Pilates for Kyphosis
A BASI Pilates program designed to help correct thoracic kyphosis

Lucy Penrose
19/01/2014
Wimbledon UK, April 2013
Abstract

Kyphosis refers to an exaggerated curve in the thoracic region of the spine. A kyphotic posture can give someone a hunched over and round shouldered look, and is fairly common among adults who spend the majority of their time sitting at desks. This paper gives details of a case study that explores the effects of the BASI Pilates method on a kyphotic posture. It will conclude that with regular Pilates sessions, the muscular imbalances that cause Kyphosis can be addressed, and the posture improved.
# Table of contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title page</td>
<td>1</td>
</tr>
<tr>
<td>Abstract</td>
<td>2</td>
</tr>
<tr>
<td>Table of contents</td>
<td>3</td>
</tr>
<tr>
<td>Anatomy</td>
<td>4</td>
</tr>
<tr>
<td>Introduction</td>
<td>7</td>
</tr>
<tr>
<td>Case study</td>
<td>7</td>
</tr>
<tr>
<td>Conditioning programme</td>
<td>8</td>
</tr>
<tr>
<td>Conclusion</td>
<td>12</td>
</tr>
<tr>
<td>Bibliography</td>
<td>13</td>
</tr>
</tbody>
</table>
Anatomy

The spine is made up of seven cervical vertebrae, twelve thoracic vertebrae, five lumbar vertebrae, the sacrum, (consisting of five fused vertebrae), and the coccyx, (a triangular bone consisting of three to five fused vertebrae).

![Diagram of the spine]

A healthy spine has several distinct curves when viewed from the side. The lumbar and cervical regions are concave to the back, while the sacrum and the thoracic region are concave to the front.

---

1 Clippinger and Isacowitz, Pilates Anatomy (Human Kinetics, 2011), p. 11
The term Kyphosis refers to an exaggerated curvature in the thoracic region of the spine.

The muscles that extend the spine can be divided into three groups: the erector spinae, semispinalis and deep posterior group. In a kyphotic posture the muscles that extend the thoracic region of the spine, in particular the semispinalis, are weak.

---

2 Clippinger and Isacowitz, p. 22
3 Clippinger and Isacowitz, p. 15
The pectoral muscles that protract the shoulder girdle are shortened and tight,

while the trapezius and rhomboid muscles that retract the shoulder girdle are lengthened and weak.

---

4 Clippinger and Isacowitz, p. 38
5 Clippinger and Isacowitz, p.38
Introduction

Thoracic Kyphosis is a fairly common problem in society today. Characterised by a hunched over look, it is often accompanied by rounded shoulders and a forward head. The cause can be either structural or postural. In most cases, Kyphosis is a postural deviation resulting from increasingly sedentary and desk bound lifestyles. Many adults spend the majority of their day sitting hunched forward for prolonged periods of time, causing the thoracic extensors to become weak and the pectoral muscles to become tight and inflexible. This can lead to pain and tension in the upper back and shoulder region. A Pilates conditioning programme can be used to teach correct alignment and correct muscular imbalance, improving posture and alleviating painful symptoms. Below is a case study carried out in order to look more closely at the effects of Pilates on postural Kyphosis.

Case Study

Name: Anna

Age: 25

Sex: Female

Lifestyle: Anna is a writer and an illustrator and spends the majority of her working day hunched forward at her desk. She has fairly high cardiovascular fitness as she cycles every day and plays football twice a week. She has practiced Pilates infrequently for the past two years. She complains of shoulder and neck pain and tension and has occasional massages to relieve symptoms.
Limitations and goals:

- Anna has a kyphotic curve in her thoracic spine so she needs to be taught correct alignment. Her spinal extensors are weak and lengthened so she needs to work to strengthen them.
- Conversely, her pectoral muscles of the chest are short and tight as are her intercostal muscles, so she needs to stretch them and to increase thoracic flexibility.
- Her shoulders tend to round forward so she needs to strengthen her scapular stabilizers, (mid and lower trapezius, rhomboids, and serratus anterior).
- Anna complains of tension in her upper back and shoulders so needs to lengthen and stretch her overactive upper trapezius and levator scapulae.
- She has tight and overactive hip flexors so she needs to stretch them and strengthen her abdominals.
- Stronger abdominals will also help bring her pelvis into neutral as she is slightly lordotic in the lumbar region of her spine.

 Conditioning program

Anna has an intermediate knowledge of Pilates but practices infrequently. She agreed to attend two one hour sessions of Pilates a week for a period of five weeks. Below is the plan of her first session. Although the main focus for Anna is correcting her Kyphosis and muscular imbalances, her conditioning programme has been designed utilizing the BASI Block system. This means that the concept of the ‘whole’ will not be compromised and each session will provide Anna with a balanced work out. In addition, Anna has agreed to carry the Pilates principals in to her everyday life and will make an effort to take regular breaks from sitting, and attempt to sit up tall instead of slouching at her desk.
WARM UP

Mat
Roll down  Chest lift
Pelvic curl  Chest lift with rotation
Spine twist supine  Leg lifts/leg changes

We start with the roll down to focus mind and body, to coordinate breath and movement, and for Anna to particularly focus on correct alignment of her spine. Engaging lateral breathing will stretch the intercostals and encourage thoracic mobility.

FOOTWORK

Reformer
Parallel Heels  Calf raises
Parallel Toes  Prances
V position toes  Prehensile
Open V Heels  Single leg heels
Open V Toes  Single leg toes

Lying supine will support Anna’s spine and align head and neck. I will cue to maintain a neutral pelvis throughout.

ABDOMINALS

Step Barrel
Reach
Overhead Stretch

While the muscle focus here is abdominals, these exercises have the added benefit for Anna of shoulder and thoracic stretch.

Reformer
Round back
Flat back
Tilt
Twist

This series strengthens the abdominals and engages the back extensors while avoiding excessive flexion.
HIP WORK

Cadillac
Frog
Circles down
Circles up
Walking
Bicycles

This series will strengthen Anna’s adductors and hamstrings with a strong focus on pelvic stability.

SPINAL ARTICULATION

Reformer
Bottom lift
Bottom lift with extensions

These exercises will strengthen Anna’s abdominals and hamstrings and introduce spinal articulation without excessive forward flexion.

STRETCHES

Reformer
Kneeling lunge

This will give Anna both the hip flexor and hamstring stretch that she needs. I will cue her to keep her back extensors engaged when straightening her front leg and lowering her trunk.

The Pole
Shoulder stretch
Overhead stretch

These exercises will provide Anna with the shoulder and chest stretch that she needs, while improving scapular stabilization with a particular focus on the trapezius.

FULL BODY INTEGRATION

Reformer
Up stretch 1
Down stretch

Up stretch 1 will encourage back extensor and abdominal strength, both so important for Anna. It will also give her a hamstring and shoulder stretch, while allowing her to practice shoulder stabilization. Down stretch necessitates contraction of back, hip and shoulder extensors throughout.
ARM WORK

Reformer
Extension
Adduction
Up Circles
Down Circles
Triceps

The arms supine series will enable Anna to strengthen and increase the mobility of the shoulders with a supported spine.

LEG WORK

Wunda chair
Leg press standing

The muscle focus is hamstrings, encouraging a balance between Anna’s overactive quadriceps and hamstrings. She will have to engage her back extensors and abdominals in order to stand up tall, and stay balanced.

Reformer
Single leg skating

With a strong focus on pelvic lumbar stabilization, this exercise will strengthen the gluteus medius.

LATERAL FLEXION/ROTATION

Ladder barrel
Side overs

This exercise will engage Anna’s back extensors, and strengthen her abdominals with a heavy focus on the obliques.

Reformer
Mermaid

The mermaid will develop Anna’s spinal mobility, elongation of the spine and scapular stabilization.

BACK EXTENSION

Step Barrel

Swan prep

Swan prep will enable Anna to focus entirely on learning to engage and use her back extensors. Progressing to Swan when ready will develop abdominal and hip extensor strength too.
Conclusion

After ten regular sessions Anna has already felt the benefits of the BASI Pilates method. She no longer has to be cued as much for spinal and pelvic placement as she has become aware of correct alignment. She has gained a little more flexibility across the chest and her shoulders are becoming more mobile. Anna’s back extensors are getting stronger and she has become aware of using them while sitting at her desk. She has gained and a little more flexibility in the thoracic region of her spine. Through the use of the Pilates conditioning program based on the BASI block system, Anna has started to address the muscular imbalances of her body. Her posture has improved, and she feels less tension in her neck and shoulders. Anna is now fully committed to correcting her posture, and plans to continue on her path towards a balanced body using the Pilates method.
Bibliography


Keane, S. *Pilates for Core Strength*, (Greenwich Editions, 2005).


Peterson, J. *Teaching Pilates for Postural faults, Illness and Injury*, (Elsevier Ltd, 2009).


http://www.pilatesinteractive.com/


http://thepilateshundred.blogspot.co.uk/2011/04/posture-201-kyphosis.html