

Pilates to Improve the Game for Professional Basketball Players

Caitlin Diebler

May 13, 2018

Istanbul, Turkey CTCC

Abstract

Out of all the professional sports, basketball players could top the list of the world's most elite athletes. The game of basketball demands players to be both highly skilled in their craft and natural born athletes. Explosive vertical leaps, quick lateral movements, urgent acceleration, and drop of a dime deceleration are only a few maneuvers made by each player as they step onto the court. Core strength and stability, flexibility, balance and body awareness can make a basketball player's movements more efficient, effective and decrease their risk of injury. Pilates serves as the most beneficial holistic conditioning for these top-tier athletes.

Table of Contents

Title Page 1

Abstract 2

Table of Contents 3

Introduction and Case Study 4

Anatomical Description 9

Repertoire 10

Reasoning 12

Conclusion 14

Bibliography 15

Introduction

Professional basketball is a highly intense, fast-paced game that is both physically and mentally demanding. **Balance** and **core stability** are needed to make a basketball player's quick, lateral movements safe and smooth. **Flexibility** is key to injury prevention and ensures that optimal mobility of the athlete is maintained. Joints are highly taxed in this fierce competition, so **body awareness** and control are needed.

This paper and program will highlight specific aspects of Pilates conditioning that are beneficial to a professional basketball player. They include but are not limited to, **core strength** and **stability, balance, flexibility** and **body awareness**.

The Core

Core training is a trendy term used widely in the physical conditioning world, but it is more than just strength training the powerhouse. The core is the connecting chain of the body. It integrates the trunk, spine, pelvis, shoulder girdle and in turn, the body's limbs. The core is responsible for supporting and protecting the spine, stabilizing and balancing the body, and this strength depends on much more than rectus abdominus strength. Core strength is developed by strong abdominal muscles and strong back muscles. "A balance between spinal flexors, spinal extensors, rotators and lateral flexors is the goal." *Basi Study Guide pg. 52*

Mainstream abdominal exercises are commonly performed in spinal flexion. Core exercises done in flexion focus on the rectus abdominus. The rectus abdominus is the famous

abdominal muscle for creating the “six pack” look but actually has little function in the core’s stability. In terms of stabilization of the trunk, the deepest abdominal muscle, the transverse abdominus, is the most important followed by the multifidus. Without correct stabilization there cannot be efficient movement, and efficient movement patterns decrease likelihood of injuries. “Core stability can be thought of as the ability to keep the pelvis and spine in the desired position while moving the limbs or the whole body through space without undesired distortions or compensations.” *Pilates Anatomy pg. 27*

Core strength is directly correlated to an athlete’s ability to transfer force to their limbs. Strength that comes from the body’s stabilizers as opposed to extremity strength give the athlete more control of their body, which in turn heightens the player’s awareness of where they are in space. In competition, the athlete may be required to instantly decelerate from maximum speed. A deeper awareness of their hips, knees, ankle and feet decreases chances of injury. “When the body is equipped with good core strength, movement is more efficient, and the body is better protected against injury.” *Basi Study Guide pg. 51*

The game of basketball inevitably includes forceful landings with a great deal of stress to the spine. Core training results in good posture and ideal alignment of the spine and they are detrimental to its protection and the ability for the rest of the body to function by design. “Good alignment translates into less stress on the spine and more economical muscular activity.” *Basi Study Guide pg. 41*

The goal is to use Pilates to improve core strength and core stability and to encourage more activation from the powerhouse during movements, in turn, taking stress and strain off of extremities. Co-contraction of the muscles that support the spine unloads the hips, knees and ankle joints and gives better control and efficiency in their game pattern movements, balance and agility. Core strength and stability will benefit the athlete's shooting, passing, rebounding and defending. "If the powerhouse, (or core), is being used appropriately, the limbs should be able to move in a more coordinated manner." *Pilates Anatomy pg. 27*

Balance

"Balance refers to the neuromuscular skill of being able to maintain one's center of mass over the base of support." *Basi Study Guide pg. 67* Good balance is essential for a professional basketball player. By nature, the sport demands an abundance of movements that challenge balance. Perimeter defense, contested shots, unexpected twists under the basket, and unanticipated landings coming down from the board – all of which must be quick and in limited space.

Basketball players typically favor one side when driving to the basket or shooting the ball. These habitual movement patterns of preferring one side often cause muscular imbalances in the body. Muscle imbalances, particularly those of the core, contribute to postural deviations. Other muscular imbalances and asymmetries throughout the body can cause strain onto joints, muscles, tendons and ligaments. The amount of strength or flexibility the athlete has is not as important as the relationship between the two. An equal ratio of strength and flexibility plays a

large role in a well-functioning and injury free body. Pilates is an invaluable conditioning tool for a professional basketball player.

Flexibility

The term balance can also be used to define a harmonious relationship between two counterparts. A balance between strength and flexibility may be the most important facet of injury prevention. Professional basketball players are explosive athletes whose sport develops strength in large, fast twitch muscle groups. Flexibility is a necessary component for agile muscle movements. When muscles and joints are able to work in their full range of motion, correct recruitment is available. Inflexibility of a muscle or joint is inflexible may cause the body to defer from natural alignment or even call upon different muscles to accomplish the movement. This incorrect muscle recruitment and poor alignment will eventually lead to overuse, overstress and injury.

Body Awareness

“Pilates should improve awareness of body alignment as well as your ability to achieve the desired body alignment associated with a given movement or position.” *Pilates Anatomy* pg.

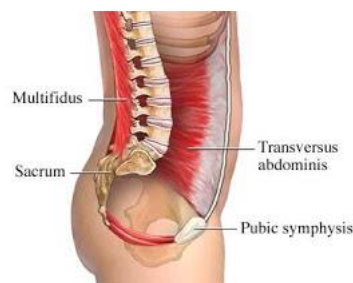
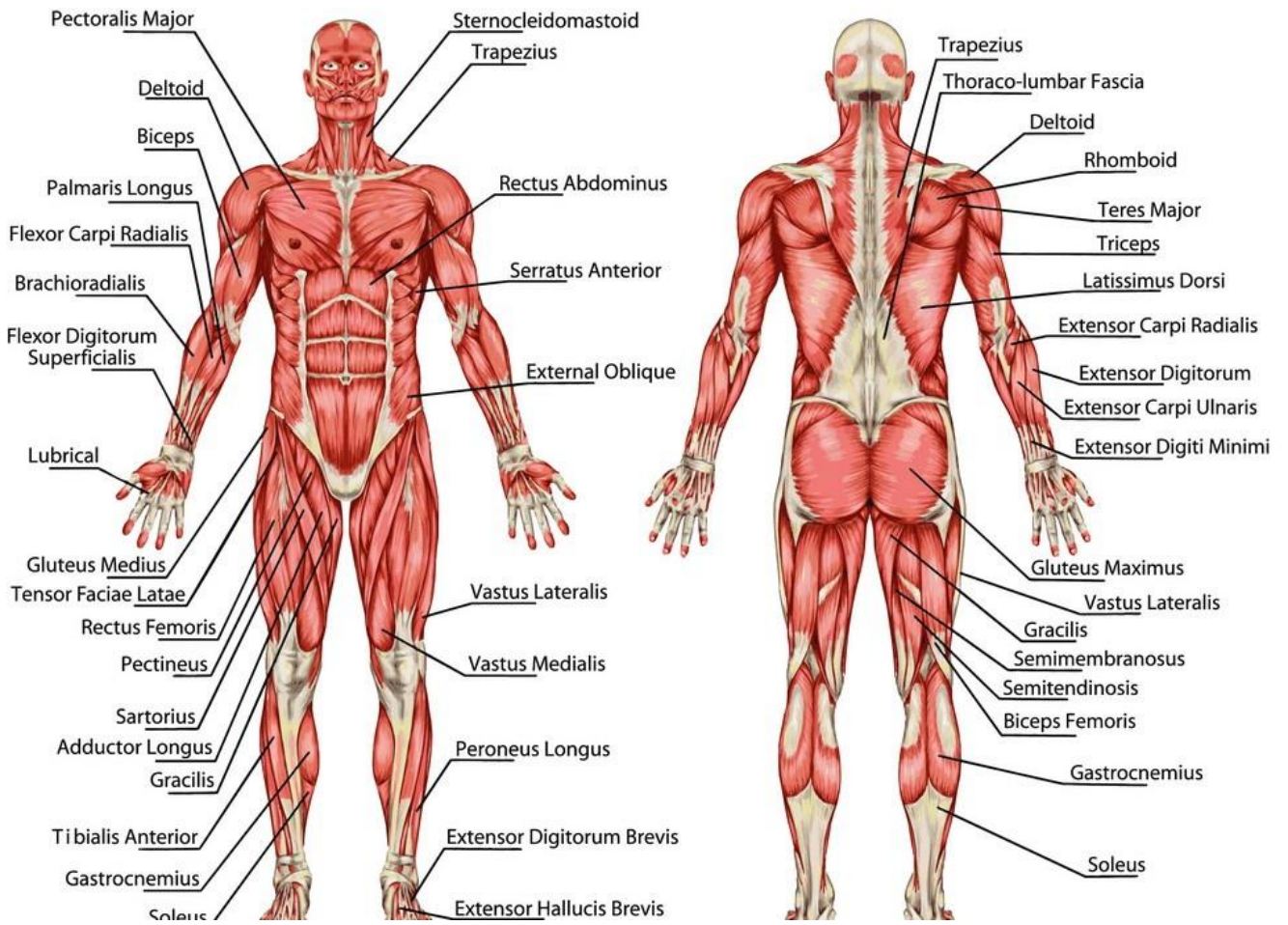
20

One of the highest goals for a Pilates Instructor should be to encourage a client to take the knowledge they have learned in the session into their lives. This is especially true for training a professional basketball player. “Research suggests that with repetitive activation of the desired

muscles in the appropriate manner, over time your body will automatically start utilizing these more optimal strategies”. *Pilates Anatomy pg.33* Proper alignment of the body (both static and dynamic alignment) is habitually practiced during a Pilates session and will hopefully translate to the athlete’s ability to be aware of their body and achieve proper dynamic alignment of the spine during competition.

Reinforcing the bond between the mind and muscles can help to make one aware of body alignment and improve the mind – body connection, which is a pillar of the Pilates practice.

“Pilates is not just exercise. Pilates is not just a random choice of particular movements. Pilates is a system of physical and mental conditioning that can enhance your physical strength, flexibility, and coordination as well as reduce stress, improve mental focus, and foster an improved sense of well-being.” *Pilates Anatomy pg. 10*



Basi Comprehensive Block System Program

<p>Warm Up Intermediate on Mat</p>	<ul style="list-style-type: none"> • Roll Up • Spine Twist Supine • Double Leg Stretch • Single Leg Stretch • Criss-Cross
<p>Footwork Performed on Cadillac</p>	<ul style="list-style-type: none"> • Parallel Heels • Parallel Toes • V Position Toes • Open V Heels • Open V Toes • Calf Raises • Single Leg Heel • Single Leg Toes
<p>Abdominal Work Performed on Cadillac</p>	<ul style="list-style-type: none"> • Mini Roll Ups • Mini Roll-Ups Oblique
<p>Hip Work Performed on Cadillac</p>	<p>Single Leg Supine Series</p> <ul style="list-style-type: none"> • Frog • Circles Down • Circles Up • Bicycle • Hip Extension
<p>Spinal Articulation Performed on Cadillac</p>	<ul style="list-style-type: none"> • Tower Prep
<p>Stretches</p>	<p>Pole Series</p> <ul style="list-style-type: none"> • Overhead Stretch • Shoulder Stretch • Side Stretch • Spine Twist <p>Avalon Step Barrel</p> <ul style="list-style-type: none"> • Kneeling Lunge
<p>Full Body Integration F/I Performed on Reformer</p>	<ul style="list-style-type: none"> • Down Stretch
<p>Arm Work Performed on Reformer</p>	<ul style="list-style-type: none"> • Rowing Back 1 • Rowing Back 2

Full Body Integration A/M Performed on Reformer	<ul style="list-style-type: none">• Balance Control Front
Leg Work Performed on Wunda Chair	<ul style="list-style-type: none">• Leg Press Standing
Lateral Flexion / Rotation Performed on Wunda Chair	<ul style="list-style-type: none">• Side Stretch
Back Extension Performed on Wunda Chair	<ul style="list-style-type: none">• Back Extension Single Arm• Swan on Floor

Reasoning

Private Pilates sessions with professional athletes are an Instructor's dream. Even more enjoyable than their physical capabilities, is their mental toughness. Elite athletes understand training their bodies is hard work, they are humble to listen to instruction from a coach or instructor and they enjoy a challenge. My client, Jon is no different. Jon is a thirty-year-old male professional basketball player. In the off season, he practices Pilates three times per week. This program encompasses various ranges of motion, the different planes of motion, large and small muscle groups, stabilization and mobilization, isometric, eccentric and concentric contractions, all within a stimulating but smooth flow.

Jon's Pilates sessions have resulted in strengthening his core, improving his balance, increasing his flexibility, developing awareness of his body with the goal of enhancing his athletic performance and preventing non-contact injury on the basketball court.

Warm Up Intermediate on Mat

Abdominal strength

Long lever movements with a challenge of pelvic stability and core strength

Spinal mobility and stability

Footwork on Cadillac

(Set up in reverse due to inflexibility), Hamstring stretch, Hamstring strength

Abdominal Work on Cadillac

Mini Roll Up

Mini Roll Up Obliques

Isometric flexion and concentric contraction of abdominals

Hip Work on Cadillac

Single Leg Supine Series

Challenge unilateral movements

Identify asymmetries

Increase range of motion in hip joint

Spinal Articulation on Cadillac

Tower Prep

Hamstring control and stretch

Articulation of the spine using abdominals

Stretches

Pole Series

Chest and shoulder stretch

Avalon Step Barrel

Hip flexor stretch, hamstring stretch

Full Body Integration 1 on Reformer

Down Stretch

Co-contraction of back extensors and abdominals

Arm Work on Reformer

Rowing Back 1

Rowing Back 2

Mind body challenge with choreography and coordination

Practice of core muscles stabilizing the body during extremity strength movements

Full Body Integration 2 on Reformer

Balance Control Front

Isometric hold of core while (shoulder joint) extremities are moved and challenged

Leg Work on Wunda Chair

Leg Press Standing

Balance

Lateral Flexion / Rotation on Wunda Chair

Side Stretch

Lateral Flexor strength and stretch

Back Extension on Wunda Chair

Back Extension Single Arm

Unilateral back extensor strength

Identify and correct asymmetries

Swan on Floor

Maintaining core engagement during movements of back extensors and should flexors

Conclusion

The overall goal of my program for Jon is to prolong his professional basketball career through enhancing his athletic performance and helping to prevent non-contact injuries in the game.

Awareness at all times, cat like **balance** for unanticipated movements, **breath** to endure the duration of the game, **concentration** to guard the opponent, **center** oneself under the basket for a rebound, **control** in passing to teammates, **efficiency** when shooting the basketball, **flow** to keep plays moving, **precision** to score points, and team **harmony**.

I believe Joseph Pilates' Ten Principles translate directly into the game of basketball and therefore make Pilates the ideal conditioning program for professional basketball players like Jon.

Bibliography

Books

Isacowitz, Rael. Study Guide Comprehensive Course. Body Arts and Science International. Costa Mesa, California. 2014

Isacowitz, Rael and Clippinger, Karen. Pilates Anatomy. Champaign, IL. 2011.

Calais-Germain, Blandine. Anatomy of Movement. Revised Edition. Seattle, WA. USA. 2013

Websites

<https://sportsfitnesshut.blogspot.com.tr/2012/08/how-to-do-core-stabilization-training.html#.WvcmSy97Hq0>

<https://giorgiافiorio.org/muscles-anatomy/muscles-anatomy-muscle-anatomy-quiz-human-anatomy-and-physiology/>