

# 신체기능운동학적 관점에서의 근막과 운동제어

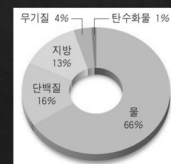
김 수 관  
저스트원 피티짐

심포지엄 : 건강기능식품, 어떻게할 것인가?

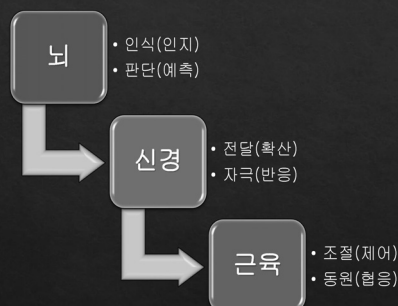
살아 있는 몸은 고정된 물체가 아니라,  
하나의 흐르는 사건이다.  
-앨런 와츠-

## 인간의 몸은 무엇으로 구성되어 있는가?

- ◆ 인체원소 : 탄소, 질소, 산소, 수소, 인, 칼슘, 칼륨, 나트륨...
- ✓ 우주원소 : C, N, H, O, S, P
- ◆ 진핵세포 : 근원성유의 액틴과 마이오신이 움직임의 시작
- ◆ 4개의 조직 : 상피조직, 결합조직, 근육조직, 신경조직
- ◆ 11개의 기관계 : 골격계, 근육계, 신경계, 순환계, 호흡계, 소화계, 내분비계, 면역계, 비뇨계, 생식계, 피부계



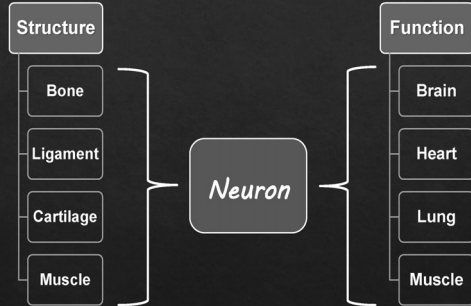
## 무엇이 몸을 움직이게 하는가?



뇌는 움직임을 만드는 기관  
신경은 움직임 자극하는 기관  
근육은 움직임을 일으키는 기관

Fascia는 어느 기관에 속하고  
그 역할은 무엇일까?

## Form & Function



## Fascia is Whole Body Space?

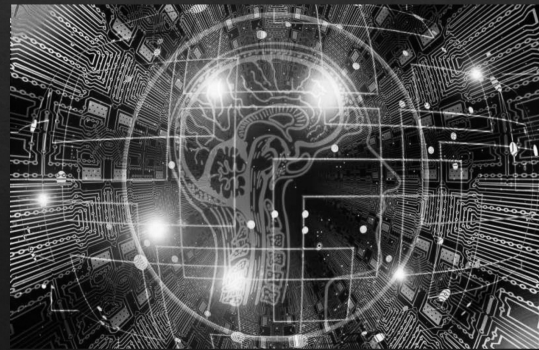
**Fascia**는 인체 내 모든 것을 연결하고 반영하는 장(network)이자, 공간(space)이자, 에너지 통로(line of energy)가 아닐까?

11개의 신체기관 그 전체를 관장하는 것이 '**Fascia**' 인 듯 하다.

**Fascia**는 의식(생각)과 감정의 정보, 자극과 반응, 진동과 파동, 움직임의 모든 관계성(상호작용)에 관여하는 것으로 보여진다.

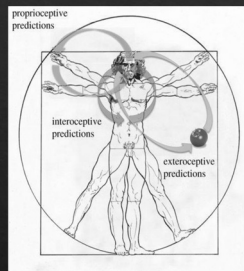
**Fascia**는 그 사람이 살아온 흔적이자  
움직임의 무늬(패턴)다.

## Fascia : 'Information Field'

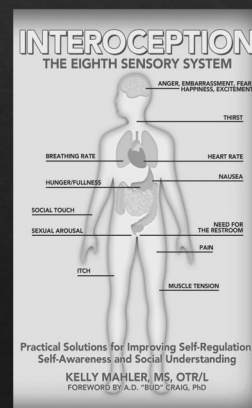


## Sensory Systems

- Exteroception(외부수용감각)
- Interoception(내부수용감각)
- Proprioception(고유수용감각)

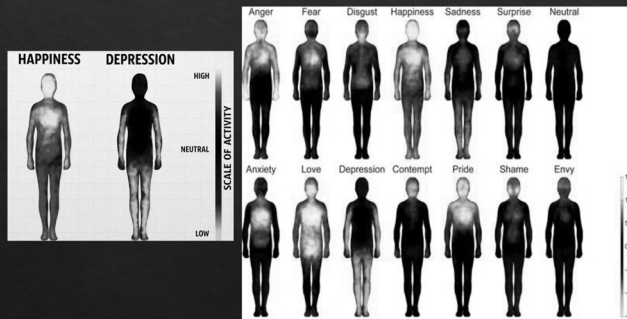


## Fascia : 'Meta-Membrane'

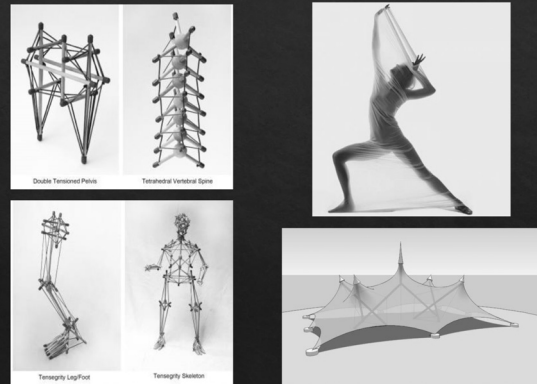


Interoception is the sense of knowing what is going on 'INSIDE' our bodies.

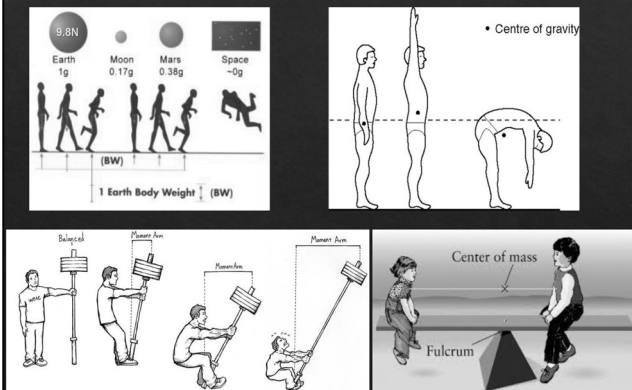
## 감정에 따른 체온의 변화



## Fascia : 'Biotensegrity'



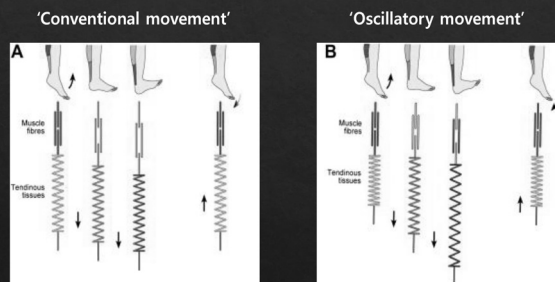
## 중력과 무게중심의 변화



## Multimicrovascular Collagenic Dynamic Absorbing System



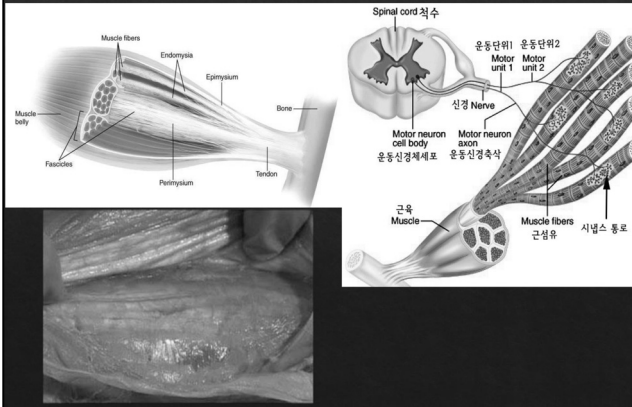
## Catapult Effect : Elastic Recoil Properties



## Elastic Recoil Zone?



## Myofascia & Motor Unit



## Motor Units : Individual Regulatory System

### Muscles are Not Functional Units

When discussing any changes in motor organization, it is important to realize that the central nervous system does not operate "in muscles" – a muscle is never activated as a whole. The functional units of the motor system are the so-called motor units. There are several million of these motor units in the human body. They function much like a school of fish that have learned to swim together. Depending on the quality of sensory feedback, these millions of motor units can be individually regulated.<sup>1</sup>

Based on this background, we can apply these details to a reference scenario in which a practitioner is working on the connective tissue around the lateral ankle. When the practitioner reports a tissue release, it may be that it is caused by a lowered firing rate of only a few fish (motor units) in the vicinity, and that this movement is transmitted to the tissue under the practitioner's hand. If the practitioner then feels the change and responds in a supportive way toward these particular fish, other fish may soon follow the new direction, which leads to additional "release scenarios" for the practitioner (Fig. 5).

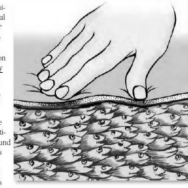
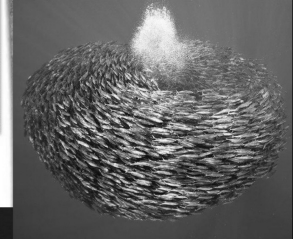
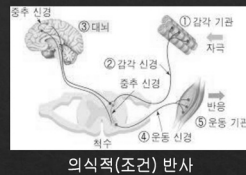
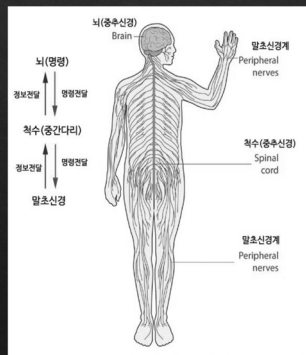


Figure 5: This illustration depicts myofascial tissue as a school of fish. A practitioner working with myofascial tissue may feel several of the motor units – the fish – responding to the touch. If the practitioner responds supportively to this new scenario, the working hand will soon feel other "fish" responding. Illustration by Tanya Olwe, Munich, Germany.

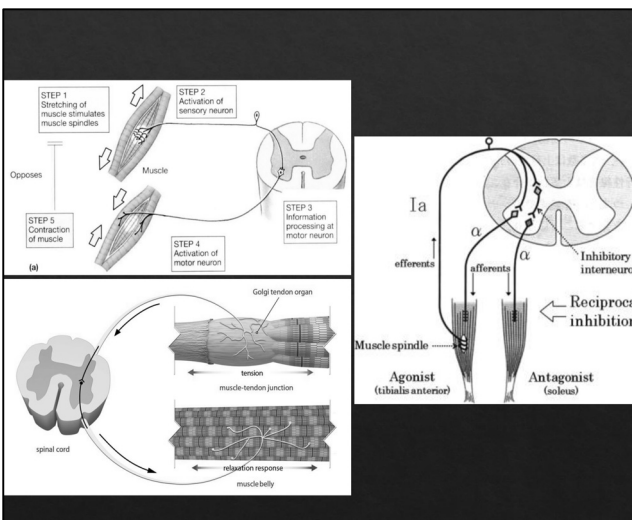


## 감각신경과 운동신경



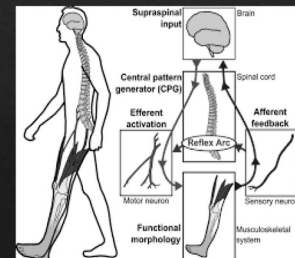
## 신경반사

- ◆ 신장반사(stretch-reflex)
  - ✓ 근방추(muscle spindle) : 길이와 속도를 감지
- ◆ 자발적 억제(autogenic inhibition)
  - ✓ 골지건(golgi tendon organ) : 장력과 압력을 감지
- ◆ 상호 억제(reciprocal inhibition)
  - ✓ 근방추(muscle spindle) : 길항작용(agonist/antagonist)



## Motor Control

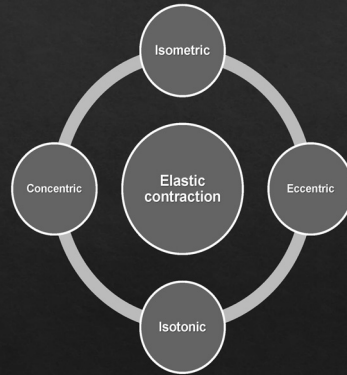
- ◆ 동작의 기질을 조절 또는 통제할 수 있는 능력
  - ◆ 안정성(균형)과 운동성(가동성)을 동시에 제공
  - ◆ 자세와 움직임에 있어서 무게중심, 방향, 속도, 힘 조절
- 균형, 협응, 동원



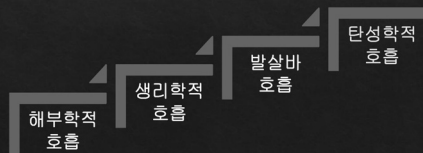
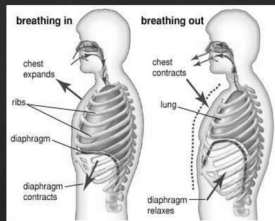
## 신장성 수축 트레이닝 방법론의 재해석



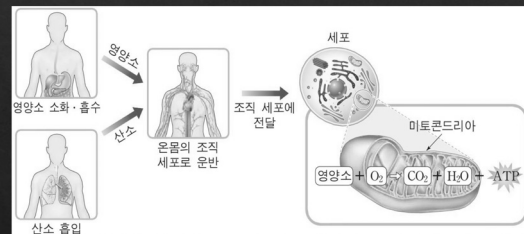
## Elastic Motor Control



## Exercise & Breathing

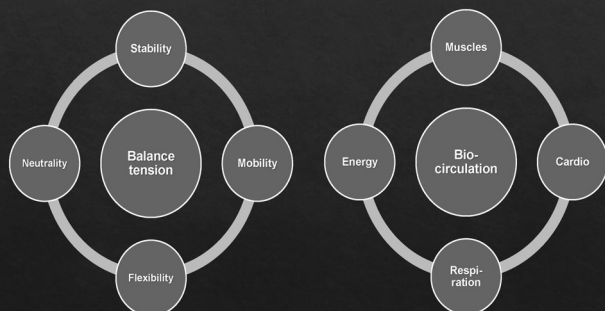


## Respiration : Metabolism



‘호흡은 세포 작용의 핵심’

## Body Balance Control Systems



“구조적으로도 기능적으로도 신체가  
원활히 작동할 수 있게 트레이닝 하기 위해서  
‘Fascial balance, tension, 호흡’ 조절은 필수다.”

