



## FASCIA SCIENCE AND CLINICAL APPLICATIONS: FASCIA NOMENCLATURE SUB-COMMITTEE REPORT

Defining *the fascial system*Sue Adstrum<sup>a,\*</sup>, Gil Hedley<sup>b</sup>, Robert Schleip<sup>c</sup>, Carla Stecco<sup>d</sup>, Can A. Yucesoy<sup>e</sup><sup>a</sup> Wellpark College of Natural Therapies, Auckland, New Zealand<sup>b</sup> Integral Anatomy Productions LLC, Melbourne, FL, USA<sup>c</sup> Fascia Research Group, Neurosurgical Clinic Guenzburg, Ulm University, Germany<sup>d</sup> Human Anatomy and Movement Science, University of Padua, Italy<sup>e</sup> Biomedical Engineering, Bogazici University, Istanbul, Turkey

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## ABSTRACT

Fascia is a widely used yet indistinctly defined anatomical term that is concurrently applied to the description of soft collagenous connective tissue, distinct sections of membranous tissue, and a body pervading soft connective tissue system. Inconsistent use of this term is causing concern due to its potential to confuse technical communication about fascia in global, multiple discipline- and multiple profession-spanning discourse environments. The Fascia Research Society acted to address this issue by establishing a Fascia Nomenclature Committee (FNC) whose purpose was to clarify the terminology relating to fascia. This committee has since developed and defined the terms *a fascia*, and, more recently, *the fascial system*. This article reports on the FNC's proposed definition of *the fascial system*.

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## 1. Introduction

*Fascia* is a widely used anatomical term yet its minimal, inexact and ambiguous definition confounds clear recognition of this fundamental body part (Mirkin, 2007). Over time, this term has, for example, diversely alluded to: a membranous tendon (Crooke 1651); a membranous part (Hall 1788); a strong aponeurotic band (Cruveilhier, 1844); a distinct section of dense fibrous tissue, and membranous tissue enveloping internal organs (Godman, 1824); a distinct, superficial or deep layer of connective tissue (Ellis, 1840); a distinct (i.e., aponeurotic or fibro-areolar) type of connective tissue (Gray, 1858); a global connective tissue system (Still, 1899); 'a sheath, sheet, or other dissectible mass of connective tissue' (FCAT, 1998); and 'the soft tissue component of the connective tissue system that permeates the human body forming a whole-body

continuous three-dimensional matrix of structural support' (Findley and Schleip, 2007). This single word accordingly identifies several different types of body part, which makes sense of Standing's (2016) assertion that *fascia* is effectively a 'generic,' rather than scientifically precise, anatomical expression.

Whether or not we personally agree with all of the (above-mentioned) meanings associated with *fascia*, it appears, in the words of Thomas Myers,<sup>1</sup> that 'the F-word has escaped its traditional confines. *Fascia*, like the genie in the bottle, has escaped its [conventional] medical meaning.' Also, as explained by Robert Schleip,<sup>2</sup> 'the media as well as many clinicians are frequently using the term *fascia* in unconventional ways. Nowadays, the media play a large part in shaping public thinking, so their unconventional use of this term is already having a widespread effect, especially considering the recent steep growth in publications relating to fascia.'

In a practical sense, the co-existence of several differing meanings for *fascia* appears to have triggered the development of a problematic tension between traditional 'scientific' (precise,

*Definition of key terms used in this article:* Anatomical term, Technical word or expression that refers to a specific part of the body; Anatomical terminology, Practical vocabulary of commonly used anatomical terms; Anatomical nomenclature, Officially approved terminological system intended to normalise use of anatomical language.

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<sup>1</sup> Myers made this claim during the FNC 'Anatomy Consensus Meeting,' held on 19 September 2015 prior to the Fourth Fascia Research Congress (FRC4), near Washington D.C.

<sup>2</sup> Schleip explained this at the same (10 September 2015) FNC meeting.

**Table 1**Four traditional 'morphological' definitions of *fascia*.

<b>Terminologia Anatomica</b> <i>Fascia</i> consists of sheaths, sheets or other dissectible connective tissue aggregations ... [This term] includes not only the sheaths of muscles but also the investments of viscera and dissectible structures related to them. (FIPAT, 2011, p. 33)
<b>Gray's Anatomy</b> <i>Fascia</i> is a term applied to masses of connective tissue large enough to be visible to the unaided eye. Its structure is highly variable but, in general, collagen fibres in fascia tend to be interwoven and seldom show the compact, parallel orientation seen in tendons and aponeuroses. (Standring, 2008, p. 39)
<b>Dorland's Illustrated Medical Dictionary</b> <i>Fascia</i> [is] a sheet or band of fibrous tissue such as lies deep to the skin or forms an investment for muscles and various other organs of the body. (Anderson, 2012, p. 679)
<b>Stedman's Medical Dictionary</b> <i>Fascia</i> [is] A sheet of fibrous tissue that envelops the body beneath the skin; it also encloses muscles and groups of muscles and separates their several layers or groups. (Stegman, 2006, p. 700)

**Table 2**Four holistic 'functional' definitions of *fascia*.

<b>Fascia Research Congress</b> <i>Fascia</i> is the soft tissue component of the connective tissue system that permeates the human body forming a whole-body continuous three-dimensional matrix of structural support. It interpenetrates and surrounds all organs, muscles, bones and nerve fibers, creating a unique environment for body systems functioning. The scope of our definition and interest in fascia extends to all fibrous connective tissues, including aponeuroses, ligaments, tendons, retinacula, joint capsules, organ and vessel tunics, the epineurium, the meninges, the periosteum, and all the endomysial and intermuscular fibers of the myofasciae. (Findley and Schleip, 2007, p. 2)
The fascia is a tough connective tissue that spreads throughout the body in a three-dimensional web from head to foot functionally without interruption ... The fascial system surrounds, infuses with, and has the potential to influence profoundly every muscle, bone, nerve, blood vessel, organ, and cell of the body. Fascia also separates, supports, connects, and protects everything. This three-dimensional web of connective tissue is alive and ever changing as the body demands. Thus it is a network for information exchange, influencing and influenced by every structure, system, and cell in the organism. Like air and gravity, its influence is so all-pervasive that we have tended to take it for granted. (Barnes, 1990; pp. xi & 3)
The fasciae constitute an uninterrupted sheet of tissue that extends from the head to the feet and from the exterior to the interior. This is a perfectly continuous system that is suspended from bony structures to form a fully integrated supporting framework. The ubiquitous fasciae not only invest the external surface of all the body's diverse structures – muscles, organs, nerves, vessels – but also form the internal matrices which support these structures and maintain their integrity. (Paoletti, 2006, p. xiii)
<i>Fascia</i> is an uninterrupted viscoelastic tissue which forms a functional 3-dimensional collagen matrix. It surrounds and penetrates all structures of the body extending from head to toe, thus making it difficult to isolate and develop its nomenclature ... [it] is virtually inseparable from all structures in the body and acts to create continuity amongst tissues to enhance function and support. (Kumka and Bonar, 2012)

anatomically descriptive) and relatively recent 'holistic' (more expansive, functionally oriented) interpretations of this term. Concern has been expressed that imprecise, inconsistent, and/or indiscriminate use of this term in reference to a variety of connective tissue parts (rather than one specific type of part) may be confusing international communication, research, and medical education relating to fascia (Wendell-Smith, 1998; Langevin and Huijting, 2009; Schleip et al., 2012a; Kumka and Bonar, 2012). In these professional contexts, it is vital that every anatomical term (such as *fascia*) unambiguously relates to one and the same body part. An editorial in this journal that highlighted this worry (Stecco, 2014) attracted feedback from several members of the interdisciplinary fascia research community, who mutually acknowledged that the language being used to describe fascia requires some remedial attention (Chaitow, 2014; Kumka, 2014; Langevin, 2014; Myers, 2014a; Natale et al., 2014; Schleip and Klingner, 2014; Tozzi, 2014; Adstrum, 2015).

The Fascia Research Society (FRS) responded to this issue by establishing a 'task force' (Langevin, 2014) – the Fascia Nomenclature Committee (FNC) – charged with improving the language relating to fascia. A preliminary discussion that aimed to establish a consensus understanding on this matter was conducted (during late 2014 – early 2015) using the 'Delphi Method,' an interactive structured communication technique<sup>3</sup> (Stecco and Schleip, 2016). While those involved were unable to reach a precise consensus agreement about fascia's definition, their deliberations revealed that fascia is concurrently perceived in two main ways (i.e., morphological and functional) within the interdisciplinary fascia research community environment (exemplified in Tables 1 and 2). Furthermore, their advocates' divergent investigative interests mean their terminological requirements are not wholly congruent with each other. Consequently, as Stecco and Schleip (2016) explain, the morphological researchers are best suited by a

'narrower' style definition of fascia 'such as the one proposed by FCAT (Federative Committee on Anatomical Terminology (1998))', whereas if 'one intends to investigate functional aspects – such as force transmission or sensory capacities – then a wider definition of fascia tends to be more helpful.'

Importantly, the FNC recognised that conventional (anatomical) fascia-relating language lacks the linguistic capacity required to effectively discuss fascia's morphology, architectural distribution, material properties, and physiological roles (e.g., mechanical force transmission, sensory capacity) from a more holistic ideological position. For many proponents of this 'functional' perspective, several fibrous structures (e.g. aponeuroses, ligaments, tendons, retinacula, joint capsules) that have traditionally been depicted as existing separately from fascia are now portrayed as different aspects of a unitary global fibrous tissue network (or fascial system). In the absence of the language to differentiate between them, the word *fascia* is currently (paradoxically and often incompatibly) being applied to each of these two very different ways of comprehending fascia – i.e., reductionist/descriptive and holistic/heuristic (Adstrum, 2015). Little wonder people are getting confused!

This group's preliminary finding was reported (by Robert Schleip) and discussed at the FNC meeting held in Washington D.C. on 19th September 2015, immediately prior to the Fourth Fascia Research Congress (FRC4). Jointly chaired by Carla Stecco (Italy) and Robert Schleip (Germany), the meeting was attended by 15 voting fascia researchers (from Australia, Austria, Britain, France, Germany, Holland, Italy, New Zealand, Turkey, and United States of America), and 4 non-voting observers (from Austria and Germany). Following some lively discussion, this meeting's participants agreed to the necessity of developing two new definitions that, together, equitably represent how fascia is largely known within the interdisciplinary fascia research community. The first was required to tangibly relate to the distinct (dissectible) sections of fascial tissue that have been traditionally been known as *fasciae* (singular, *fascia*). It needed to be a precisely couched 'scientific term' that could conceivably be rationally used to identify individual fasciae within

<sup>3</sup> See [https://en.wikipedia.org/wiki/Delphi\\_method](https://en.wikipedia.org/wiki/Delphi_method).

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