety of factors, including continue being in one postures, minor falls or accidents, referred pain from upper back injuries, overuse, and stress or tension. Two-thirds of all dancers will experience neck discomfort at some point in their careers, according to research, and neck pain is the second most common disorder leading in injury and disability claims. Pilates is helpful for neck injuries and cervical disorders due to the emphasis on good posture, correct breathing, and muscle extension.

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1 (Loosli, A.R., & Herold, D. (1992). Knee rehabilitation for dancers using a Pilates-based technique. Kinesiology and Medicine for Dance 14(2), 1-12.) (Loosli, 1992, p.1, 10-11).

2. Surjeet Chakraborty, 8-3-2022, Interview, Zoom meeting

In diagnoses of-Cervical Disk Pathologies, Cervical or thoracic Osteoarthritis, Cervical Stenosis, Thoracic Outlet Syndrome, Whiplash Injury, Osteoporosis one can practice Pilates exercise like Single leg lifts, Spine twist, Single leg stretch, swimming, Pelvic curl, Chest lift, Single leg, supine spine twist, hundred.[1]

5.4.2 The Spine:

Lower back pain is both unpleasant and costly. It may occur in Bharatanatyam dancers because of a lack of muscle awareness or an accident during performance or practice. Some dancers may feel less discomfort after an injury because they are already doing cross training activities and their lower back muscles are stronger.

In diagnoses- like Lumbosacral Osteoarthritis, Lumber Stenosis, Spondylolisthesis, Lumbosacral Facet Joint Syndrome, Postural syndrome Sciatica, Sacroiliac joint dysfunction- the common problem is, pain in low back and buttock, area and often referred to groin or posterior thigh, pain aggravated by unilateral weight bearing, Lumbosacral instability, tight hamstrings, hip flexors, or piriformis, weak gluteal muscles one may practice Pilates exercise like Pelvic curl, Single leg lifts, Spine twist, chest lift, single leg stretch, front support, leg pull front, side bend.

5.4.3 The Shoulder:

The shoulder is the most frequently used portion in Bharatanatyam. Dancers' hands are regularly moved upward, behind, downward, and sideways. It is likely that over-practicing will result in shoulder injury. Other connected parts, such as neck and back injuries, may produce shoulder pain.

In diagnoses like- Impingement syndrome, bursitis, and tendinitis, Rotator cuff injury, Frozen shoulder, Shoulder Labral tear one may practice Pelvic curl, single leg lifts, spine twist, chest lift, hundred prep, Single-leg stretch, side bend etc.

5.4.4 The Hip:

Hip bears the most load of the body and it has the strongest ligament and largest joint. It supports the weight of the head, arms, and body. To perform daily activities maintaining adequate hip range of motion is essential. Although in Bharatanatyam dancers hip injuries are less frequent than knee or lumbar spine injuries. Hip dysfunction or weakness frequently contributes to or even causes issues in other areas. Study says that hip replacements will increase by 174% by the year 2030. However, the majority of experts concur that low-impact

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1. Wood, Samantha., Pilates for rehabilitation- recover from injury and optimize function, Pg no. 223-228

therapeutic exercise like Pilates is very effective in reducing pain and delaying the need for hip replacements.

In diagnoses like- Hip joint replacement, Hip Osteoarthritis, Hip bursitis, Piriformis Syndrome, Hip flexor Injury, Hip Labral Injury Pilates exercise like Pelvic curl, spine twist, chest lift, Hundred, Swimming, Single leg stretch, Shoulder bridge, Side bend are useful.

5.4.5 The knee:

The most common injury in Bharatanatyam dancers are knee injury. Bharatanatyam dancers are tend to put their weight either on their knee or ancle, this may cause injury. This happens because of lack of muscle awareness. To avoid knee injuries, pelvic muscles, trunk and hip muscles should strengthened. The researcher believe that Pilates is the best type of exercise for people with knee pathologies because all Pilates exercises incorporate pelvic, trunk, and hip control.

In diagnosis like- knee osteoarthritis, knee joint replacement, meniscal injury, anterior cruciate ligament injury (ACL), Patellofemoral pain syndrome, Iliotibial band syndrome, Patellar tendinopathy, Pilates mat exercise like Pelvic curl, hundred, single leg stretch, leg pull front, side bend, swimming, shoulder bridge can help.

5.4.6 The Ankle:

Overuse or trauma from high-impact sports such as dancing, running, jumping, and cutting cause the majority of foot and ankle injuries. As a result, the Pilates approach is an excellent therapeutic exercise for maintaining overall strength and fitness while the foot and ankle heal in the early phases of foot and ankle rehab. In her work titled "Use of Pilates in Foot and Ankle Rehabilitation," physical therapist Deborah Cozen (2001) says that integrating Pilates in the rehabilitation program will considerably improve a patient's healing process. She describes Pilates as a functional kind of exercise since it combines various planes of movement and encourages muscular balance between opposing muscles and the right and left sides of the body. Adequate ankle strength and mobility are obviously required for people to be able to dance, run, leap, and cut, but they are also required for simple daily activities such as walking, balancing on one foot, and getting up and down from a chair.

In diagnoses like-ankle ligament injury (ankle sprain), Achilles tendinopathy, shin splints, plantar fasciitis Pilates exercise like pelvic curl, leg pull front, shoulder bridge are useful.

5.5 Examples of rehabilitation through Pilates exercise:

5.5.1 Case studies done by physiotherapists:

Case-1

Background: Pilates is an exercise program that emphasizes breathing, stretching, and controlled movement. Today, Pilates is favored for both physical fitness and rehabilitation program. The effectiveness of Pilates as a rehabilitation tool for a variety of conditions in an adult population is reviewed in this paper in the literature.

Methods: A systematic review of the literature was conducted in accordance with PRISMA recommendations. Cohort studies and randomised controlled trials (RCTs) were sought out using electronic databases, and inclusion and exclusion criteria were used. Utilizing the PEDro and CONSORT 2010 checklists, the final RCTs were evaluated.

Results: The inclusion criteria were met by twenty-three studies that were published between 2005 and 2016. These papers evaluated the effectiveness of Pilates in the treatment of chronic neck pain, postmenopausal osteoporosis, non-structural scoliosis, multiple sclerosis, low back pain, and ankylosing spondylitis. Pilates was found in 19 studies to be more effective than the comparison or control group at reducing pain and disability levels. The quality of the papers varied when evaluated using the CONSORT and PED ro scales, with more papers falling toward the higher end of the scale.

Conclusion:

Pilates has been found to be effective in achieving desired outcomes in the majority of clinical trials conducted in the last five years into its use as a rehabilitation tool, particularly in the area of reducing pain and disability. It highlights the need for more research in these many areas, particularly on the advantages of specific Pilates exercises for the treatment of particular conditions.[1]

The researcher might conclude from the above case study that Pilates exercises are becoming more popular in rehabilitation, and their popularity is growing as people see positive results. Therapeutic Pilates exercises are extremely beneficial, and when done by Bharatanatyam dancers, they can aid in the rehabilitation of any injury, eliminating the need to leave the profession.

Case-2

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1. Byrnes Keira, Ping-Jung Wu Stephney Willier, Is Pilates an effective rehabilitation tool? A systematic review

Orthopaedic (chronic/Acute) Disease- Chronic Lumbar syndrome

Patient Example

Case History

Mr. M. has been complaining about back pain for more than 4 years. He is a chemist who is 52 years old and plays sports (swimming once in a week). His symptoms didn't begin right away and got worse with continuous standing and sitting; they weren't brought on by overloading. Mr. M. has experienced recurrent "low back pain" episodes, which have become more frequent over the past year.

Findings

Presents with a generally back flat and a slight pelvic tilt when standing. Extremely lengthened knees, external rotation of the feet, and extended legs. Forward bending causes a significant weight shift to the heels and a significant flexion of the middle and lower lumbar spine. Mr. M. claims that his lower back is slightly pulling. The distance between fingers and the floor is 3 cm.

The Laségue straight leg lift test, commonly known as the Safety Test, which screens for nerve irritation, demonstrates no disc involvement or any significant disease. Muscle testing and the Pilates screening reveal weak abdominal muscles, substantial contractures in the hip and pelvic region, and poor lumbar spine segmental stability.

Therapeutic Pilates Exercise Program:

Mr. M. is currently in the subacute period (phase II), preparing to enter the recovery stage (phase III). As a result, the Pilates movements used should be active/assistive in nature, with an emphasis on moving the lumbar spine and including axial elongation and dissociation to alleviate stress on the lumbar region. Furthermore, trunk strength should be increased, particularly in areas of segmental instability, and hip/pelvic area range of motion should be increased.

Mat exercises:

1. The Hundred
2. The Single leg stretch
3. The Bridge
4. The Dart
5. The Assisted roll up

Results:

For a period of six weeks, the aforementioned Pilates routine was practised twice a week. After that, Mr. M. continued his home mat training with proper progressions and began attending a weekly Pilates group session. Mr. M.'s back pain decreased as a result of improvements in segmental articulation and dynamic stability, as well as changes in his posture and everyday activities.

Case 3:

Impingement syndrome:

Patient Example

Case History

42-year-old Mr. S is the owner of an insurance company. He has been complaining for a number of months about right shoulder pain, which is made worse by prolonged side lying and overhead movements. Mr. S. plays tennis occasionally and jogs twice per week.

Previous Therapy: Mr. S's doctor discovered a subacromial impingement and a minor supraspinatus tendon inflammation. He was given a cortisone injection and told to take anti-inflammatory drugs as needed.

Findings

Mr. S. is a little overweight and has a thoracic kyphosis when he stands.

A painful arc of flexion between 80° and 120° is revealed by active movement analysis. The range of motion is completed when the shoulder is elevated to 170 degrees. Both shoulders have extension.

Therapeutic Pilates Program

The thoracic spine is the structure that supports the shoulder. The anatomy of this region is important because it influences how the glenohumeral joint operates mechanically. To accurately align the joint surfaces in the plane of movement, adequate thoracic extension is necessary during bilateral arm elevation and unilateral rotation during single arm movements. It is critical that the shoulder girdle muscular system has balanced strength relationships. Breathing and breathing-related motions can have a substantial impact on the shoulder region.

Taking these functional linkages (as well as the limits of the subacute period (Phase II) of rehabilitation) into mind, the Therapeutic Pilates Programme concentrates on thoracic spine mobility and shoulder joint stabilisation exercises. Following successful dynamic stabilisation over restricted motion ranges, more difficult activities can be added.

Mat exercises:

1. Dart Swimming

Result

After 8 weeks of manual massage treatment for the shoulder and functional taping for support, Mr. S. was able to move the unweighted arm pain-free. It took another 6 weeks for him to be able to perform exercises while playing sports with his arm moving practically painlessly. He used the Pilates foam roller for corrective stretches on a regular basis and supplemented his other physical pursuits with Pilates sessions on occasion.

Case 4

Neurology (Peripheral/Central)

Condition Following Discectomy with Partial Paralysis

Patient Example

Case History

Mrs. P had microsurgery five weeks ago to remove a sequestrum that had been partially paralysing her right calf muscle for several weeks. She is a 46-year-old business consultant who enjoys competitive sports but currently suffers from moderate back discomfort when stressed. However, due to her partial paralysis, she struggles to walk swiftly upstairs.

Previous Therapy:

Exercises for isometric stabilisation dominated postoperative physical therapy. She also received electrotherapy for muscle stimulation.

Findings

Mrs. P has a sway-back posture when standing. Her right side has been freed. She is unable to complete a heel rise while standing on her right foot. Active rehabilitation is recommended for up to three months after surgery, according to medical standards. Mrs. P. should avoid active flexion for the first three months after surgery and should not sit for more than 15 minutes at a time. Mrs. P. want to complete her therapy at our facility and include Pilates training into her routine.

Therapeutic Pilates Program

Mrs. P. is currently at the subacute (Phase II) stage. In accordance with medical guidance, training focuses on back stability and right leg strength. Mobilisation exercises at the location of the operation must be avoided while surrounding vertebral segments are mobilised to prevent mobility impairments in the thoracic spine due to lumbar spine difficulties.

Exercises

Pilates Mat exercises:

1. The Dead Bug
2. The Side-lying
3. The Dart
4. The Leg Pull Front

Result:

The programme was followed twice or three times per week, with ever more stringent restrictions. Mrs. P's right leg had regained 80% of its former strength after three months, and she was starting to feel better. She planned to begin swimming lessons and continue her once-weekly Pilates routine in either private or group reformer courses.

Case-5

Multiple Sclerosis

Patient Example

Case Analysis Mrs. W., 51, was diagnosed with multiple sclerosis four years ago. The illness's evolution follows a devious pattern. Mrs. W. complains of a shaky walk, weakness throughout her body, particularly on her left side, and feeling shaky when climbing stairs.

Previous treatment

Mrs. W. has so far participated in an inpatient rehab programme. She sees a neurologist and a physician who specialises in holistic medicine for her treatment, and she goes to physiotherapy (PNF/Vojta) once a week.

Findings

When standing, the tone on the left side of the trunk and shoulder is slightly lessened, and she favours that side. As she takes a stride forward while still standing, her weight shifts heavily to the left. A walk. Her movement is unpredictable, and the length of her steps is unequal. According to a modified fitness test, less strength is noted on the left side of the body, particularly in the hamstrings. There is significantly reduced trunk stability.

Therapeutic Pilates Program

Pilates exercise requires specialised training and experience to support those with neurological diseases. The therapeutic emphasis places a strong emphasis on the body parts that are still largely unaffected by Multiple Sclerosis because the disease is brought on by damage to the central nervous system, which is only marginally impacted by conventional training methods.

It is important to avoid adding to your existing exhaustion, disappointment, or frustration while practising Pilates.

The closed kinetic chain is frequently the best place to start when stimulating and stabilising the trunk muscles and connections to the extremities, with a focus on the functional muscle chains.

Warning

When dealing with multiple sclerosis patients, stay away from exhaustion and frustration!

Exercise

Pilates Mat exercises:

1. The Chest Lift
2. The Bridging
3. The Side-lying
4. The Dart
5. The Possibly Roll Down
6. The Standing into Push Up

Result:

Due to the prognosis of the disease, expectations must be adjusted from the beginning. The maintenance of function and stabilisation of the mind and body are of utmost importance. Mrs. W continues to practise Pilates once a week and is happy with the physical improvements made possible by this particular training approach.[1]

Case-6

Other medical conditions:

Oncological issues:

Pilates education can be a very beneficial tool for cancer patients, especially if exercise can reinforce a good body image. The guiding principle of the Pilates technique encourages the development of both the mental ('mind') and exterior ('body') elements of wellness. A lot of studies support the favourable impacts of physical activity and sports in general (Dr. Freerk Baumann, Sporthochschule Köln, http://innerel.uk-koeln.de/forschung/ag-sportonkologie). This is especially true in Pilates training, which emphasizes developing the entire person as well as the entire body throughout the training process.

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1. Geweniger,V and A. Bohlander, Pilates- A teacher's manual, Pg No.-266 to 271

While group training concepts have recently been developed in consultation with oncologists in order to assist those suffering from oncological diseases in stabilising their bodies and health, positive findings and experiences have recently been associated primarily with individual training. [1]

The researcher wants to make Bharatanatyam dancers aware of the seriousness of Pilates exercise, its application in medically proven injuries, and successful rehabilitation through it. This way, they will take it seriously, begin practising it, and be able to prevent and recover from injuries. The researcher can infer from the case studies mentioned above that Pilates exercises are popular in rehabilitation and that this popularity is increasing as individuals become more aware of the benefits. When Bharatanatyam dancers perform therapeutic Pilates exercises, they can help with the recovery of any injury, preventing the need to leave the profession.

5.5.2 Personal experience:

The researcher was injured in an accident while obtaining an M.A in Bharatanatyam. The injury was to the shoulder, which caused the hand to be immobile. After visiting a physiotherapist and receiving correct treatment, the researcher's injury was gone but the pain remained. Later, the researcher joined a Pilates exercise class where shoulder muscles were strengthened and there is no pain in the shoulder. After that, the researcher decided to undertake a study because the researcher felt that Bharatanatyam dancers needed something strong as well as graceful like Pilates exercises, in their routine.

5.5.3 Cases shared by dancers in Interview:

Bharatanatyam dancer Shri Pavitra Bhatt ji revealed that he had a 1-foot-long rod in his legs with screws and 4 plates inside the face, his hip was not properly aligned, and his jaw was dislocated, but that with great effort, good rehabilitation, and perseverance, he is now a well-known Bharatanatyam dancer. Shivangee Vikram ji, a Bharatanatyam dancer, said that she suffered a grade 2 meniscal injury in her knee and recovered, but she continued to strengthen her knee to avoid further injury. Strength training, according to her, should be systematic and scientific. Manali Natali, a Bharatanatyam dancer, also revealed that after her pregnancy, she was unable to dance properly due to her heavy physique and lack of flexibility. She started doing exercise and strength training and now she can perform better.

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1. Geweniger,V and A. Bohlander, Pilates- A teacher's manual, Pg No.-266 to 271

5.6 Conclusion:

In this chapter, the researcher explained therapeutic value of Pilates exercise. The research studies discussed in this chapter show that Pilates is effective at treating injuries. Studies like these significantly contribute to the body of evidence supporting the use of Pilates for Bharatanatyam dancers. This chapter explains why Pilates is so effective for rehabilitating and healing injuries and can be used by the Bharatanatyam dancer to improve performance, providing safe and effective cross-training, raising overall fitness levels and extend careers. We can infer from the research, the case studies conducted by physiotherapists, and the examples provided above that Bharatanatyam dancers should adopt Pilates exercise, practice it, and benefit from it.

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