Train and Improve Your Posture, Strength and Flexibility

FASCIAL E RORK

Gunda Slomka

Foreword by Robert Schleip I Chapter on fascial stretching by Jürgen Freiwald MEYER & MEYER SPORT

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Writing a book is always challenging for one's personal life. It requires living with someone who is moody, doesn't leave her workplace for months at a time, and, even when physically present, has difficulty focusing on other topics because at least half of her thoughts are firmly fixed on the book project.

For this reason:

Thank you to my family for only rarely taking offense.

Thank you to my mother, who, as an inquisitive PE instructor, never tired of reading and correcting.

Thank you to my team members and friends, who cast a critical eye on all the chapters. Thank you to my unshakable graphic designer, who by now is so well versed in fascia that she could give lectures on the subject.

It is done!

This book has been very carefully prepared, but no responsibility is taken for the correctness of the information it contains. Neither the author nor the publisher can assume liability for any damages or injuries resulting from information contained in this book.

GUNDA SLOMKA

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FOREWORD

Welcome to the fascinating world of fascia

p until a few years ago, they were still considered the "stepchild" of tissues in medicine. In practical anatomy courses for doctors-to-be, they were immediately peeled away in order to be able to see other elements. We are talking about the muscle connective tissue, or the so-called *fascia*. Although in the past, it was viewed as packaging and filler material, much like the wrapping of a Christmas gift, more recent research shows that our fascial network plays an important role—in muscular force transmission, one's own body perception, and many types of soft-tissue pain, as well as in sports medicine, in the areas of flexibility, power, and energy efficiency.

Much like a bodysuit, this fibrous, collagenic connective tissue surrounds the entire body from head to toe with a thickness of 0.3 to 3 mm, depending on local stress levels. It is therefore most developed at the outside of the upper thigh (the so-called *iliotibial band*) and at the bottom of the foot. But rather than just enveloping us, this suit seamlessly transitions into countless sacs and septa inside every muscle, into the tubular sheaths

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of the bundles of nerves and vessels, as well as the internal organs. The modern point of view thus sees the fascial network as a tensile stress network that envelops, permeates, and interlinks the entire body, and whose orientation of collagen fibers is specialized based on local stress history.

Osteopaths, Rolfers, and some skilled yoga and martial arts experts have long known about the importance of fascia and developed—most often independently—effective methods to specifically affect this tissue. But what was missing was scientifically acceptable quantification. X-ray diagnosis for the exact measuring of bones has been available for decades, as well as so-called *electromyography* (EMG) for the measuring of muscles. But to explore the fascia one had to rely on the subjective stretch sensation of the user or the palpatory findings of the practitioner.

Thanks to new measuring methods, this regrettable state has significantly improved in recent years: Using highly sensitive ultrasound, today we are able to capture the thickness and mobility of a fascia to within a tenth of a millimeter. We are able to ascertain its strength, elasticity, and water content before and after athletic or therapeutic stimulation with portable equipment. And, using miniscule fascial tissue samples, we are able to take a close look at their biochemical matter and compare the results to the more-or-less-esoteric concepts of belief of osteopaths, Rolfers, yogis, and Eastern martial artists.

These are exciting times for fascia-inspired therapists and scientists such as myself. These days barely a month goes by that the international network of fascia researchers that sprung up seemingly overnight does not make scientific headlines with a new, sensational discovery about fascia. It is no wonder that fascia, the former "stepchild," is now also increasingly dragged into the limelight in the areas of fitness and exercise therapy.

This book is one of the first publications in this new area to be taken seriously. Dozens of me-too products will most certainly flood the market in the coming months and years, but presumably not with the same expertise and professional quality as this book.

Gunda Slomka recognized the importance of new findings regarding fascia early on and immersed herself with heart, brains, and dedication in the current international findings as one of the first experts from the German fitness scene. Together with our fascia

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research group at the University Ulm, Germany (fasciareserach.de), as well as the—in my opinion—leading fascial fitness association (fascial-fitness.de) in the area of content implementation, she has modified existing back exercises, gymnastics, dance, and yoga exercises in a fascinating manner in order to make it accessible to a wider public for the first time through this book.

Her background as a former sports scientist, her reputation as one of the most successful and well-known pioneers of the German fitness scene, her close collaboration with the German king of stretching Dr. Jürgen Freiwald, and last but not least her winning personality, convinced us to lend her our full support as a fully qualified proponent of fascial training.

I would therefore like to congratulate the reader for choosing this book. I would also like to add a well-intentioned and scientifically substantiated recommendation: In spite of all your enthusiasm, please approach your fascial training slowly and patiently. Collagen regenerates more slowly, but all the more sustainably, in reaction to athletic strain than do muscles or cardiovascular fitness.

Engage in fascial training the way you might manage a savings account: Many small deposits over a long period of time will allow you to transform your physical home from a brittle fiber structure into an elastic, springy tensional network over a period of 6 to 36 months.

A well-trained fascial network will then allow you to engage in greater physical exertion in the future with increased resilience and without injury. You will feel an increased excitement and sensuousness while dancing and running and will be able to perform many challenging everyday movements with youthful ease.

Another of Gunda Slomka's exciting projects is her previously released DVD on fascial training. As you watch, let her powerful yet supple elegance inspire you as it did me.

Dr. Robert Schleip

Director, Fascia Research Group, University Ulm, Germany Director of Research, European Rolfing Association

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Introduction

- II Fascia—where do they come from
- III Fascia—what exactly are they?
- IV Fascia in Motion
- V Summary
 - References
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1 INTRODUCTION

ascia! Rarely has an anatomical and physiological topic been the subject of such interest and enthusiasm, but also produced such polarization! For some it is new and exciting and has development potential. It motivates others to make statements such as: "I know all about it! I've been doing it for years." They feel validated about their knowledge and work. And there are still others who fight, condemn, and dismiss current research with a sardonic smile.

One thing is for sure: In recent years there has been an effort to reevaluate "old" questions regarding connective tissue *(fascia)* via new studies, new results, and new images.

Whether the resulting exercises are new or stem from the past does not matter at this point. Whether fascia-specific training is effective, makes us healthier, more resilient, faster, more flexible, and more energetic are important questions worth discussing, and they are answered in this book.

The target-group-specific implementation of theoretical knowledge is what motivated me personally to write this book.

The book contains five chapters.

Chapter I is a guide. It defines the five parts of the book. The chapters build on each other but can stand alone with regard to content. If you are not interested in the anatomical and physiological facts about the fascia, you can move on to the more practically oriented Chapter IV.

Chapter II takes you on a "fascial trip through time." For how long have people focused on the topic of fascia? What is the current state of knowledge? What is important and must be taken into consideration during exercise or training?

Chapter III offers an anatomical and physiological overview of the connective tissue and the body's fascial structures. It clarifies terminology; for example, what are *fascia* and what is *connective tissue*? Although different definitions exist, I would like to point out that I decided to use these two terms synonymously.

Chapter IV is dedicated to the topic "Fascia in Motion." After establishing the relevance to the body and its movements with the topic of posture, the movement concept is introduced, which is based on five pillars:

- **1.** Supply is everything
- 2. The renaissance of swinging and pulsing
- **3.** Fascial stretch
- 4. Fascial power
- 5. Sensory refinement

With an introduction to anatomy and physiology that ties in with Chapter III, the path moves from training theory to practical implementation.

Chapter V provides training tips, offers differentiation options, and lists contraindications.

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In all chapters you will find small highlighted boxes with content of particular importance:

Good to know!

A message box that repeats and emphasizes important statements.

Pay attention!

Here are pitfalls you want to avoid.

Did you know?

We take a moment for a brief, exciting digression.

This is how it's done!

This will make the movers among you happy. This box offers training tips for practice.

This book is a reference book for exercise instructors, trainers, and interested exercisers, particularly for application in fitness and exercise.

In this context the book periodically takes a look at physical therapy as well as competitive sports. But the more the movement and training practice shifts in one direction or another, the more individualization based on the person or type of sport becomes necessary.

However, I am certain that this book also contains interesting information for the physical therapist or athletic trainer.

My personal wish is that we all continue to use our knowledge of other physiological systems but give equal attention to the physiological and anatomical family consisting of muscles, nerves, vasculature, supporting tissue, joints, and fascia and understand them in a "familial" context. The fascia: an all-body tensional network, a "stepchild" of training theory.

This book belongs to the fascia!

I wish you lots of fun with:

THE FASCIAL NETWORK!

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CHAPTER II

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- II Fascia—where do they come from
 - and why do we need them'?
- III Fascia—what exactly are they?
- IV Fascia in Motion
- V Summary
 - References
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2 FASCIA—WHERE DO THEY COME FROM AND WHY DO WE NEED THEM?

• o address the trainability of fascia and its benefits, we first take a look at the beginnings of the sports science methodology.

2.1 "FASCIA? NEVER HEARD OF IT!"

In past years, when people asked about the trainability of fascia, they were often met with the response: "Fascia—what?"

Compared to many other sciences, exercise science (and sports anatomy and sports physiology) is a young discipline. Although professorships in sports at German universities increased in number and importance after WWII, centers for sports medicine that also conducted research in training science still had to develop.

Many of the findings that our current ideas about exercise are based on come from the 1970s or 1980s.

DID YOU KNOW?

Chronology of training focus in fitness and exercise as a function of sports science (extract):

- **1970s** Strength training was the focus of attention, as well as the training adaptations of different stimuli to the musculature.
- **1980s** Exploration of the cardiopulmonary system and the cardiovascular system's adaptations through training.
- **1990s** Many studies of flexibility training. Different stretching methods and their effects on the musculature were highlighted. Coordinative aspects also took on greater significance.
- **2000s** Stabilization and core stability were the buzzwords of the decade. The muscular system was classified on the one hand as part of the group of deep-set stabilizers, and on the other hand as part of the superficial mobilizing musculature.
- **2010s** Fascia capture the attention of trainers, therapists, and scientists through current research findings.

Although the connective tissue isn't in itself new, a significant amount of knowledge about it is. Many studies are still pending. A certain amount of new information is expected to emerge over the next few years and decades. Consider this book a kind of companion that is thought-provoking and whose contents will continue to evolve.

Training theory and the deduced implementation for practical use is based on anatomical and physiological facts. Anatomy means to dissect! Knowledge is derived from the dissection and dismantling of the body. The body is examined microscopically down to its smallest component; the musculature is dismantled all the way to the microfibrils,

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or a nerve is dissected to learn about its composition and possible adaptation through training stimuli. In doing so, the all-surrounding and pervading white, milky tissue—the connective tissue—is removed. Other than its connective, binding, and force-transmitting function, not much attention was paid to it.

Surely this is one of the reasons why, to date, so little has been known about connective tissue, or the fascia.

Learning from anatomical images is the prevalent Western approach to determining training regularities. The individual parts of the body are monitored, examined, and evaluated for adaptations to training. Therefore, today we have a good idea of which training units and training loads are necessary for maximum strength or strength endurance, for example. We also know which training stimuli are required to train the sensory system with regard to sensory recruitment and firing rate. Physical therapy and competitive sports greatly benefit from the prospects of this scientific research.

In contrast, Asian kinematics are based on the several-centuries-old teachings of great masters. Movement concepts were created by feeling and experiencing movement such as it is practiced today in, for example, different Yoga styles. It never was and still isn't today necessary to "dismantle" in order to know the body's smallest constituent. The individual as a whole is the focus of movement: body and mind.

No Qi Gong master would think of examining the specific effects of his practice on a certain nerve fiber or the effects of a yoga Asana on, for instance, the rectus abdominus (the straight abdominal muscle). Asian-oriented kinematics only function as a whole. There is no separate muscle training. The muscular system works in interaction with all muscles, in interaction with the nerves, in interaction with all fascial systems.

Tom Myers was able to prove that 80 percent of energy lines (meridians) coincide with the "myofascial meridians" named after them (see Chapter 4.4.3). Also, 80 percent of the acupuncture points known from Chinese medicine coincide with the fascial insertion points of vein, artery, and nerve (VAN).

Two teaching methods as a basis for movement concepts: The Asian as well as Western approaches provide us with a wealth of knowledge and learning.

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The masters of Yoga, Tai Chi, and Qi Gong teach us to see body and mind as one and to practice sensitivity to the interplay of body, mind, and environment. On the other hand, the analytical Western approach gives us a primarily scientific explanation about physiological processes.

The energy-related holistic thinking of the East is connected to anatomical and physiological teachings of the West by the network of fascial structures. Two doctrines that could not be more different in their approach find common ground, benefit from each other, and offer mutual ways of explanation.

GOOD TO KNOW!

Fascia take care of exchange and supply.

(1. Supply is everything)

Fascia can store kinetic energy and then provide it again in a catapult-like release. They make us elastic and smooth in the execution of everyday movements and sports. They cushion forces and transmit them.

(2. The renaissance of swinging and pulsing)

Fascia give us tonicity and firmness.(3. Fascial stretch)

Fascia are a sophisticated communication system. They bind, connect muscles with adjacent muscles, and connect the active locomotor system with the passive locomotor system, as well as the internal organs.

(4. Fascial power)

Fascia contain the majority of the nervous system's receptors. Fascia play an important role in proprioception and react to different types of stimuli by contracting and relaxing.

(5. Sensory refinement)

2.2 HOW IMPORTANT ARE FASCIA FOR FITNESS TRAINING AND EVERYDAY LIFE?

I have been asking myself this question for several years. Currently, many trainers and physical therapists are focusing on fascia. Is it a trend? Can fascia provide something new and surprising? Are there also more ideas about exercise, training, or physical therapy behind the increased knowledge about fascia? Is there a possibility of crossing boundaries where previous treatment methods or training concepts have failed? All of these questions shall be answered in this book.

DID YOU KNOW?

Therapeutic treatment models where fascia are front and center:

- Osteopathy (according to Still since 1885)
- Rolfing (according to Ida Rolf 1896-1979)
- FDM (fascial distortion model according to Typaldus since 1991)
- Trigger point therapy (since 1951)

Methods to affect connective tissue are being sought and developed in preventative and rehabilitative exercise as well as in competitive sports. The industry is responding. Foam rollers and massage balls are flooding the market. There are self-massage methods, and a large variety of training concepts to affect connective tissue structures have been and are being publicized.

Why is there suddenly so much interest in the fascia? Surely an equally significant impetus is the desire for advancement: Faster, higher, farther, healthier, younger (or at least not older). Here a new concept for fitness training and implementation is welcome because previous methods are always being met with limits.

But it is not a "trend." A trend, as can often be seen particularly in the fitness scene, comes and goes. Some of you may remember *Callanetics*, an exercise program created

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in the 1980s by Callan Pinckney. It was intended to strengthen the deep musculature and firm up tissue through gentle movements with a high number of repetitions. After a while, this American trend lost its appeal and disappeared from the fitness scene.

Current interest in the fascia is not based on a movement concept. It is based on studies and a reevaluation of a long-familiar (connective tissue) structure in the body.

Only in recent years has the resolution of imaging methods become high enough to allow for precise measuring or imaging of fascia in healthy people as well as those with different disorders.

Real-time ultrasound units, functional magnetic resonance, electric impedance measurements, and sonoelastography offer completely new insights into connective tissue and provide new conclusions.

Desired goals through fascial training				
Training science	Training with targeted impact on the fascia enables performance increases as well as improved regeneration.			
Physical therapy	Persistent "problem areas" in the body can be resolved and a path to freedom from symptoms is opened up.			
Prevention	Fascia have a supporting, protective, and stabilizing effect. Positive self-help mechanisms of the immune system are activated.			
Esthetics	Taut skin and a youthful, springy gait are only two of the desired goals.			

I first encountered the subject of fascia on a long-distance flight. The first German publications had just been put on the Internet and every article captivated me. Many explanatory gaps closed. Regardless of whether my thoughts leapt to the area of flexibility training, strength training, or therapeutic ideas, I felt simultaneously thrown back and driven forward. Much of what I had for years demonized in allegedly "modern" teaching suddenly made sense again as I looked at it from a slightly different point of view.

My interest was piqued and I began to search for the teachers, the scientists, and the current state of knowledge.

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The cause of this regained interest in fascia was the co-occurrence of several parallel events.

In 2007, Peter Hujing won the Muybridge Award on the subject of "muscular connective tissue." That same year, a large number of exercise therapists met to introduce histological studies and adaptations from research and science in the area of connective tissue.

A positive article in *Science* magazine, one of the most prestigious international journals, ultimately prompted the growth of new interest in Europe.

Previously, the subject of fascia had received special attention in Germany during the 1960s and 1970s. Even today we still resort to many of the illustrations from that time. At that time there was even a Max-Planck Institute for connective tissue research. However, the then-new methods of molecular biology replaced any interest in connective tissue and fascia.

Research interest in the fascia decreased.

Hawaiian shamanism describes it in the following way: "Huna" is a teaching comprised of philosophical, psychological, spiritual, and esoteric elements, and it is a superordinate law that at a certain time, at different places on earth, the same thing can happen, or rather, interest in the same things emerges.

GOOD TO KNOW!

Now is the time of the fascia.

With all that we know and do, we are still only at the beginning. It will remain exciting for several years and even decades.

To quote Still (1899!):

"More abundant and golden insights will open up in the study of the fascia than in any other aspect of the body."