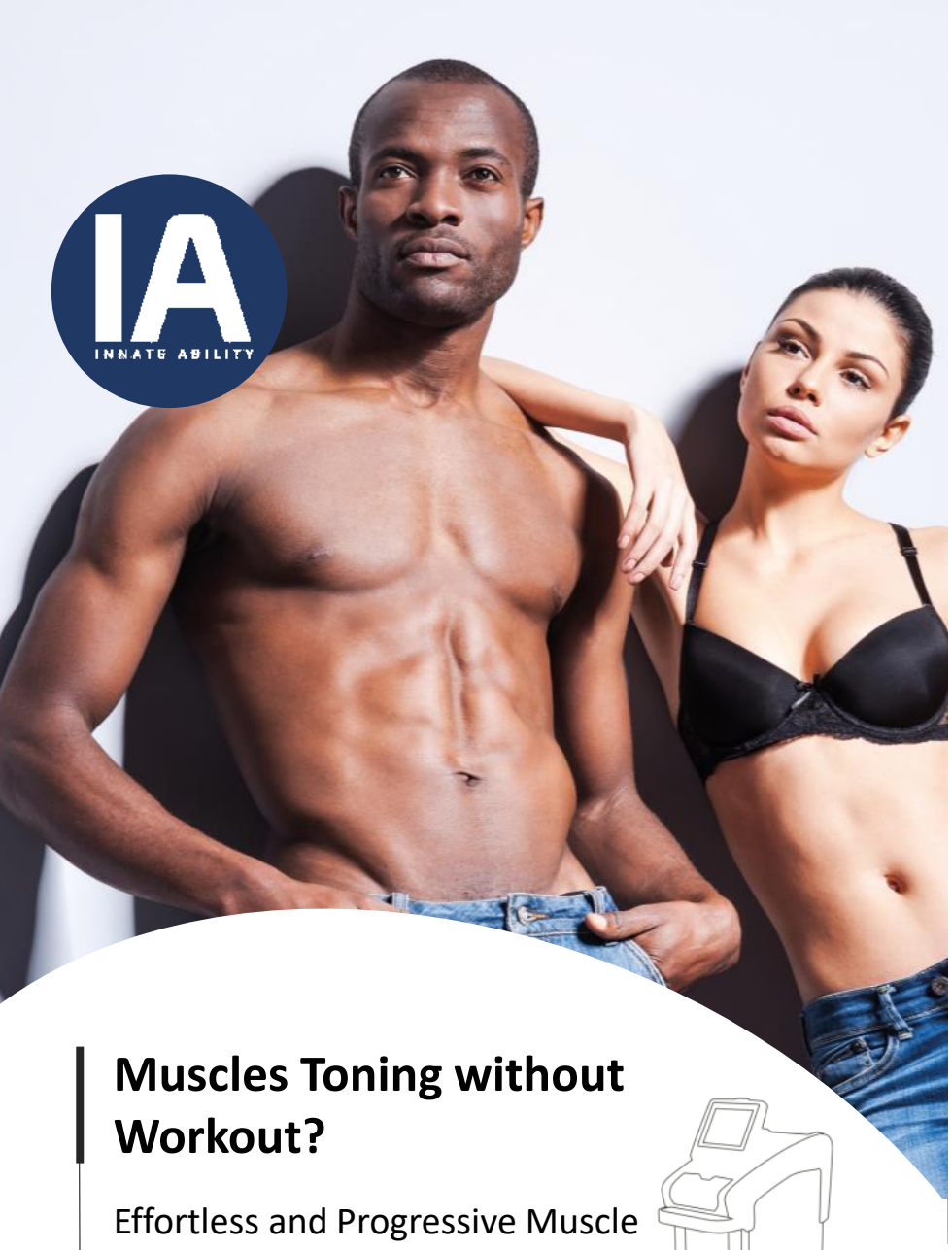
DEKA
Innate Ability

SCHWARZY

PAOLO MEZZANA MD, PHD

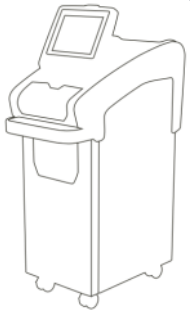
Plastic, Reconstructive, Aesthetic Surgery Specialist

Rome, ITALY



Muscles Toning without Workout?

Effortless and Progressive Muscle Strengthening Through Neuromuscolar Stimulation



SCHWARZY

The New

Magnetic Stimulation

System from DEKA

Rev 1.3

DEKA
Innate Ability

DEKA
Innate Ability

SCHWARZY

Overview

Introduction about

- **Skeletal Muscle System,**
- **Action Potential,**
- **Muscle Contraction,**
- **Human Metabolism,**
- **Physical Activity**

DEKA
Innate Ability

SCHWARZY

Skeletal Muscles

Skeletal muscle is the only voluntary muscle tissue in the human body. Every physical action that a person consciously performs (e.g. speaking, walking, or writing) requires skeletal muscle. The function of skeletal muscle is to contract to move parts of the body closer to the bone that the muscle is attached to.

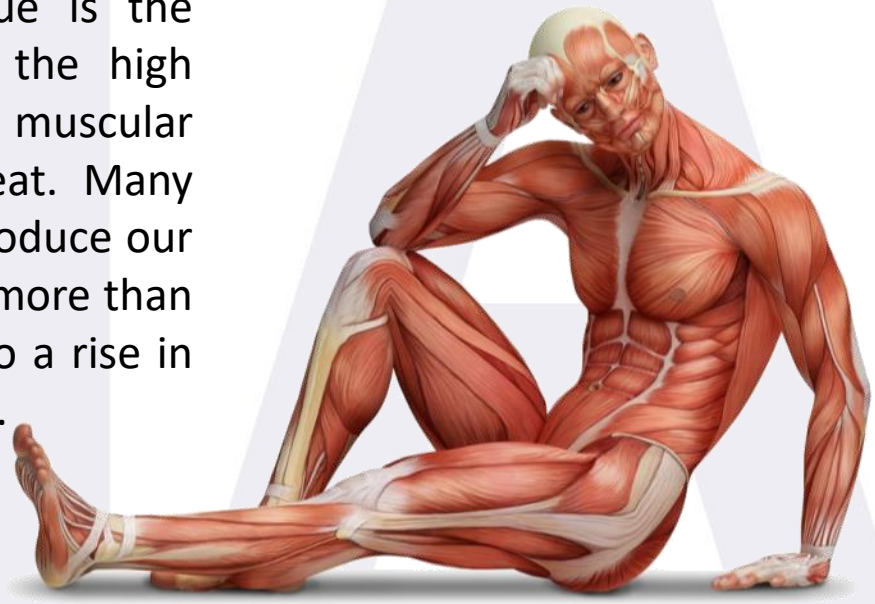
Most skeletal muscles are attached to two bones through tendons. Tendons are tough bands of dense regular connective tissue whose strong collagen fibers firmly attach muscles to bones. Tendons are under extreme stress when muscles pull on them, so they are very strong and are woven into the coverings of both muscles and bones. Muscles move by shortening their length, pulling on tendons, and moving bones closer to each other.

Function of Skeletal Muscle Tissue

The **main function of the skeletal muscular system is movement** by muscle contraction.

Related to this primary function is its second function: **the maintenance of posture and body position.** The muscles responsible for the body's posture have the greatest endurance of all muscles in the body—they hold up the body throughout the day without becoming tired.

The final function of skeletal muscle tissue is the **generation of body heat**. As a result of the high metabolic rate of contracting muscle, our muscular system produces a great deal of waste heat. Many small muscle contractions within the body produce our natural body heat. When we exert ourselves more than normal, the extra muscle contractions lead to a rise in body temperature and eventually to sweating.



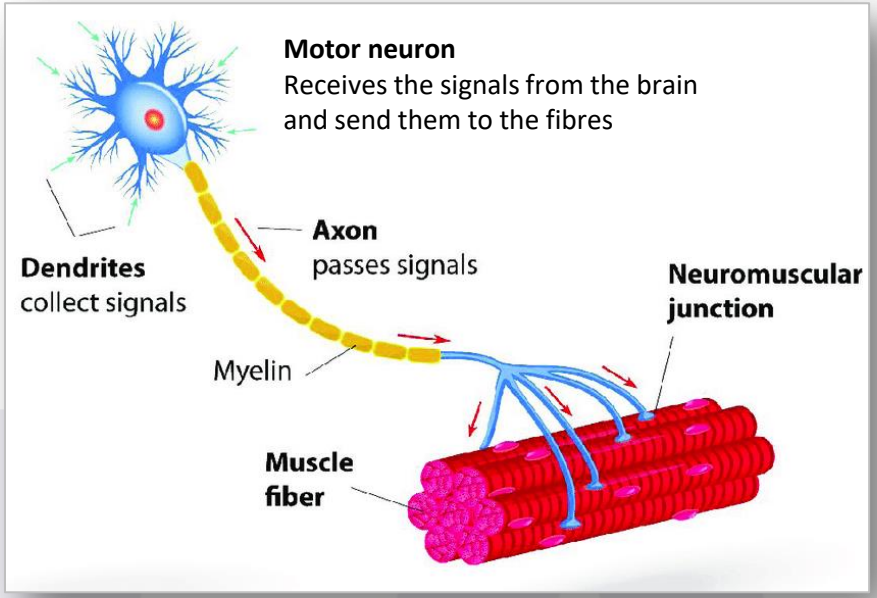
DEKA
Innate Ability

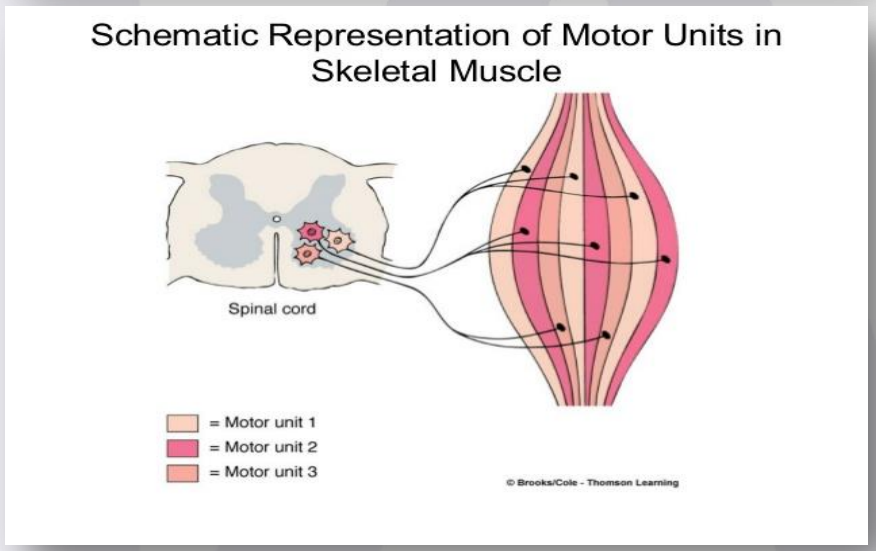
SCHWARZY

Motor Units

Nerve cells called **motor neurons** control the skeletal muscles.
Each motor neuron controls several muscle cells (called **fibers**) in a group known as a **motor unit**. When a motor neuron receives a signal from the brain, it stimulates all of the muscles fibers in its motor unit at the same time. The motor unit it is the smallest amount of muscle tissue that can be controlled by the nervous system.

The size of motor units varies throughout the body, depending on the function of a muscle. Muscles that perform fine movements—like those of the eyes or fingers—have very few muscle fibers in each motor unit to improve the precision of the brain's control over these structures. Muscles that need a lot of strength to perform their function—like leg or arm muscles—have many muscle cells in each motor unit.

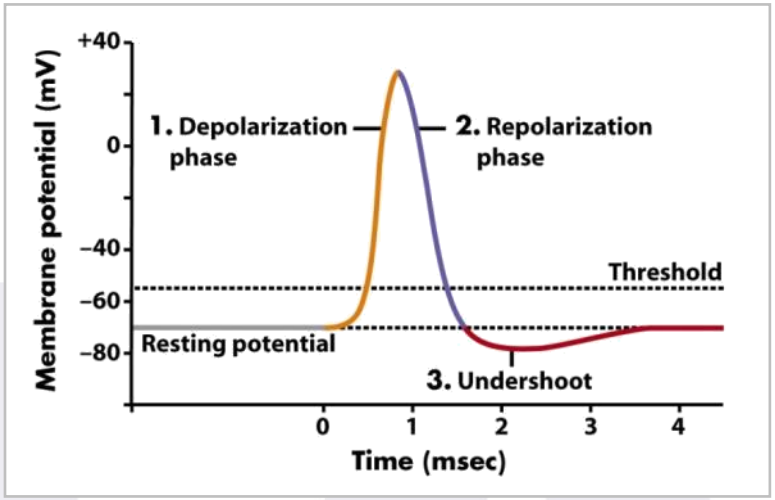


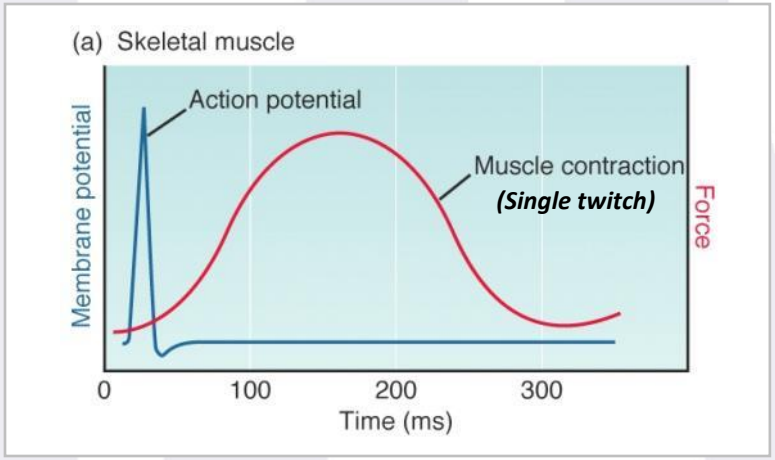


Action Potential vs. Muscle Contraction

The **action potential** is an electrical signal that is used to initiate a certain set of chemical process that lead to the **contraction of muscles**. So, although these two concepts are related, they are NOT the same thing!

To contract a skeletal muscle it is necessary that an action potential is generated inside the central nervous system. It must than travel to the cell membrane of that specific muscle fiber and depolarize the membrane. This generates an action potential inside the muscle cell which triggers a series of processes that lead the muscle contraction.

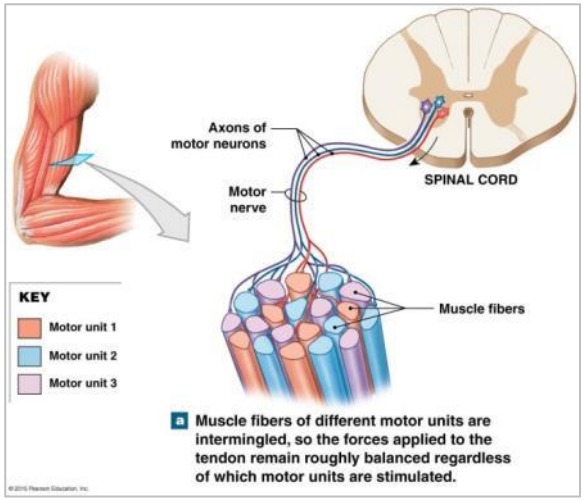


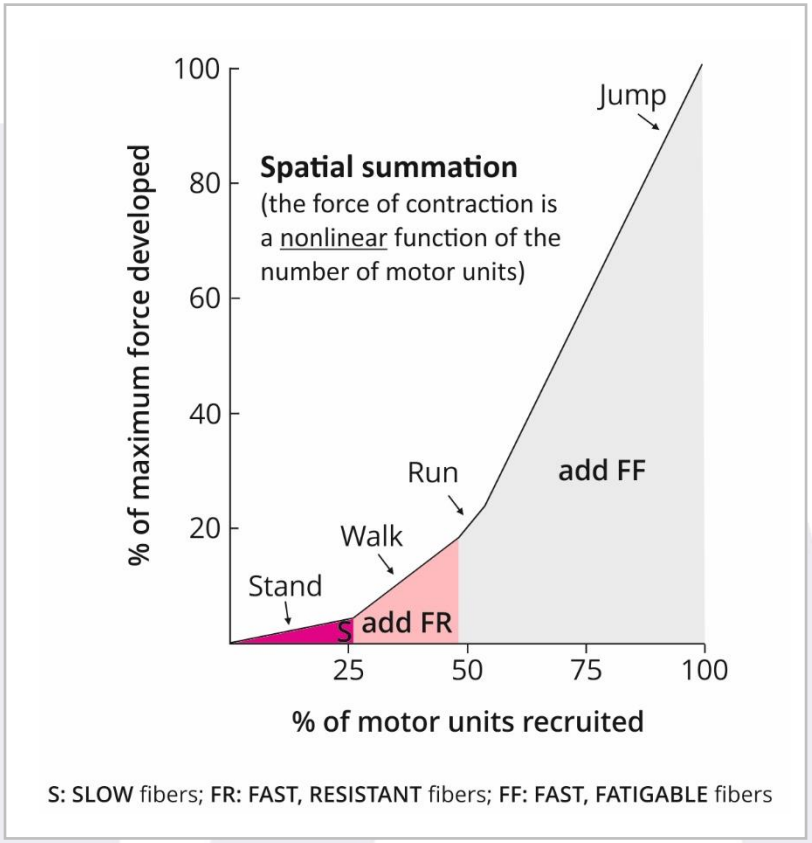


Strength of Muscle Contraction

The strength of a muscle's contraction can be controlled by two factors:

1. Varying the **number of motor units** involved in contraction (**spatial summation**) and

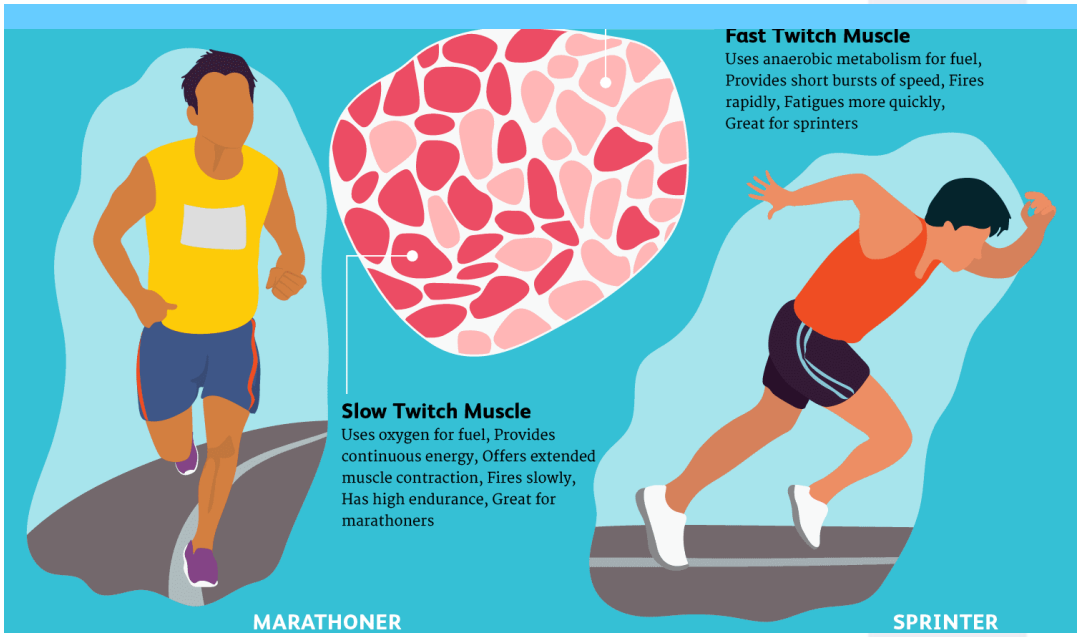




In Depth: Fiber Types & Their Recruitment

The 3 main types of motor units, which have different physiologic and staining properties, include the following:

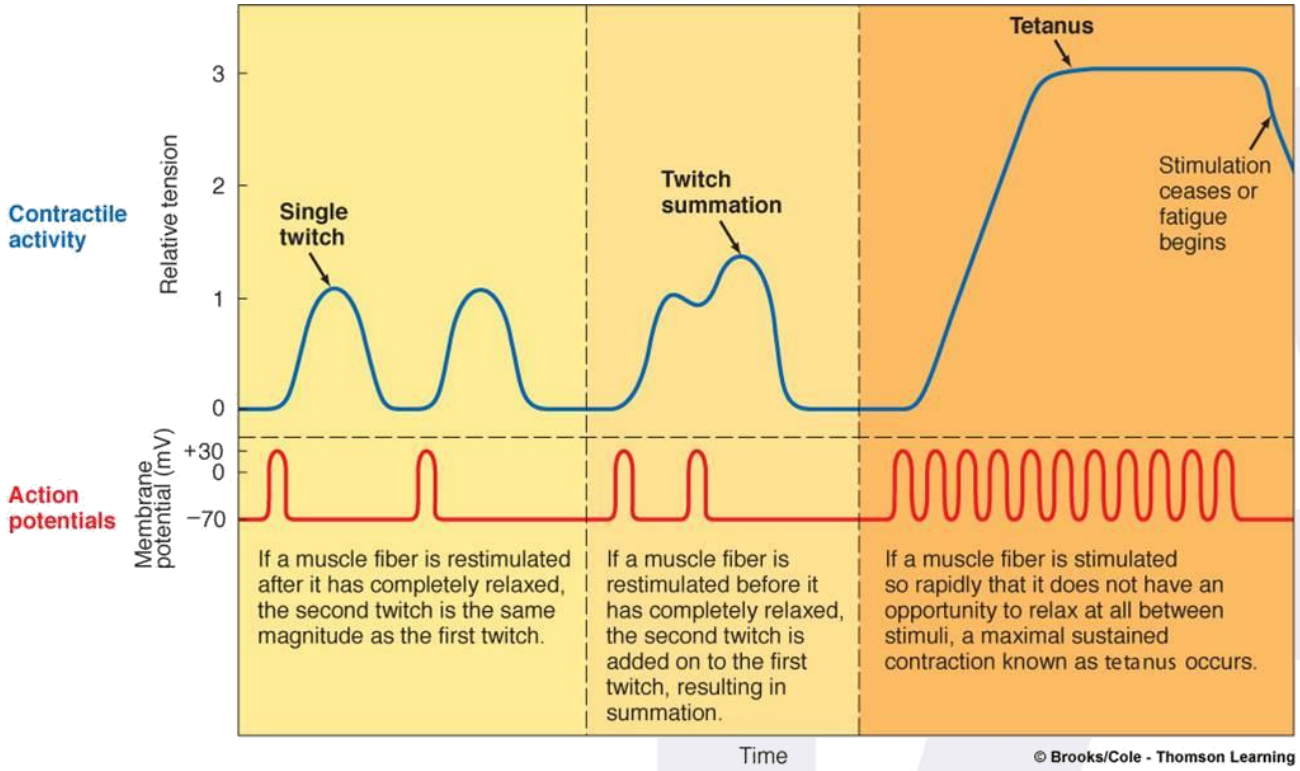
- **Type I or red or type S (slow)** - Slow twitch, fatigue-resistant units with smallest force or twitch tension and slowest contraction; contain oxidative enzymes
- **Type IIa or type FR (fast, resistant)** - Fast twitch, fatigue-resistant units with larger forces and faster contraction times; contain oxidative and glycolytic enzymes. They are intermediate fibers.
- **Type IIb or white or type FF (fast, fatigable)** - Fast twitch, easily fatigable units with largest force and fastest contraction; contain glycolytic enzymes



The recruitment sequence is thought to begin with type I motor units analogous to type S units, to progress to type II units that first include type FR (type IIa), and to end with units analogous to type FF (type IIb), which are active only at relatively high force output.

Strength of Muscle Contraction

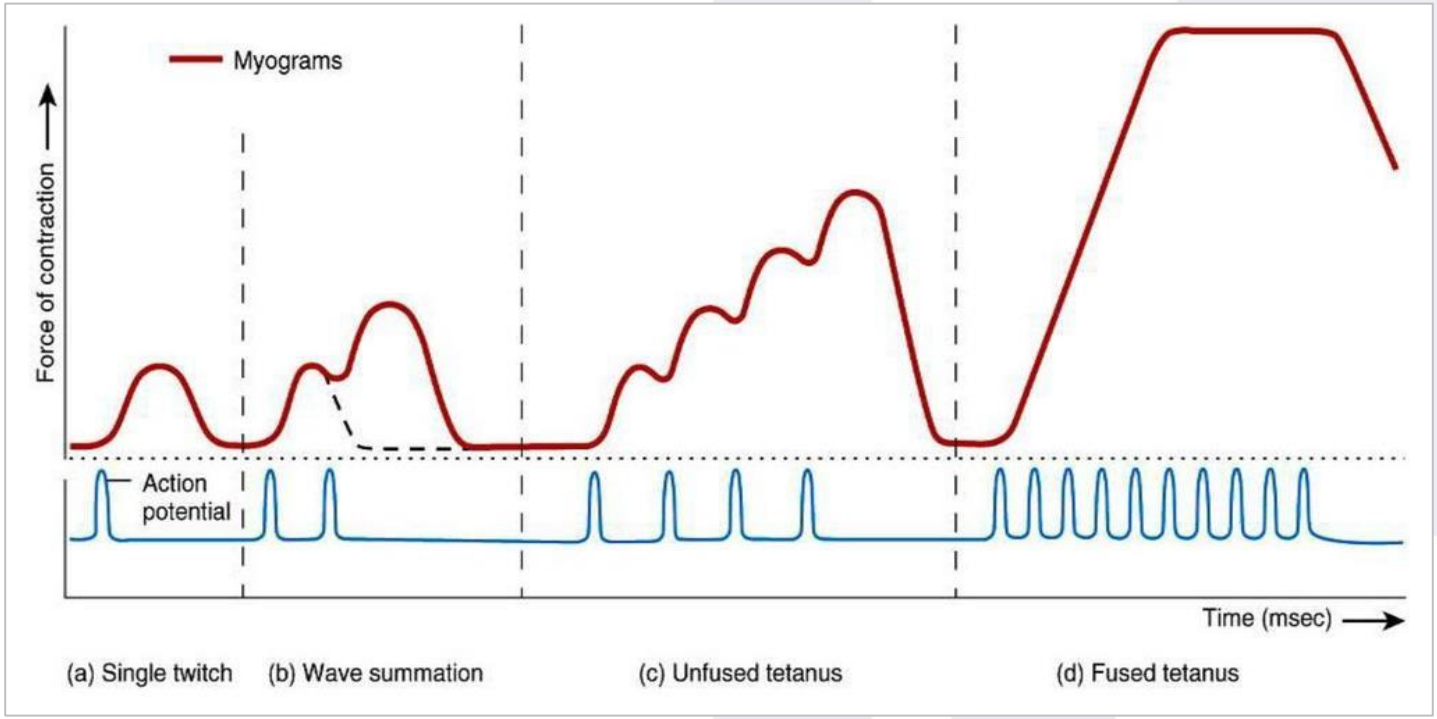
2. Increasing the **amount of stimulus** from the nervous system (**temporal summation**).



In Depth: Twitch, Summation and Tetanus

A tetanic contraction is a sustained muscle contraction evoked when the motor nerve that innervates a skeletal muscle **emits action potentials at a very high rate**. During this state, a motor unit has been maximally stimulated by its motor neuron and remains that way for some time.

A fused tetanic contraction is the strongest single-unit twitch in contraction.



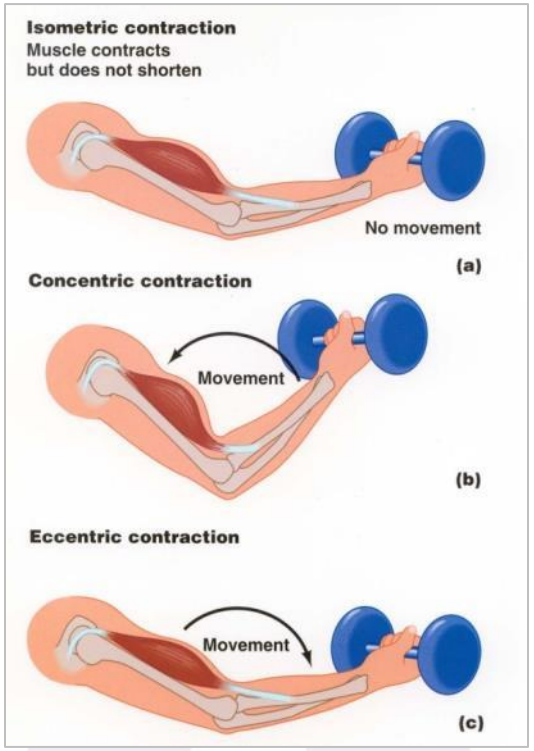
DEKA Innate Ability

SCHWARZY

Strength of Muscle Contraction

- Both spatial and temporal summation mechanisms occur concurrently. The primary mechanism at lower levels of muscle contraction strength is the addition of more motor units, but the firing rate of the initially recruited motor units also increases. When nearly all motor units are recruited, increase in firing frequency becomes the predominating mechanism to increase motor strength. At this level and beyond, motor units may be driven to fire in their secondary range to rates greater frequencies.
- As a general rule, motor units are recruited in order of their size. When the muscle is activated initially, the first motor units to fire are small in size and weak in the degree of tension they can generate. Starting with the smallest motor units, progressively larger units are recruited with increasing strength of muscle contraction. The result is an orderly addition of sequentially larger and stronger motor units resulting in a smooth increase in muscle strength.

Type of Muscle Contraction



Muscle contraction can be **isometric** or **isotonic** in the experimental situation:

- **Isometric contractions are those where tension develops in the muscle, but it does not change length (**e.g. plank, side bridge and exercises that involve holding a position)
- **Isotonic contractions are those in which the muscle experiences a constant tension, but may shorten** (e.g. squats, stair climbing, bicep curls and push-ups)

Muscle tone is a natural condition in which a skeletal muscle stays partially contracted at all times (involuntary contraction). Muscle tone helps to maintain the body's posture and provides a slight tension on the muscle to prevent damage to the muscle and joints from sudden movements.

During movement, muscle contraction is probably a mixture of contractions that are isotonic, isometric, and neither, with both length and tension varying.

Muscle Metabolism and Fatigue

Muscles get their energy from different sources depending on the situation that the muscle is working in.

- **Aerobic respiration**: when we call muscles to produce a **low to moderate level of force**. It requires **oxygen** to produce about 36-38 ATP molecules from a molecule of glucose. Aerobic respiration is **very efficient**, and can **continue as long** as a muscle receives adequate amounts of oxygen and **glucose** to keep contracting.
- **Anaerobic respiration:** when we use muscles to produce a **high level of force**, they become so tightly contracted that oxygen carrying blood cannot enter the muscle. This condition causes the muscle to create energy using **lactic acid fermentation**, a form of anaerobic respiration. Anaerobic respiration is much **less efficient** than aerobic respiration—only 2 ATP are produced for each molecule of glucose. **Muscles quickly** tire as they burn through their energy reserves under anaerobic respiration.

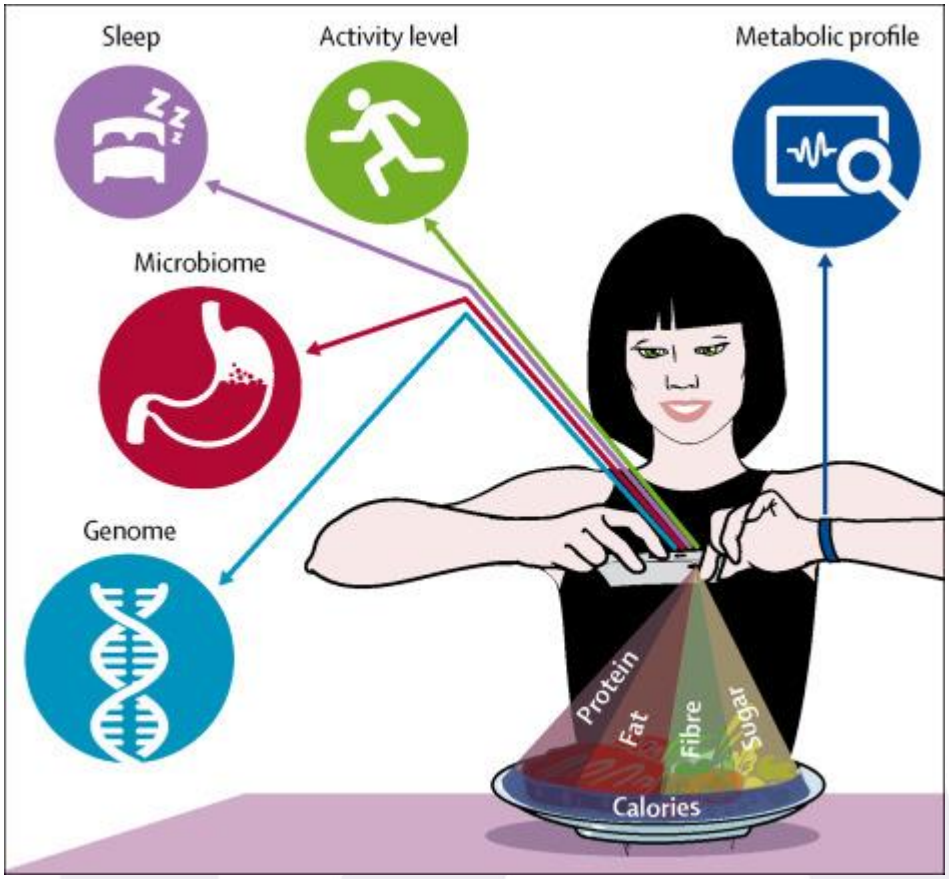
DEKA
Innate Ability

SCHWARZY

Human Metabolism

Metabolism refers to all the chemical processes going on continuously inside human body that allow life and normal functioning. These processes include those that break down nutrients from our food, and those that build and repair the body. Building and repairing the body requires energy that ultimately comes from food.

The amount of energy that the body burns at any given time is affected by the metabolism.



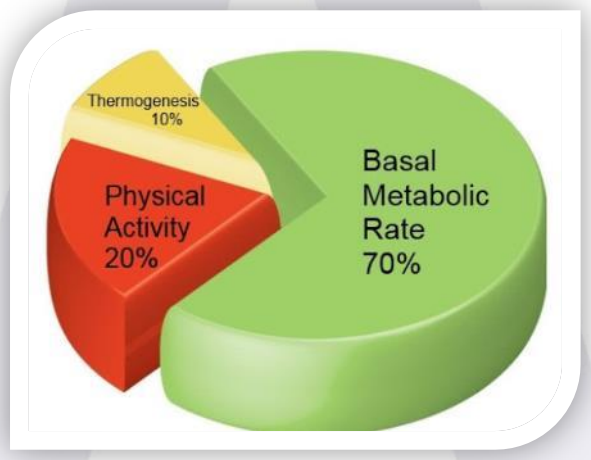
DEKA Innate Ability

SCHWARZY

Metabolic Rate

Human metabolism is complex. The body's metabolic rate (or total energy expenditure) can be divided into three components, which are:

- **Basal metabolic rate (BMR)** – even at rest, the body needs energy to keep all its systems functioning correctly (such as breathing, keeping the heart beating to circulate blood, growing and repairing cells, etc). The body's **BMR** accounts for the **largest amount of energy expended daily** (**50–80% of your daily energy use**).
- **Thermic effect of food (Thermogenesis)**– your body uses energy to digest the foods and drinks you consume and also absorbs, transports and stores their nutrients. It accounts for about **5–10% of your energy use**.
- **Energy used during physical activity (PA)** – this is the energy used by physical movement and **it varies** the most. **PA includes planned exercise** (like playing sport) **but also includes all incidental activity** (such as hanging out the washing, playing with the dog, etc). Based on a moderately active person (30–45 minutes of moderate-intensity PA per day), this component contributes **20% of our daily energy use**.

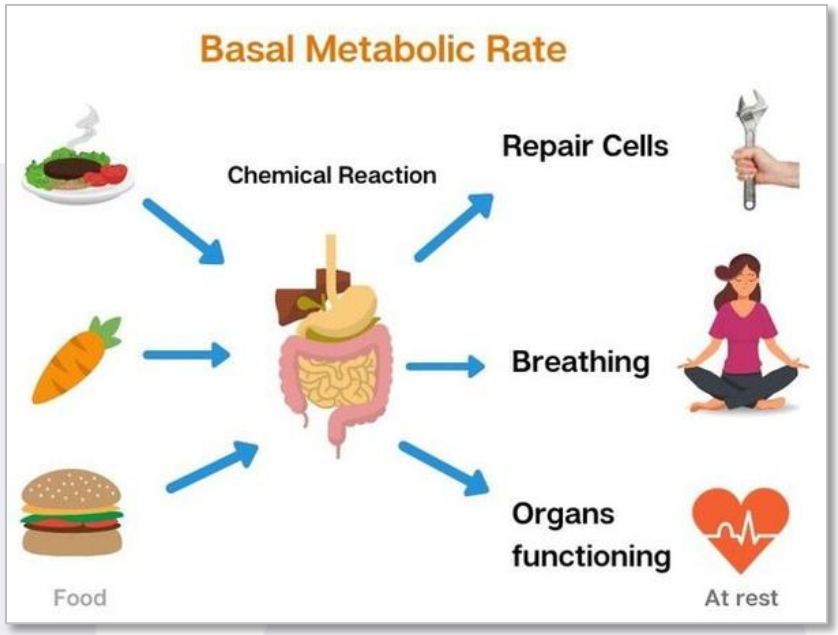


BMR

The BMR refers to the amount of energy your body needs to maintain homeostasis.

Your **BMR is largely determined by your total lean mass**, especially muscle mass, because **lean mass requires a lot of energy to maintain** (**muscle burns kilojoules rapidly!**).

As your BMR accounts for so much of your total energy consumption, **it is important to preserve or even increase your lean muscle mass through exercise when trying to lose weight** (dietary changes alone as eating too few kilojoules encourages the body to slow the metabolism to conserve energy).



Thermic Effect of Food

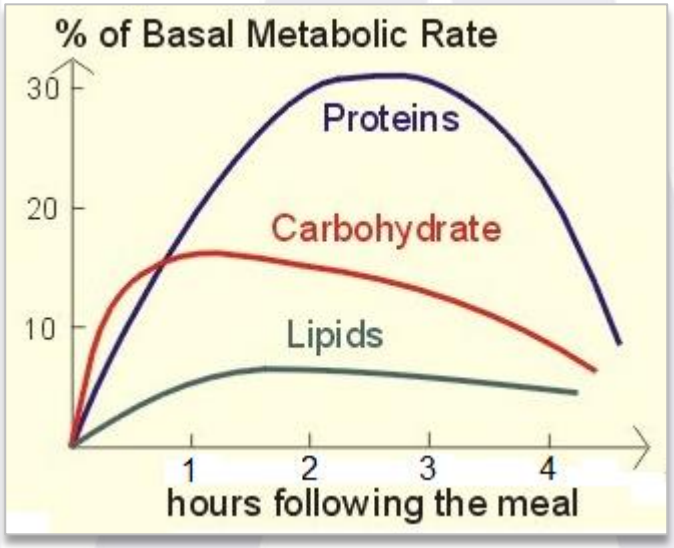
Your BMR rises after you eat because you use energy to eat, digest and metabolise the food you have just eaten. The rise occurs soon after you start eating, and peaks two to three hours later.

This rise in the BMR can range between two per cent and 30 per cent, depending on the size of the meal and the types of foods eaten.

Different foods raise BMR by differing amounts.

For example:

- **Fats** raise the BMR 0–5 %.
- **Carbohydrates** raise the BMR 5–10 %.
- **Proteins** raise the BMR 20–30 %.



DEKA
Innate Ability

SCHWARZY

Energy Used During Physical Activity

The energy expenditure of the muscles makes up only 20% or so of total energy expenditure at rest, but during strenuous exercise, it may increase 50-fold or more.

Energy used during exercise is the only form of energy expenditure that we have any control over.

However, estimating the energy spent during exercise is difficult, as the true value for each person will vary based on factors such as their weight, age, health and the intensity with which each activity is performed.

DEKA Innate Ability

SCHWARZY

Not everyone knows that ...

Weight gain equal to 1.5 kg of lean mass, i.e. muscle, determines on average:

- The 7% increase in BMR, so you will consume more calories even when you sleep
- In carrying out physical activities, your calorie consumption will increase by 15%

So, we deduce that:

+ muscle
+ calorie consumption

→ **decrease in body fat**

DEKA
Innate Ability

SCHWARZY

Magnetic Stimulation

Muscle Building Workout

Electric Stimulation

Microwaves (Coolwaves)

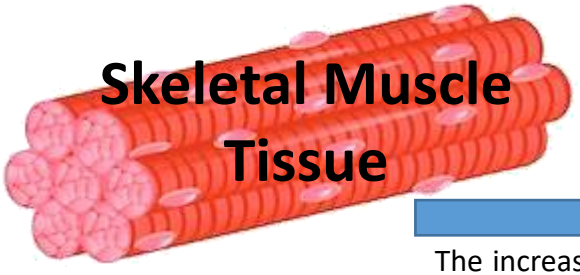
Laser (SmartLipo)

Surgery

RF

HIFU

Magnetic stimulation triggers a cascade effect resulting in FFA oversaturation. This rapid elevation of FFA levels appears to lead to the apoptosis of adipocytes, mediated through an endoplasmic reticulum stress reaction (extreme energy need).



Skeletal Muscle Tissue

The increase in muscle mass leads to an increase in BMR, greater calorie consumption with a decrease in fat mass.

Adipose Tissue

Muscle Thickness

Fat Reduction

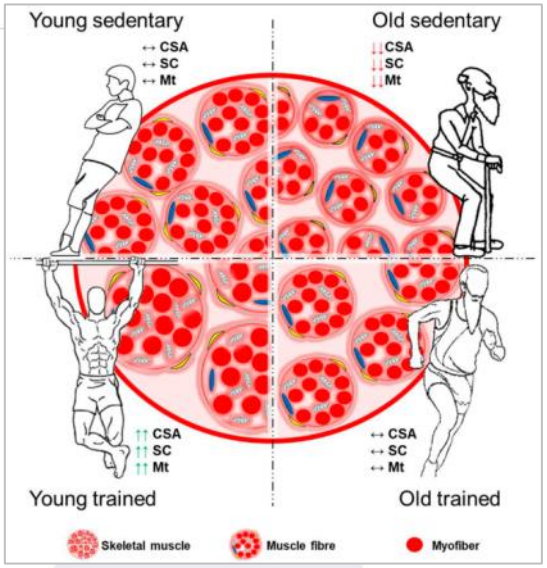
Skin Tightening

DEKA
Innate Ability

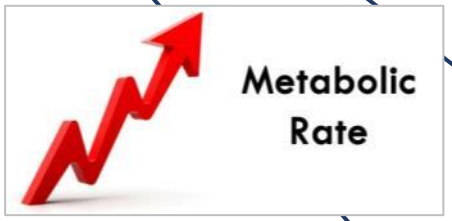
SCHWARZY

Reasons way people want to increase muscle mass and tone:

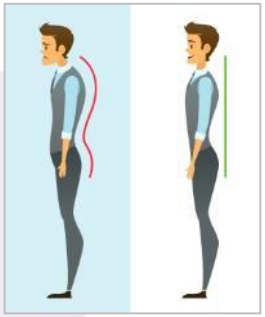
To contrast ageing process that causes muscle fiber atrophy. In effect exercise training can reverse the negative effects of ageing on skeletal muscle.



To increase the basal metabolic rate activating a process that allow to reduce fat consumption.



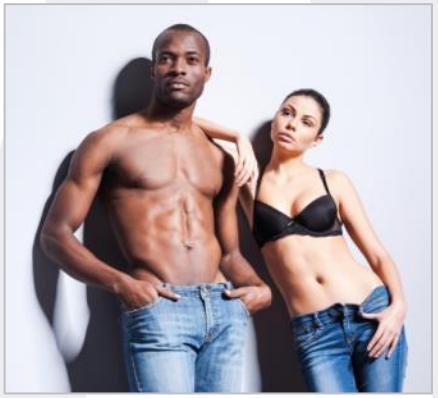
To improve posture.



To speed up physical activity for "get back in shape".

As a targeted muscle strengthening in athletes.

In combination with a weight loss diet to avoid flabby skin.



For a better physical aspect

DEKA
Innate Ability

SCHWARZY

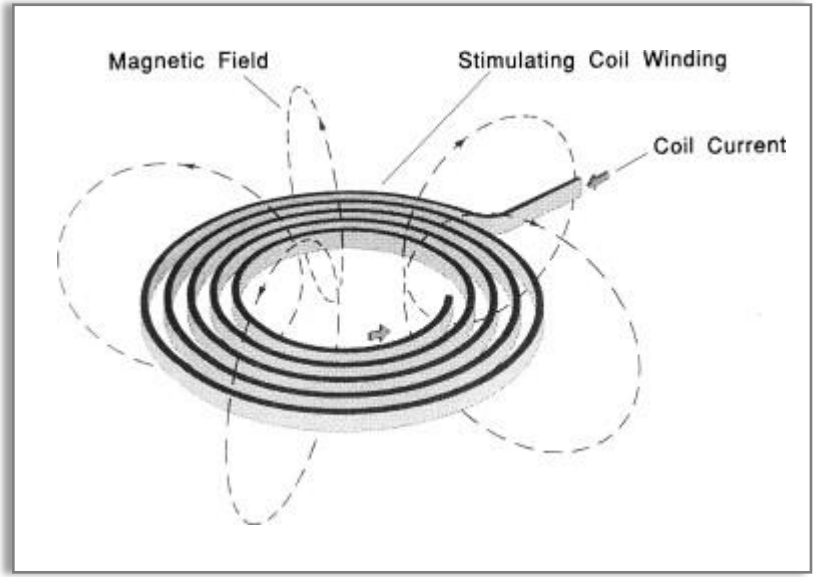
TOP – FMS: Top Flat Magnetic Stimulation

Type of energy	Magnetic field
Intensity	up to 2.5 T
Repetition Rate	1-150 Hz
Pulse duration	250 ± 20% µs

Mechanism of Action

Schwarzy system uses a new technique for stimulating human muscles in a safe and effective way, to produce fatigue without doing exercise and without pain.

Stimulation of muscles is carried out using a magnetic field via a coil that can be placed securely over the skin. The coil was water cooled to prevent overheating. In magnetic stimulation, **a quickly changing magnetic field is generated by a pulse of current flowing through a stiff coil** contained inside each pad.

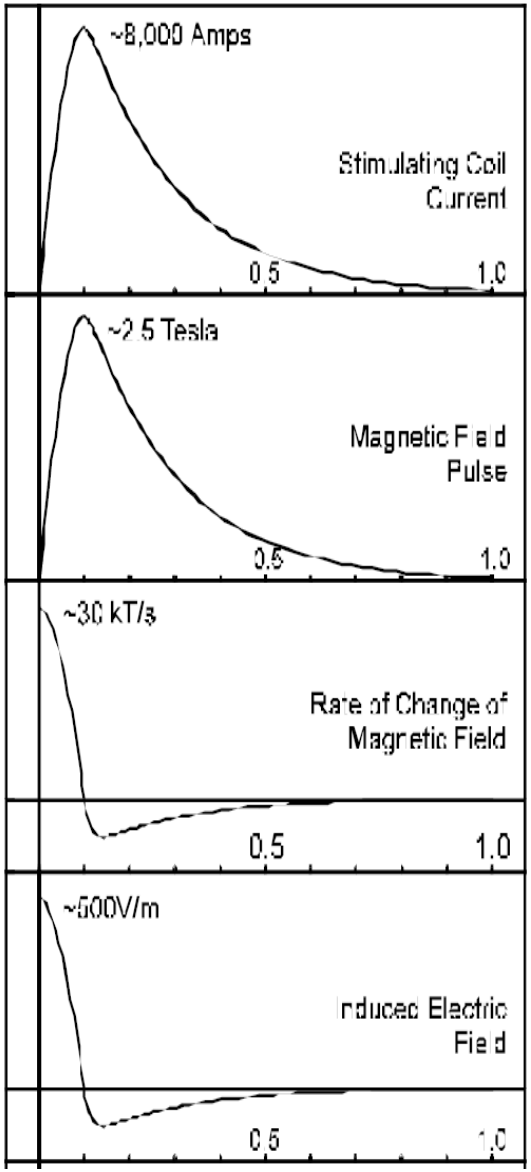


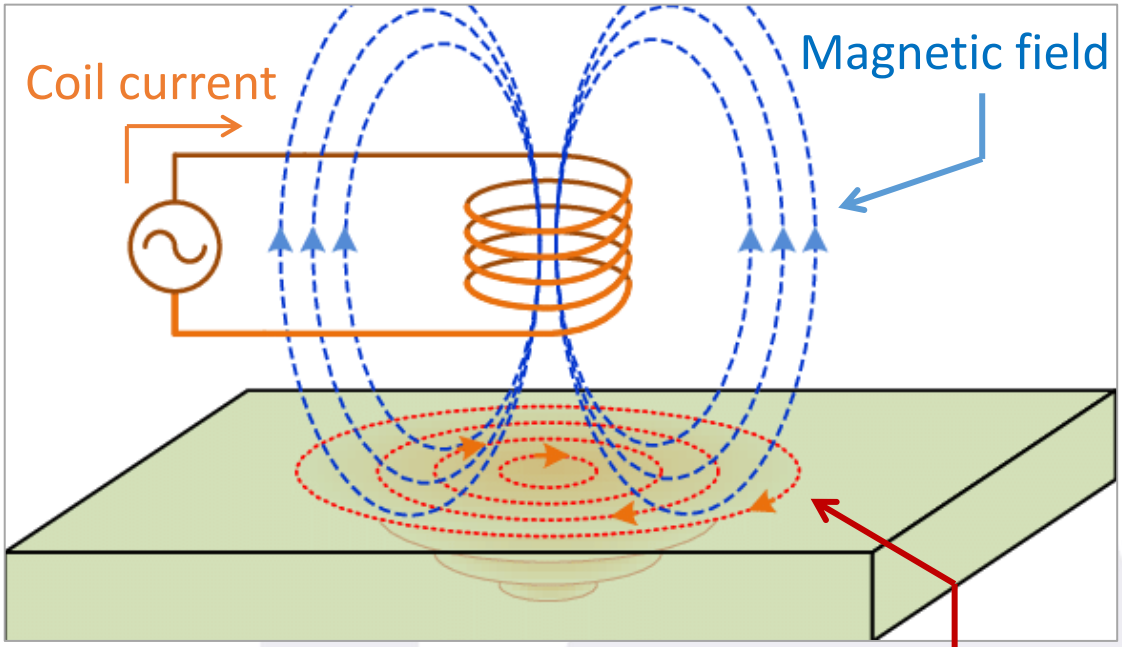
DEKA
Innate Ability

SCHWARZY

Mechanism of Action

The magnetic field in turn generates a current inside the body, and this depolarizes axons of motor units, stimulating the muscle fibers contraction.





$$\mathcal{E} = -\frac{\mathrm{d}\Phi_B}{\mathrm{d}t}$$

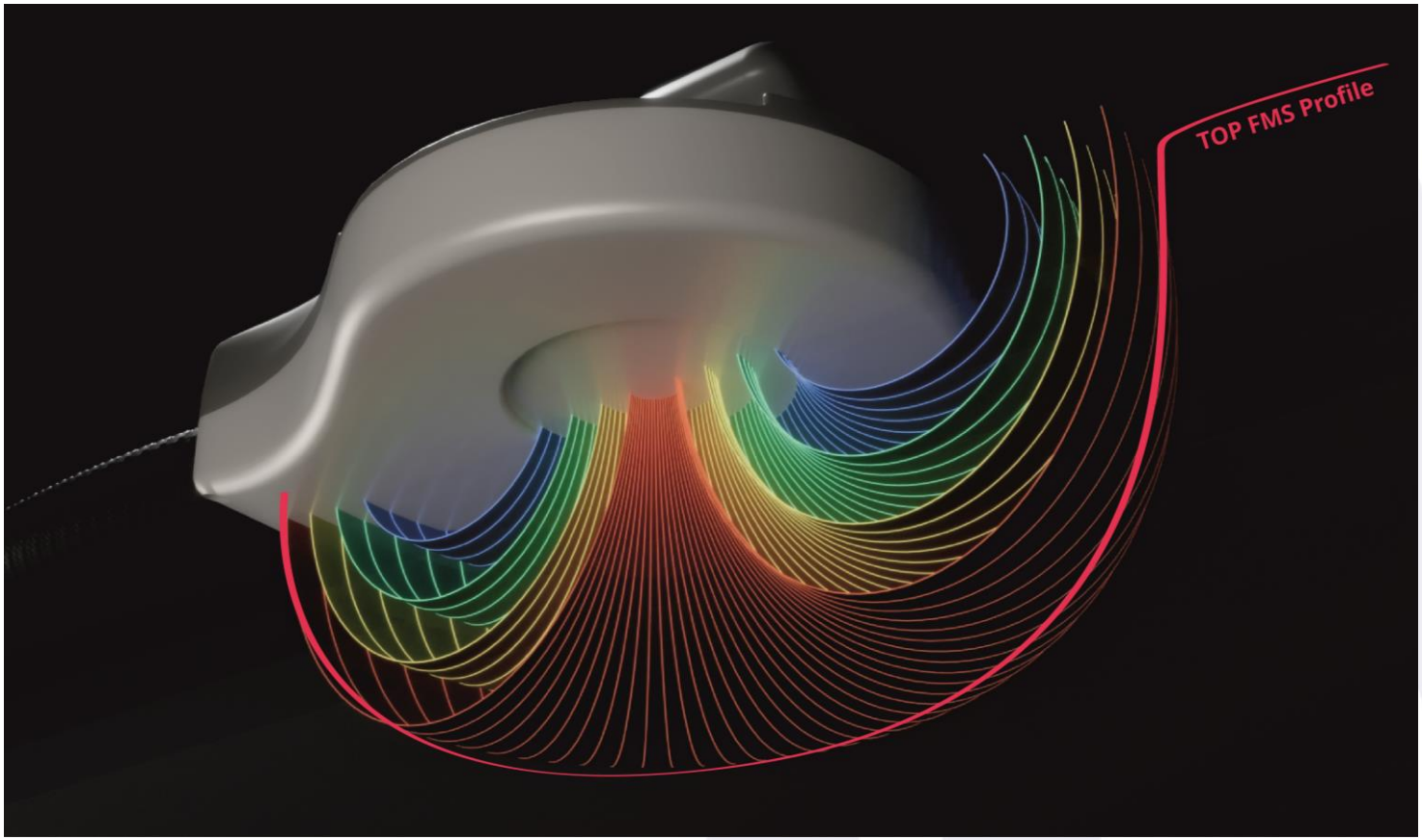
Electric field generated by the magnetic field

DEKA
Innate Ability

SCHWARZY

TOP FMS (TOP Flat Magnetic Stimulation)

Uniqueness of the TOP FMS field: uniform field lines over the entire muscle fascia.



DEKA
Innate Ability

SCHWARZY

Indications for use

Schwarzy system is a *medical device* intended for the ***fat reduction through neuromuscular stimulation*** (for the reduction of risk factors related to pre-obesity or abdominal obesity).

DEKA
Innate Ability

SCHWARZY

Schwarzy acts on different body areas and, in a few sessions, **tones and volumizes the muscles, reducing localized fat, and improving the postural aspect.**

DEKA Innate Ability

SCHWARZY

Excess fat around the waist may increase health risks even more than having fat in other parts of the body

Regardless of your overall weight, having a large amount abdominal fat increases your risk of:

- type 2 diabetes
- high blood pressure
- heart disease and strokes
- certain types of cancer
- sleep apnea
- osteoarthritis
- fatty liver disease
- kidney disease
- pregnancy problems

https://www.who.int/nutrition/publications/obesity/WHO_report_waistcircumference_and_waisthip_ratio/en/
https://www.niddk.nih.gov/health-information/weight-management/health-risks-overweight
https://www.nih.gov/news-events/news-releases/excess-fat-around-waist-may-increase-death-risk-women

DEKA
Innate Ability

SCHWARZY

DEKA Innate Ability

SCHWARZY

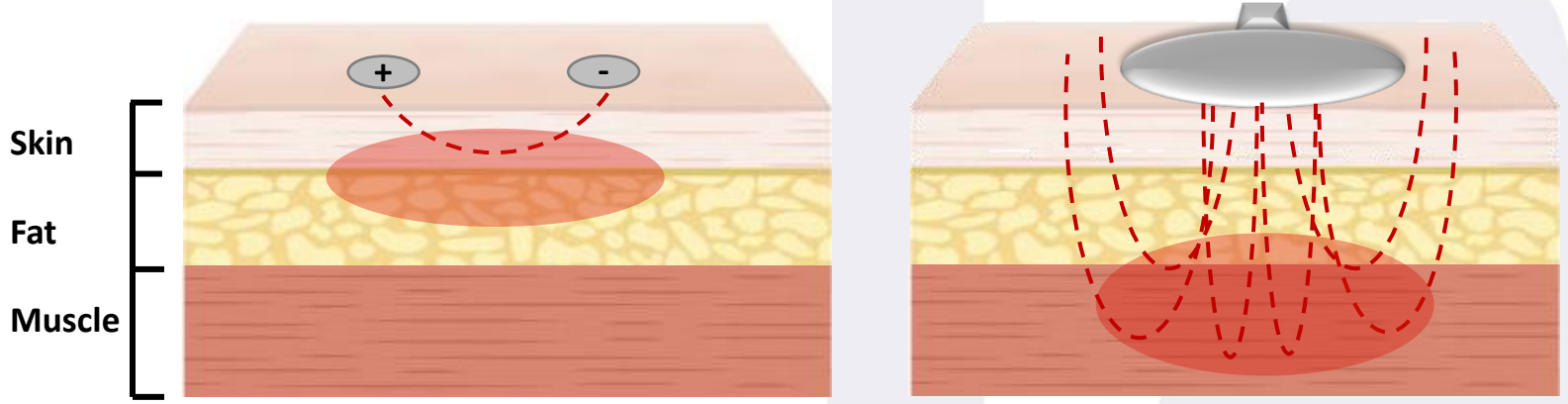
Magnetic vs. Electrical Stimulation

Electrical muscle stimulation (EMS) is the stimulation of muscle contraction using electric impulses. It can be utilized as a strength training tool for healthy subjects and athletes. **Stimulating the peripheral nervous system by electricity is done by applying electrodes to the skin and sending current through the electrodes and thereby through the tissue**. The current sent through the tissue will activate the nerves and thereby activate the muscles in the area affected. Those who have tried this will know that this is an **unpleasant and painful experience**. This feeling of pain limits the level of current sent through the tissue and, as a consequence, the possibility to increase the penetraion depth inside the tissue.

On the contrary, **using magnetic stimulation no electrodes have to be positioned**. A time varying magnetic field, generated by a coil close to the skin but not necessary in touch with it, can be used to induce an electric current inside tissue. **The current does not have to pass through the relatively high resistance of the skin so that nociceptors in the skin are not activated**. Thus by using magnetic stimulation it is possible to activate the peripheral muscles without the pain experienced by electrical stimulation.

Magnetic stimulation is independent of clothing and bone/tissue structure an this makes this technique superior to electrical stimulation in both research and clinic.

A furthermore advantage of Schwarzy technology versus EMS is the greater penetration depth of magnetic stimulation that allows to better reach muscles to be treated.

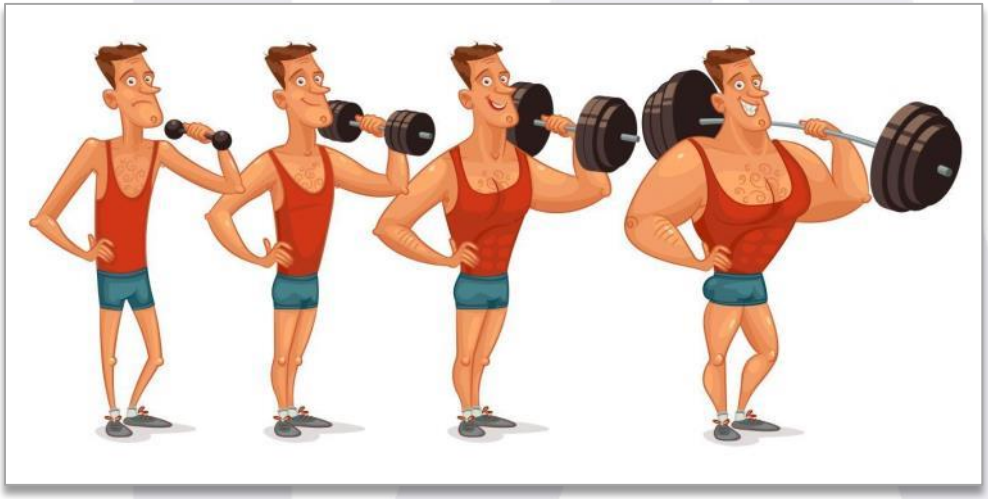


EMS

The Beneficial Effects of Increasing Physical Activity: Overload & Progression

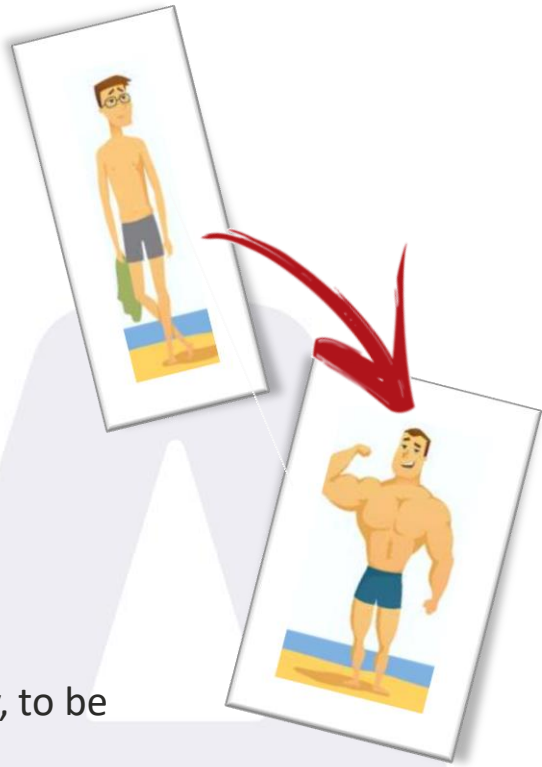
- **Overload** is the physical stress placed on the body when physical activity is greater in amount or intensity than usual. The body's structures and functions respond and adapt to these stresses. For example, aerobic physical activity places a stress on the cardiorespiratory system and muscles. This increase in demand increases the efficiency and capacity of the lungs, heart, circulatory system, and exercising muscles. In the same way, muscle-strengthening activities overload muscles making them stronger.

- **Progression** is closely tied to overload. Once a person reaches a certain fitness level, he or she is able to progress to higher levels of physical activity by continued overload and adaptation. **Small, progressive changes in overload help the body adapt to the additional stresses while minimizing the risk of injury**.



Protocol

3 different protocols have been developed, based on the principles of "**overload**" & "**progression**" illustrated in the previous slide, depending on subject's fit conditions.



- **Aerobic** – Starting workout protocol for **untrained subjects**.
- **Muscle Shaping** - Muscle work aimed to recovering muscle trophism and tone. This is the recommended starting workout protocol for **subjects who do not perform regular physical activity**.
- **Muscle Strengthening** - Muscle work aimed to increasing muscle strength and building up muscle mass. This is the starting workout protocol for **trained subjects**.

Each protocol is made up of **2 modules** (#1 and #2) of increasing intensity, to be performed in chronological succession:

#1 - **beginner step**, to perform in the initial treatments of the series;

#2 - **advanced step**, to perform when well tolerated by subjects, to progress with the series of treatments.

Schwarzy's Training Program

The Schwarzy's training program is a proposal for the resumption or strengthening of physical activity divided by level of physical conditioning:

- **sedentary people** with **reduced muscle tone**
- **moderately active people** with **normal muscle tone**
- **trained people** and therefore **used to performing exercises** for muscle strength.

REMARK:

To improve and speed up the results it is **strongly recommended** to combine the Schwarzy treatments with a **healthy lifestyle and eating habits**.

Moreover, in case of a specific diet for weight loss, the association with the Schwarzy treatment is very important to promote the increase in muscle mass and tone while reducing fat mass, in order to avoid the effect of "emptying volumes" with flabby skin typical of people who lose weight in a short time.

DEKA
Innate Ability

SCHWARZY

During the preliminary visit, the doctor identifies the type of subject to be treated.

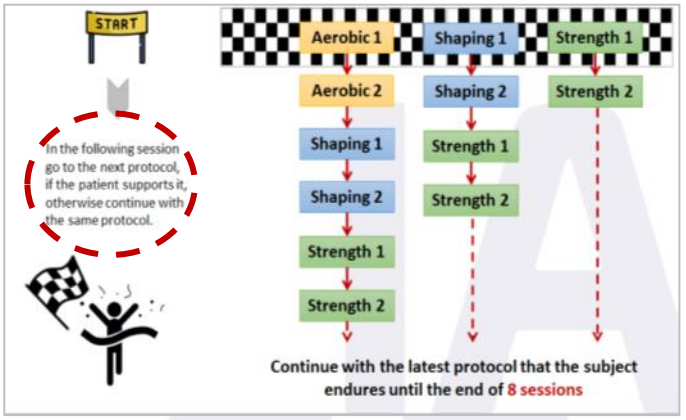
SEDENTARY SUBJECTS	MODERATELY ACTIVE SUBJECTS	TRAINED SUBJECTS
Aerobic 1	Shaping 1	Strength 1
Aerobic 2	Shaping 2	Strength 2
Shaping 1	Strength 1	
Shaping 2	Strength 2	
Strength 1		
Strength 2		

In the following session go to the next protocol, if the patient supports it, otherwise continue with the same protocol.

Continue with the latest protocol that the subject endures until the end of 8 sessions

General Indications for Progressing with Different Protocol Phases

When a patient returns after a generic Schwarzy session (**phase N**), it is important to ask him what reactions he/she had after the past treatment.



If he reports:

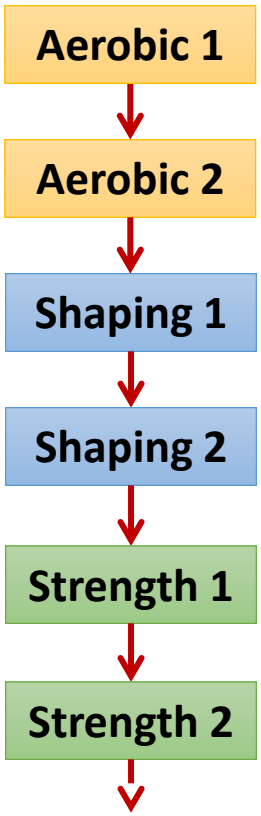
- **A muscle soreness → Continue with phase N again;**
- **No muscle soreness → Proceed with phase N + 1;**
- **Pain → Return to phase N-1.**

For example, after a session where the protocol *Shaping 2* was performed, if the patient reports:

- A muscle soreness → Continue with phase *Shaping 2* again;
- No muscle soreness → Proceed with phase *Strength 1*;
- Pain → Return to phase *Shaping 1*.

Muscle Soreness: After activity, muscular soreness typically peaks 24-72 hours after activity. **This is the result of small, safe damage to muscle fibers and it indicates that the workout you did was effective**. During this time, muscles may be tender to touch and feel tight and achy. Movement may initially be uncomfortable but moving and gently stretching your muscles will help to decrease soreness.

In-Depth Indications for the Sedentary People Protocol



Aerobic protocols help untrained muscles to be more prepared to receive the following Shaping and/or Strength protocols. Aerobic protocols are very important to **avoid too strong starting training**. In effect, as for any physical activity, graduality and progression **help the body to adapt to the muscle stresses while minimizing the risk of injury.**

On the other hand, it is normal that a softer protocol produces less evident effects.

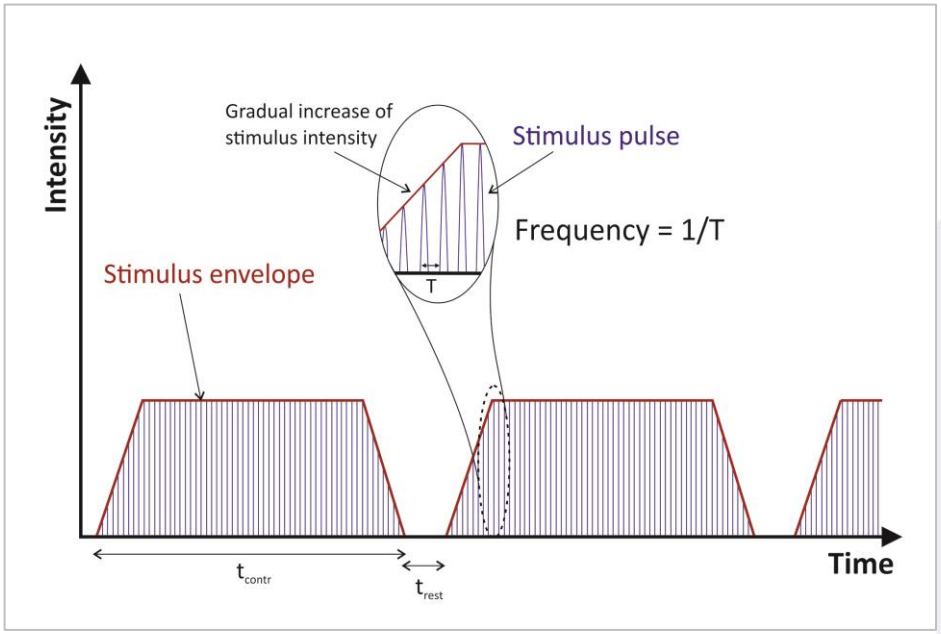
As general indications, with sedentary patients we suggest:

- To perform **Aerobic 1** protocol at the **1st session**.
- Pass to the **Aerobic 2** protocol at the **2nd session**.
- At the **3rd session**, if the patient doesn't complain muscle soreness due to previous workouts, go directly to the **Shaping 1** protocol.

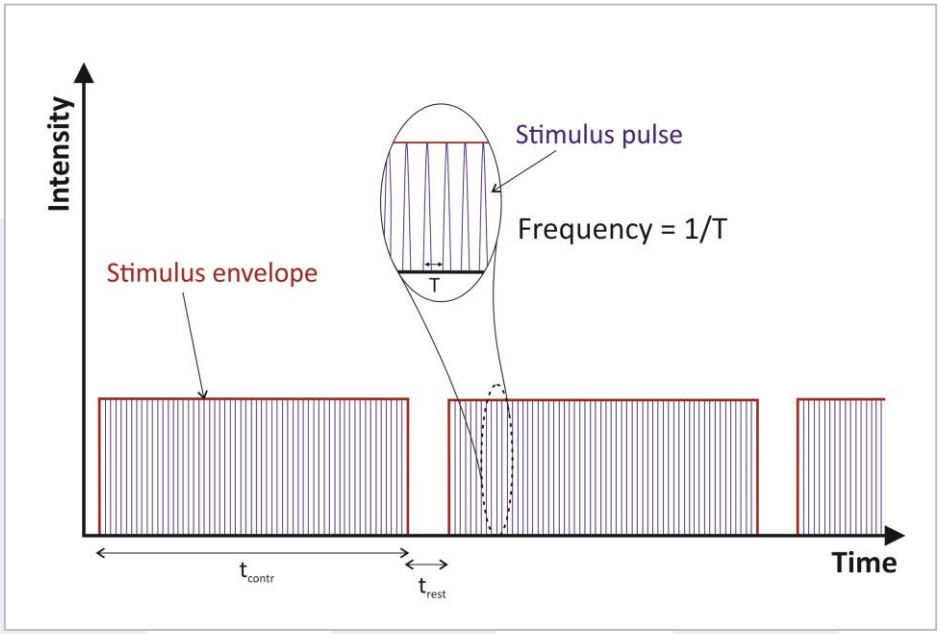
Evaluate further progressions when the subject doesn't complain any relevant muscle soreness after a treatment.

NOTE: Comparing with ***moderately active*** and ***trained*** people, subjects starting with aerobic protocols may request **some more treatment sessions** to obtain more important results.

Pulse Envelope Shapes



The envelope of pulse burst in every module **#1** is trapezoidal. This allows a gradual increase/decrease of pulses intensity generating muscle contraction.



The envelope of pulse burst in every module **#2** is rectangular. No gradual increase/decrease o pulses intensity. The stimulus for muscle contraction is simply on or off.

Warm-Up and Cool-Down

As any good training program, even with the Schwarzy system each session includes an **initial warm-up** and a **final cool-down** phases. Warm-up and a cool-down both involve doing exercises at a lower intensity and slower speed, which improves athletic performance, prevents injuries, and helps with recovery from exercise.

Warm-up:
Frequency = **10 Hz**
Time: **1 minute**

The **warm-up** allows a gradual increase in local blood circulation, which improves athletic performance and prevents injuries.

Cool-down / Muscle Relaxation:
Frequency = **5 Hz**
Time: **2 minute**

The **cool-down** prevents injuries, and helps with recovery from exercise to prevent lactic acid formation.

How to Position the Pads in the Most Effective Way

During the warm-up phase (always present in all protocols for 1 minute), **move the Schwarzy pad/pads** on the treatment body area **to find the best position which maximize the muscle contraction** (ask for the patient feedback for finding it).

Aerobic Protocols - For Untrained Subjects

Target:

- **Slow red fibers**
- **(Re)Activate muscle activity**
- **Non intense muscle contractions**

	AEROBIC 1	AEROBIC 2
	Start with Aerobic 1 protocol for the first treatment session	Continue with Aerobic 2 protocol to complete series of treatments
1 minute	**Warm-up** Frequency: **10Hz**	
43 minutes	**Aerobic** Frequency: **20Hz** 	**Aerobic** Frequency: **20Hz** 
	t_{contr} = 4''	t_{rest} = 2''
2 minutes	**Cool-down / Muscle Relaxation / Massage** (To prevent lactic acid formation) Frequency: **5Hz**	

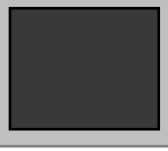
Recommendation:

- The compete series of treatments includes 8 sessions
- 46 minutes
- Sessions twice a week, not in consecutive days

Muscle Shaping Protocols - For Subjects with Flabby Muscle

Target:

- **Slow red fibers**
- **Increase muscle tone – Muscle shaping**
- **Mild/intense muscle contractions**

	MUSCLE SHAPING 1	MUSCLE SHAPING 2
	Start with Muscle Shaping 1 protocol for the first treatment sessions	Continue with Muscle Shaping 2 protocol to complete series of treatments
1 minute	**Warm-up** Frequency: **10Hz**	
24 minutes	**Muscle Shaping** Frequency: **25Hz** 	**Muscle Shaping** Frequency: **25Hz** 
	t_{contr} = 4”	t_{rest} = 4’’
2 minutes	**Cool-down / Muscle Relaxation / Massage** (To prevent lactic acid formation) Frequency: **5Hz**	

Recommendation:

- The compete series of treatments includes 8 sessions
- 27 minutes
- Sessions twice a week, not in consecutive days

Muscle Strengthening Protocols - For Trained Subjects

Target:

- **Fast white fibers**
- **Increase muscle power – Muscle building-up**
- **Intense muscle contractions**

	MUSCLE STRENGTHENING 1	MUSCLE STRENGTHENING 1
	Start with Muscle Strengthening 1 protocol for the first treatment sessions	Continue with Muscle Strengthening 2 protocol to complete series of treatments
1 minute	**Warm-up** Frequency: **10Hz**	
24 minutes	**Muscle Strengthening** Frequency: **40Hz**	**Muscle Strengthening** Frequency: **40Hz**
	t_{contr} = 2”	t_{rest} = 4’’
2 minutes	**Cool-down / Muscle Relaxation / Massage** (To prevent lactic acid formation) Frequency: **5Hz**	

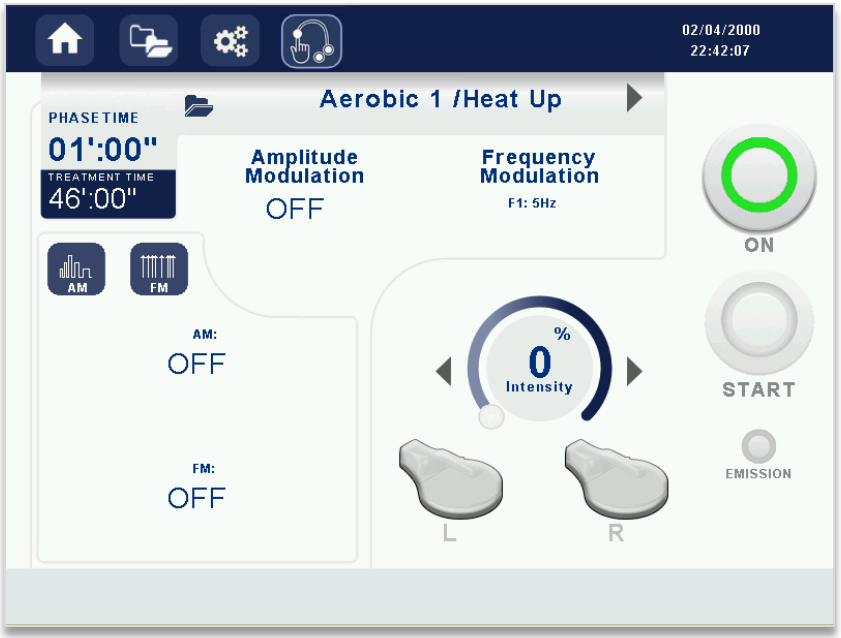
Recommendation:

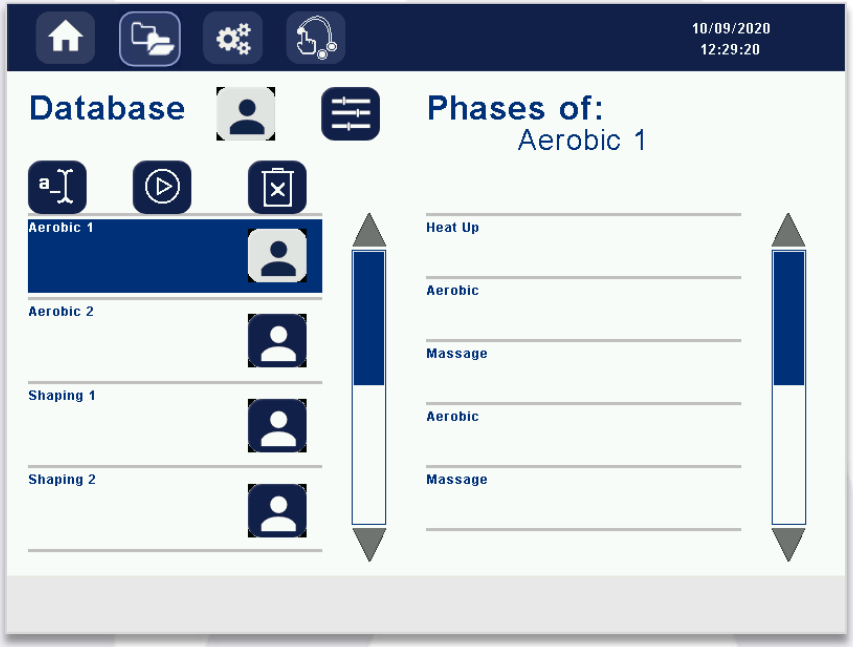
- The compete series of treatments includes 8 sessions
- 27 minutes
- Sessions twice a week, not in consecutive days

DEKA Innate Ability

SCHWARZY

GUI – Graphic User Interface

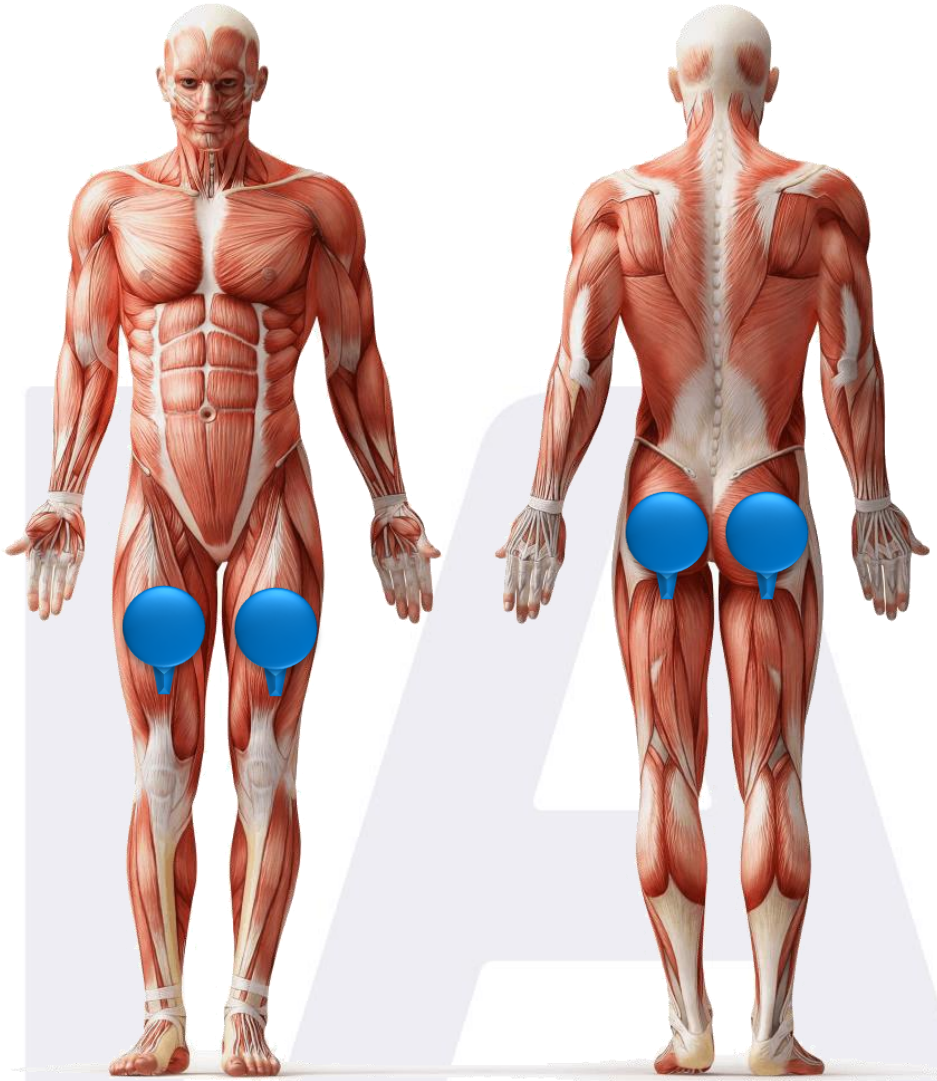




Pads & Areas

Couple of ***round flat*** pads, mainly suitable for:

- **Upper legs/thighs**
- **Buttocks**



Pads & Areas

Single ***oval flat*** pad, mainly suitable for:

- **Abdomen**

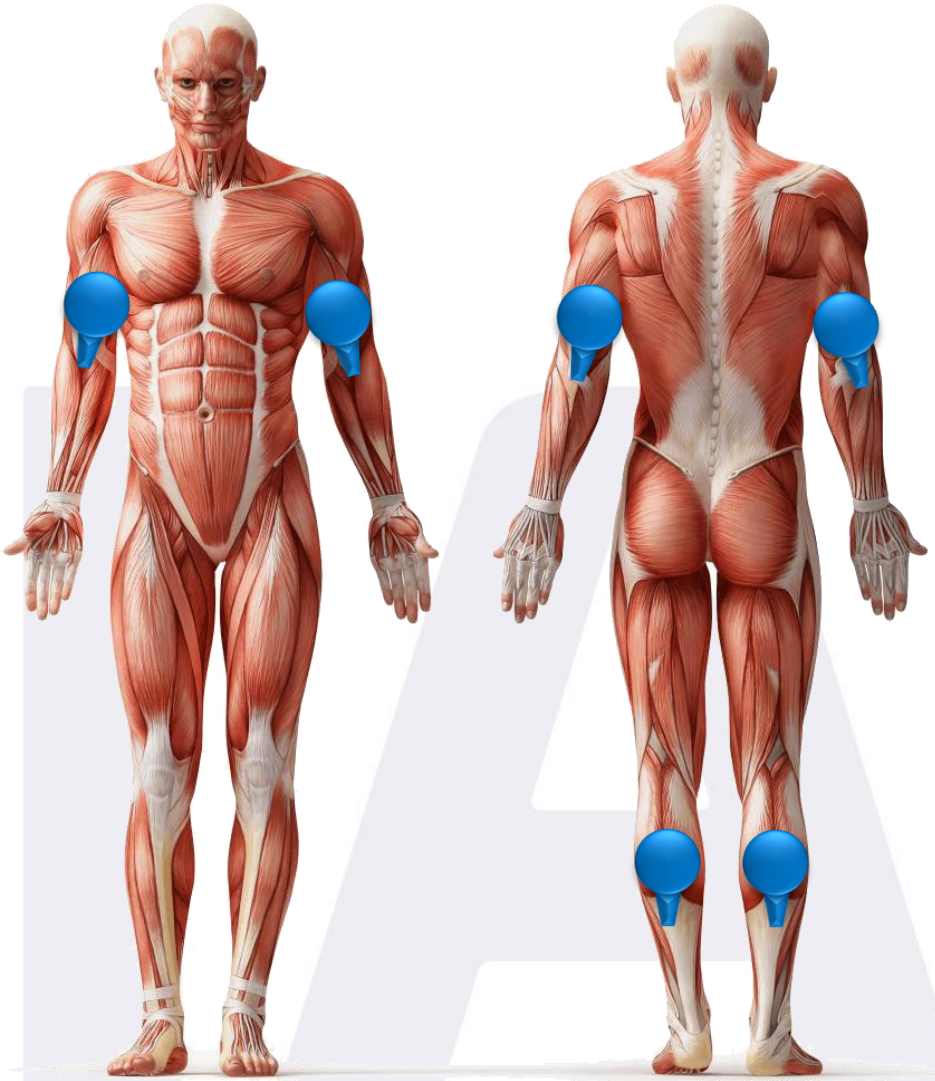
DEKA Innate Ability

SCHWARZY

Pads & Areas

Couple of ***round curved*** pads, mainly suitable for:

- **Lower legs/calves**
- **Forearm**



DEKA
Innate Ability

SCHWARZY

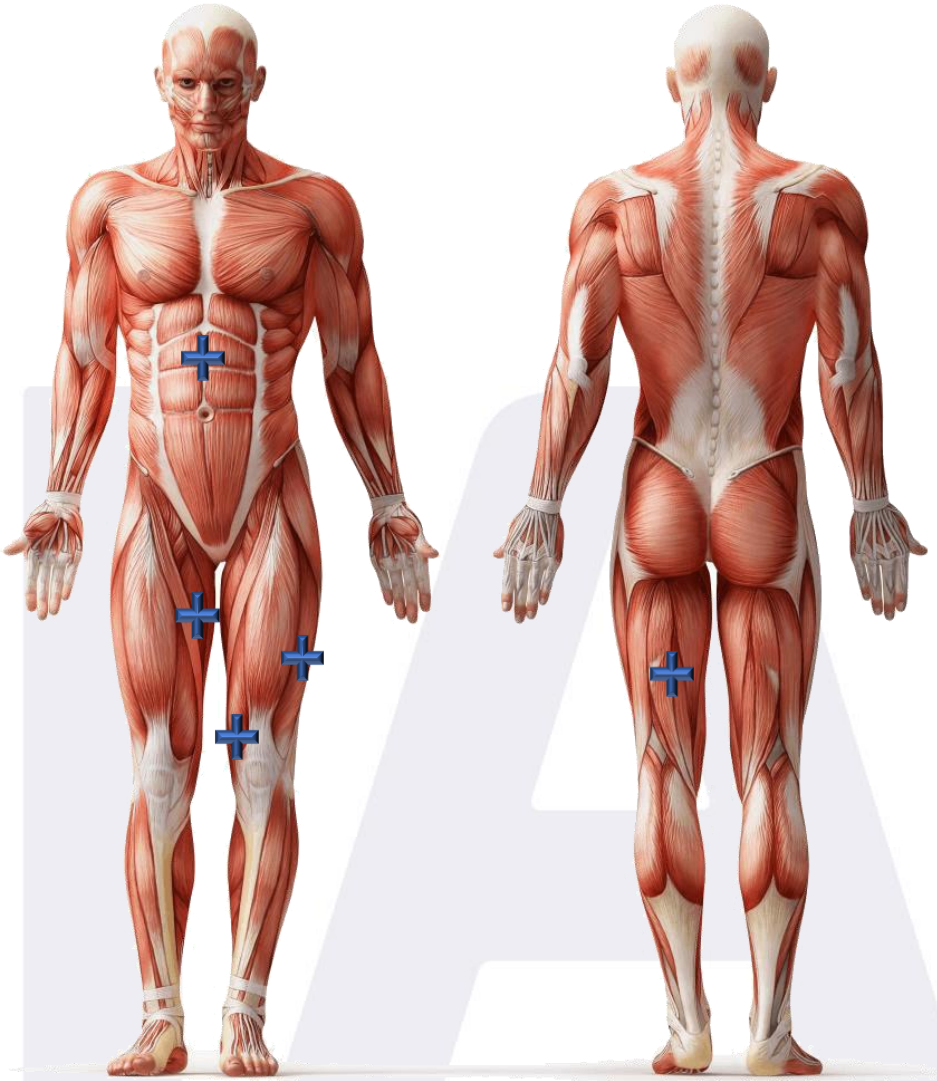
Pads & Areas

Schwarzy pads can be used also in others body areas according to the patient needs.

The figure shows some possible further points for positioning the pads.

Always remember to avoid pads application on:

- **Head area;**
- **Heart area;**
- **Growth plate areas.**



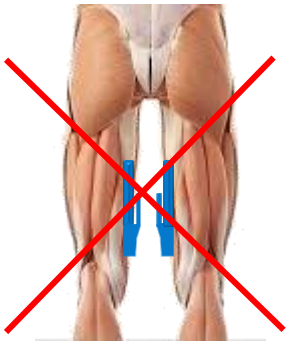
Pads & Areas

WARNING!!!!!

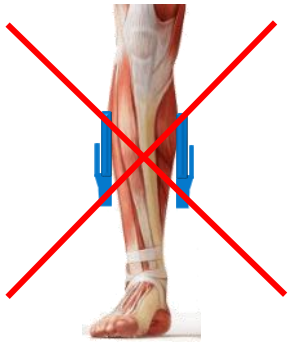
When both applicators are in use, do not position them closer than 15 cm when facing and do not overlap them each other.

Some examples of incorrect placement:

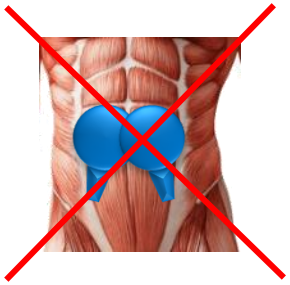
No facing pads closer than 15 cm!
(For the inner thighs, a possible solution is to spread the legs apart)



No facing pads closer than 15 cm!
(Be careful with very thin thighs)

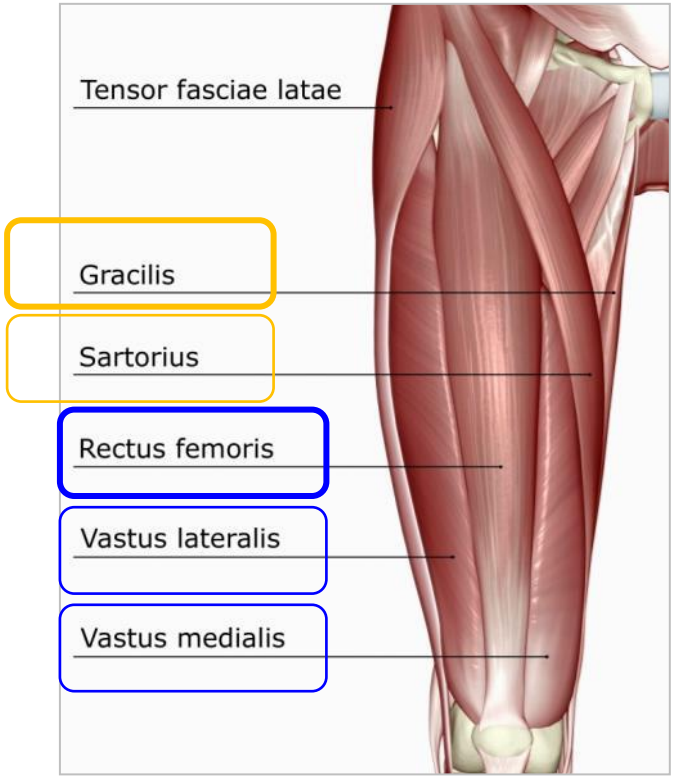


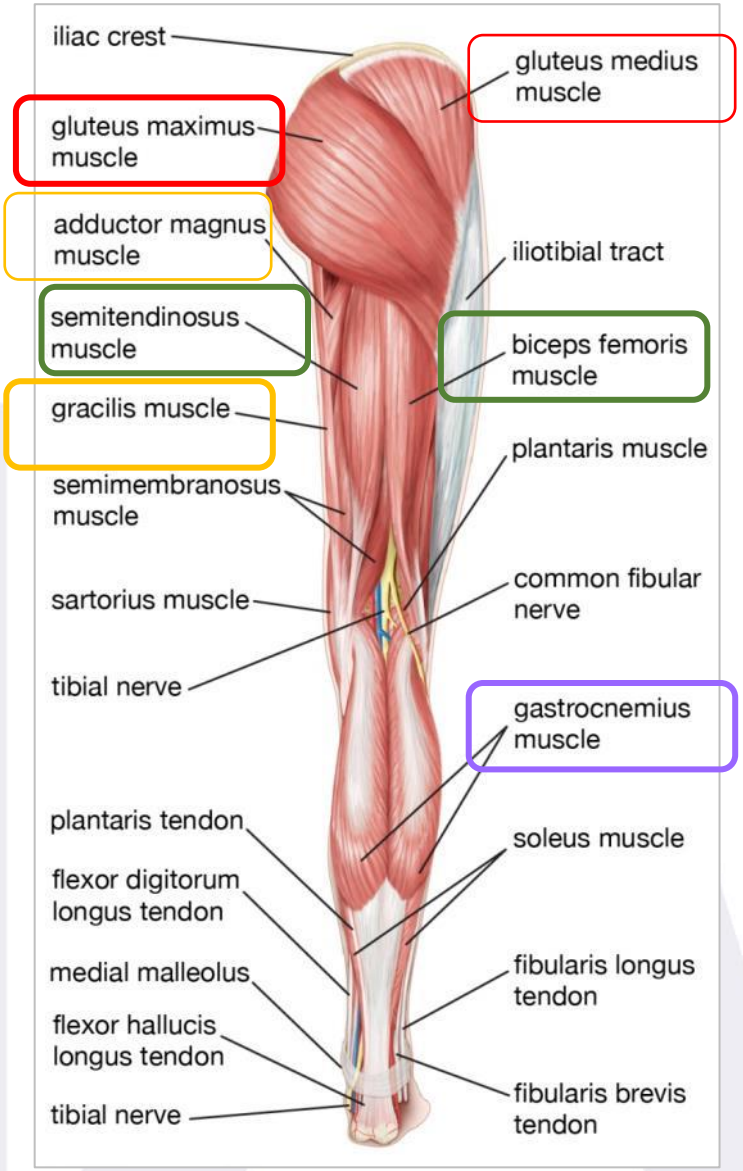
NO OVERLAPPING!



Main Muscles Involved for:

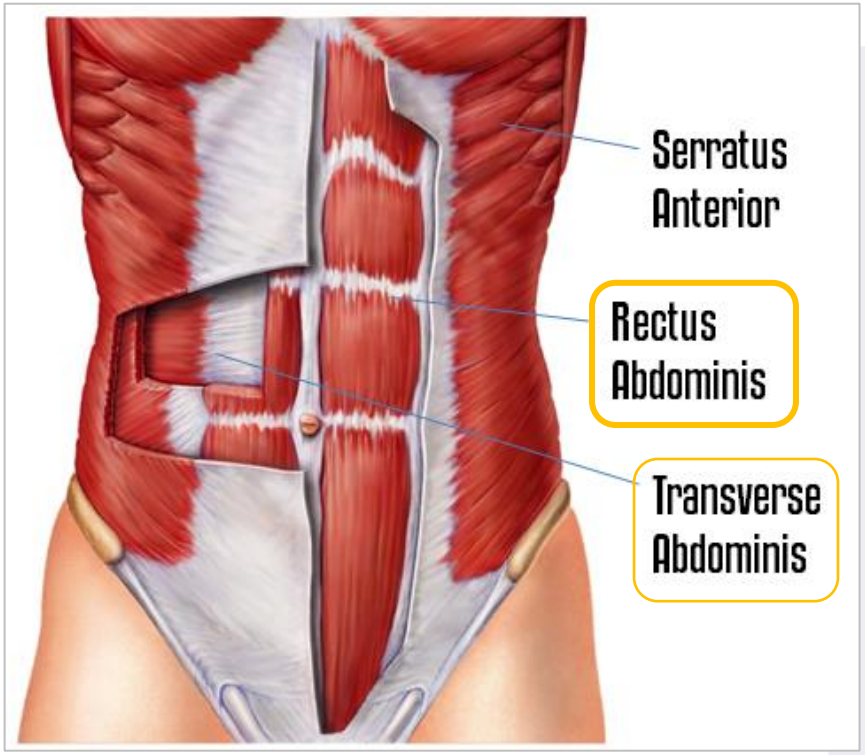
- **Front of the thigh** treatment;
- **Inner thigh** treatment;
- **Back of the thigh** treatment;
- **Buttocks** treatment;
- **Calf** treatment.

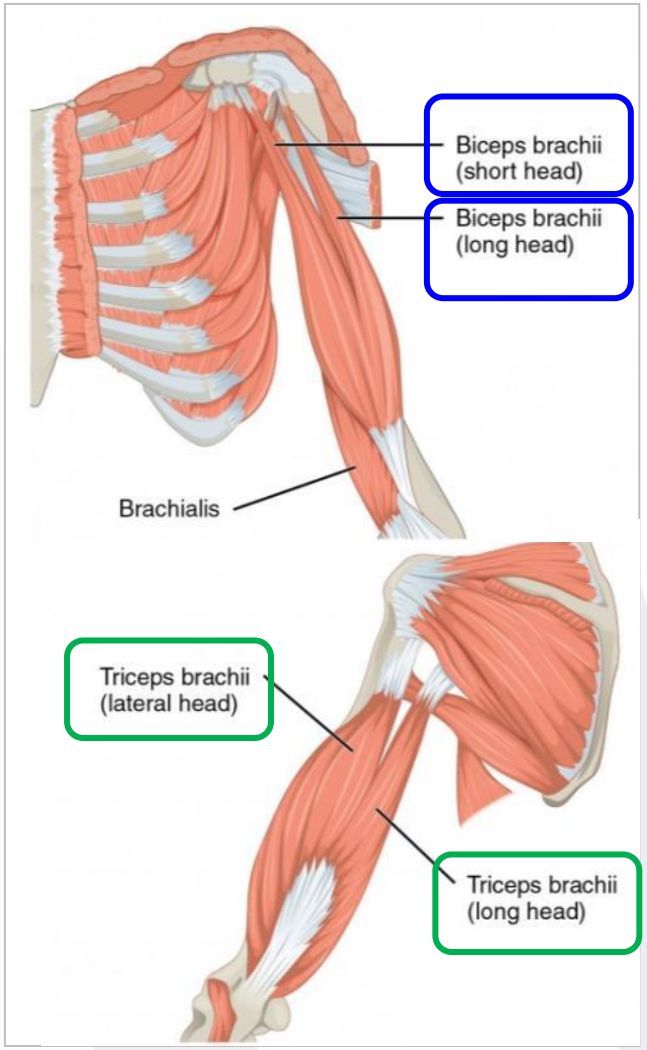




Main Muscles Involved for:

- **Abdominal (both for lower & upper abs)** treatment;
- **Arm (upper)** treatment;
- **Arm (lower)** treatment.





Safety & Comfort

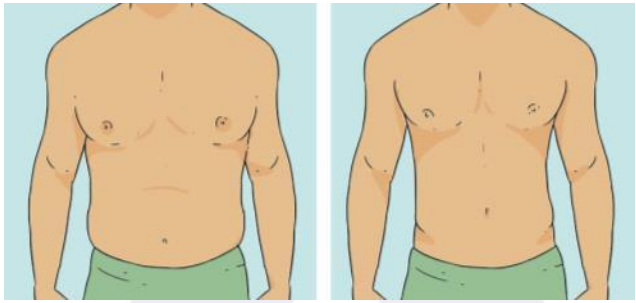
With the protective covers to use for each patient:

Expected Results

According to the scientific literature:

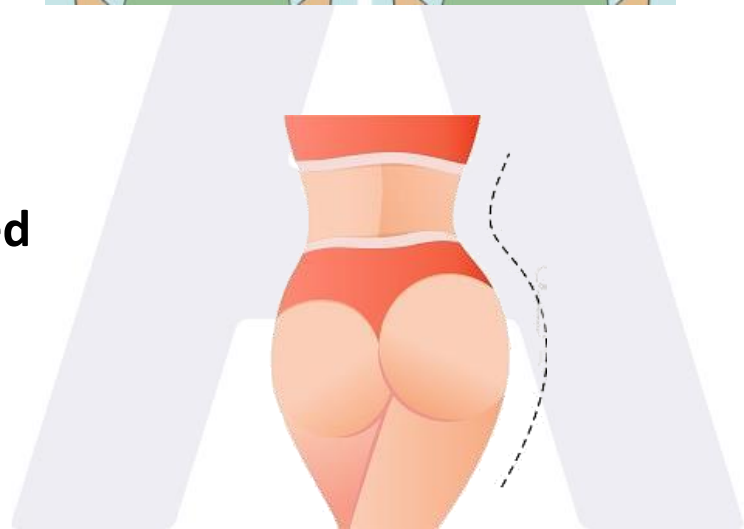
- **For abdominal area**

  reduction of adipose tissue thickness,
  increase in rectus abdominis muscle thickness,
  reduction in rectus abdominis separation (diastasis recti),
  reduction in waist circumference;



- **For buttock area**

  improved shape and volume of the treated area,
  overall buttock lifting,
  reduction in muscle laxity.



Summary of Main Advantages

- **Non-invasive** system
- Greater penetration then ES
- No dermo-epidermal involvement
- **Painless**
- **Workout tailored for any patient** (with different pads specific for the different body areas and the Aerobic, Shaping and Strength preinstalled modules, editable by the user and upgradable by an USB key)
- Trapezoidal and square envelope pulses shape
- Exclusive **TOP FMS** magnetic field emission for a more uniform muscle action
- No consumables
- Perfect **synergy and integration with Onda** system

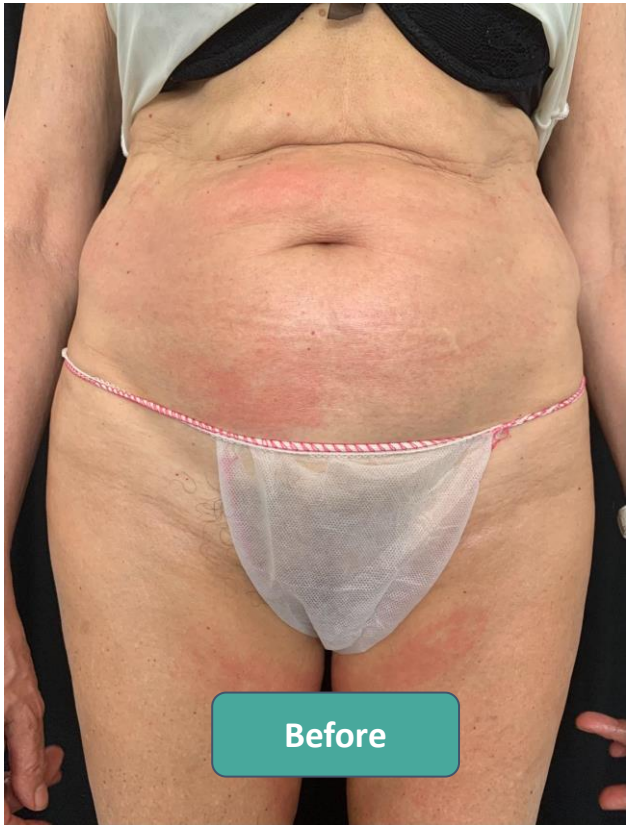
DEKA
Innate Ability

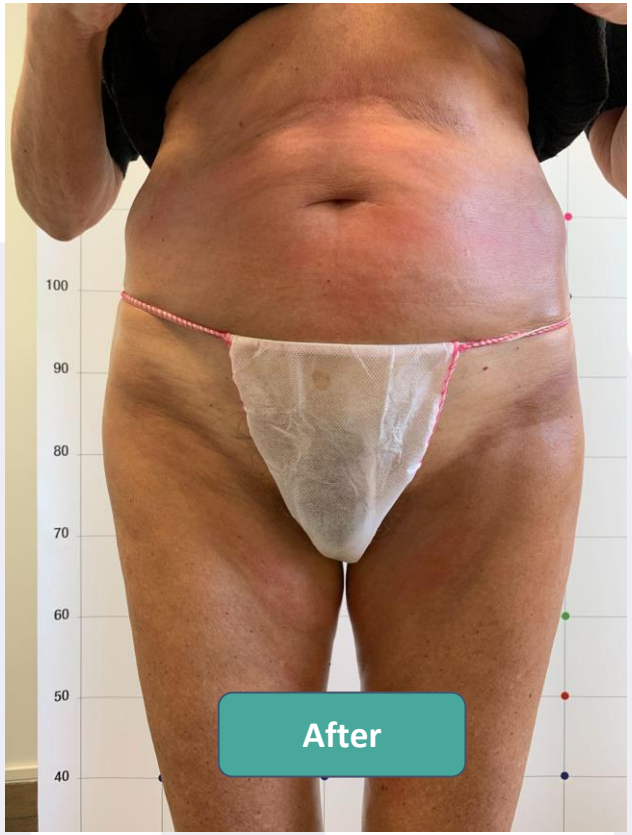
SCHWARZY

Clinical Cases

Abdomen:

4 sessions (treatment in progress Onda+Schwarzy); -6 cm abdominal circumference; -25% fat; +10% muscle.





Courtesy of P. Mezzana, M.D. – Roma, Italy.

Butt:

- 4 sessions (treatment in progress);
- -10% fat;
- +10% muscle.

Courtesy of P. Mezzana, M.D. – Roma, Italy.

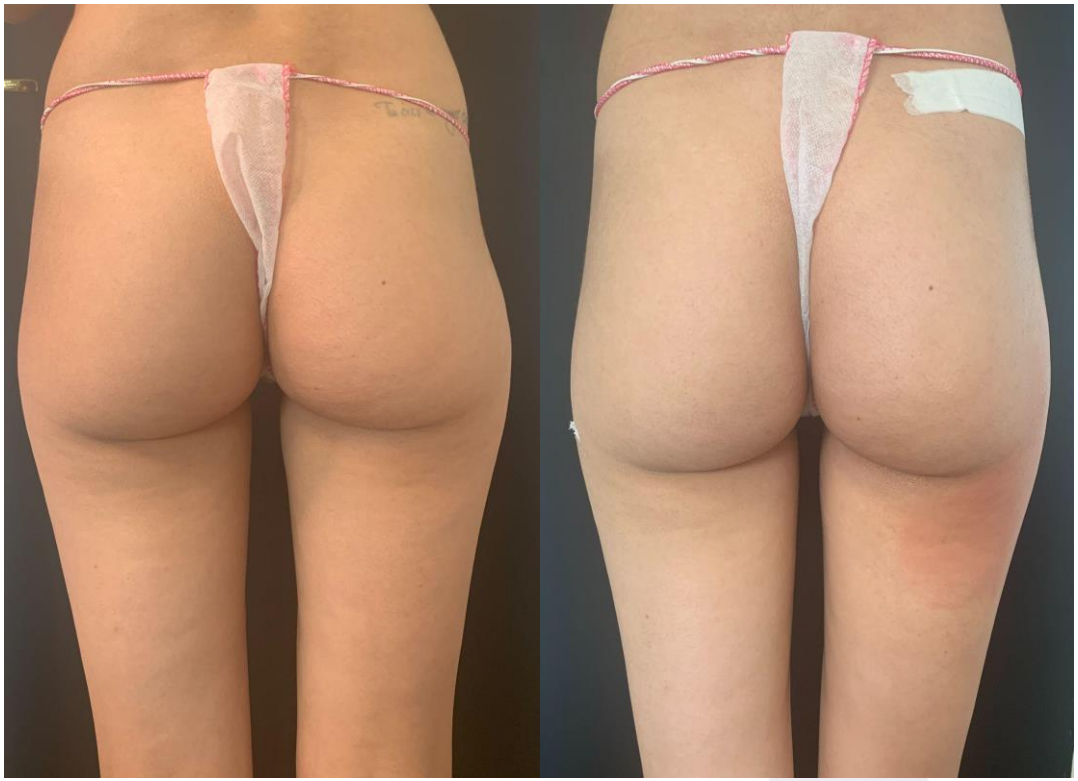
DEKA
Innate Ability

SCHWARZY

Abdomen:

8 sessions (treatment in progress); -8 cm abdominal circumference; -20% fat; +15% muscle.

Courtesy of P. Mezzana, M.D. – Roma, Italy



Butt:

- 6 sessions (treatment in progress);
- -18% fat;
- +10% muscle;
- - 5 mm thickness of plica.

Courtesy of P. Mezzana, M.D. – Roma, Italy.

Butt:

3 sessions (treatment in progress); -2,5 cm circumference; -8% fat; +10% muscle.

Courtesy of P. Mezzana, M.D. – Roma, Italy.

Arm:

- 6 sessions (treatment in progress);
- -10% fat;
- +10% muscle;
- - 8 mm thickness of plica.

Courtesy of P. Mezzana, M.D. – Roma, Italy.

Butt:

8 sessions (treatment in progress); -4 cm circumference; -20% fat; +15% muscle.

Courtesy of P. Mezzana, M.D. – Roma, Italy.

Abdomen:

- 8 sessions (treatment in progress);
- -10 cm abdominal circumference;
- -30% fat;
- +15% muscle;
- -3 cm thickness of plica.

Courtesy of P. Mezzana, M.D. – Roma, Italy.

Inner thigh:

5 sessions (treatment in progress); -2 cm circumference; -10% fat; +8% muscle.

Courtesy of P. Mezzana, M.D. – Roma, Italy.

Butt:

- 8 sessions (treatment in progress);
- -20% fat;
- +15% muscle;
- - 1,5 cm thickness of plica.

Courtesy of P. Mezzana, M.D. – Roma, Italy.

DEKA
Innate Ability

SCHWARZY

Dermatos

Abdomen:

- 4 sessions (treatment in progress);
- -2 cm abdominal circumference;
- -20% fat;
- +10% muscle;
- - 5 mm thickness of plica.

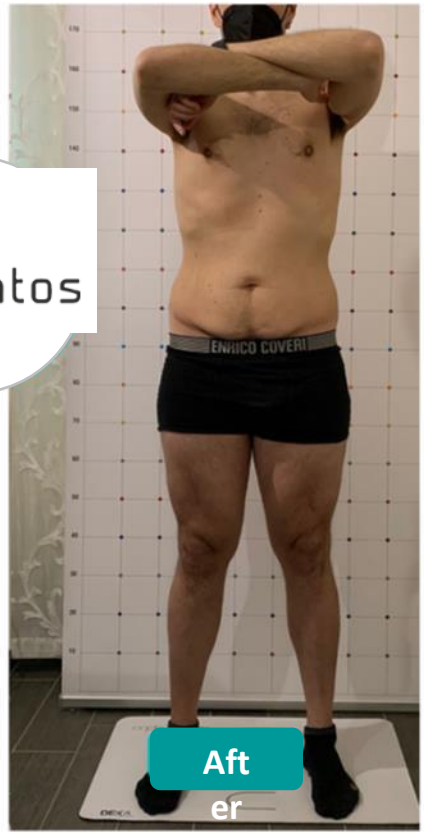
Courtesy of A. Leone, M.D. – Pescara, Italy.

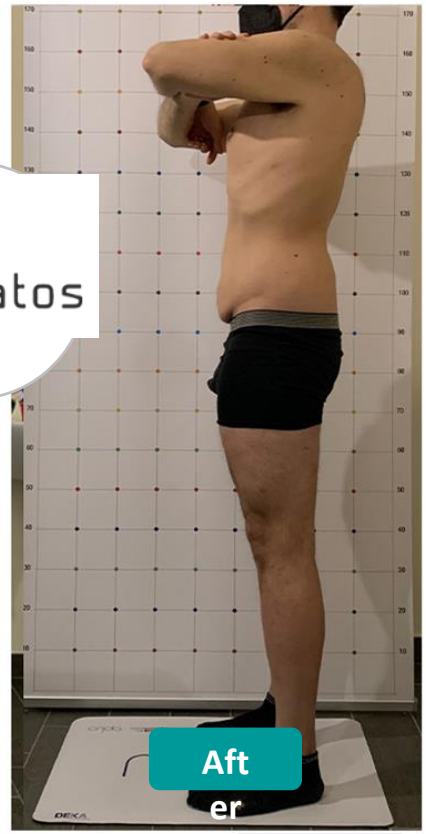
DEKA
Innate Ability

SCHWARZY

Abdomen:

4 sessions (treatment in progress); -2 cm abdominal circumference; -12% fat; +10% muscle.

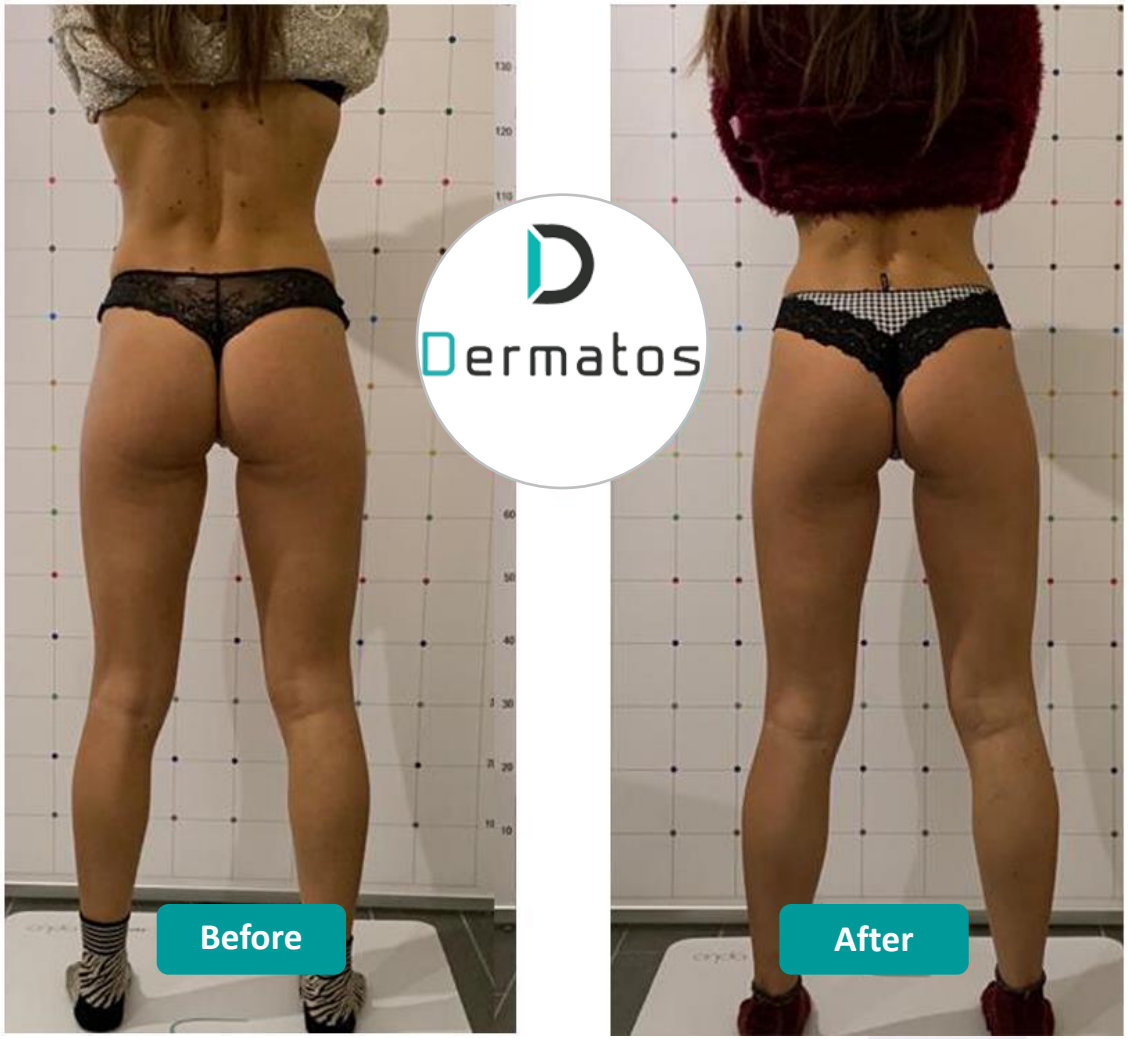




Courtesy of A. Leone, M.D. – Pescara, Italy.

DEKA
Innate Ability

SCHWARZY



Buttocks:

- 4 sessions (treatment in progress).

Courtesy of A. Leone, M.D. – Pescara, Italy.

DEKA
Innate Ability

SCHWARZY

Dermatos

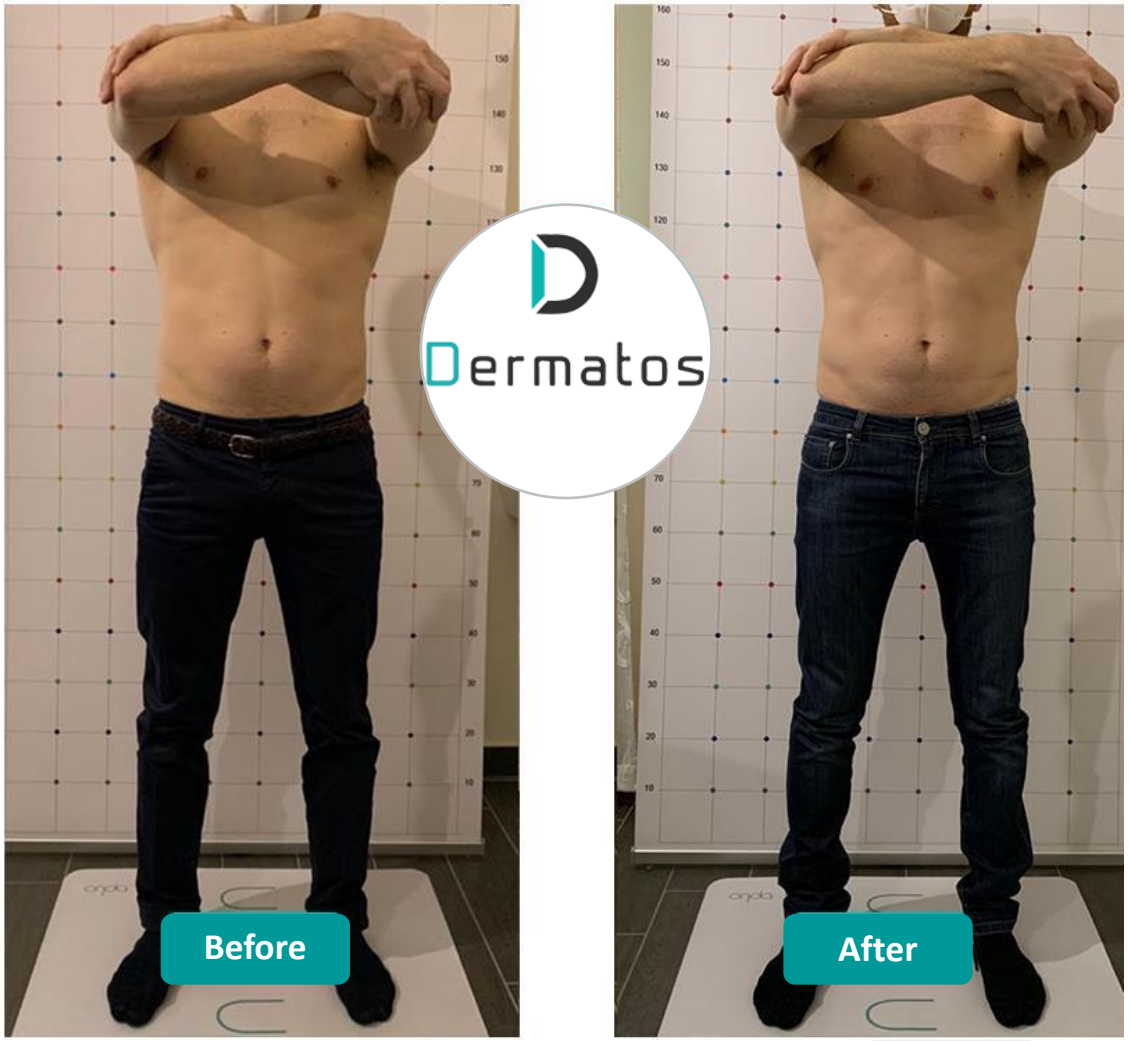
Abdomen:

- 4 sessions (treatment in progress);
- -6 cm abdominal circumference;
- -10% fat;
- +10% muscle

Courtesy of A. Leone, M.D. – Pescara, Italy.

DEKA
Innate Ability

SCHWARZY



Courtesy of A. Leone, M.D. – Pescara, Italy.

Abdomen:

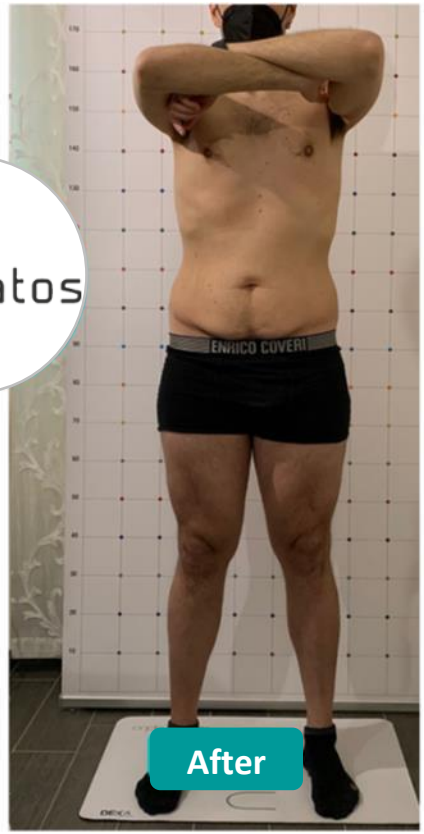
- 4 sessions (treatment in progress);
- -2 cm abdominal circumference;
- -20% fat;
- +10% muscle;
- - 5 mm thickness of plica.

DEKA
Innate Ability

SCHWARZY

Abdomen:

4 sessions (treatment in progress); -2 cm abdominal circumference; -12% fat; +10% muscle.



Courtesy of A. Leone, M.D. – Pescara, Italy.

DEKA
Innate Ability

SCHWARZY

Abdomen & Buttocks:

4 sessions (treatment in progress); -3 cm abdominal circumference; -9% fat; +10% muscle.

Courtesy of A. Leone, M.D. – Pescara, Italy.

DEKA
Innate Ability

SCHWARZY

Abdomen:

-5 cm abdominal circumference; -13% fat; +12% muscle.

Courtesy of A. Leone, M.D. – Pescara, Italy.

Courtesy of Dr G. Turra, M.D. – Rodiano (BS), Italy

Courtesy of Dr G. Turra, M.D. – Rodiano (BS), Italy

Courtesy of Prof. P. Bonan, M.D. – Florence, Italy

DEKA
Innate Ability

SCHWARZY

Courtesy of Prof. P. Bonan, M.D. – Florence, Italy

Courtesy of S. Bianchi, M.D. - Parma, Italy

DEKA
Innate Ability

SCHWARZY

The Perfect Synergy:

SCHWARZY

Skeletal Muscle Tissue

Adipose Tissue

DEKA Innate Ability

onda SCHWARZY

Cellulite:

1st month	1st day of the week	2nd day of the week (not following the 1st one)
1st week	Onda (Cellulite) + Schwarzy (Massage)	Schwarzy (Massage)
2nd week	Schwarzy (Shaping)	Schwarzy (Massage)
3rd week	Schwarzy (Shaping)	Schwarzy (Massage)
4th week	Schwarzy (Shaping)	Schwarzy (Massage)

From 2nd to 4th month	1st day of the week	2nd day of the week (not following the 1st one)
1st week	Onda (Cellulite) + Schwarzy (Massage)	Schwarzy (Massage)
2nd week	Schwarzy (Shaping)	-
3rd week	Schwarzy (Shaping)	-
4th week	Schwarzy (Shaping)	-

Schwarzy Massage Protocol

Frequency: **5Hz**

Treatment time: **14 minutes**

DEKA Innate Ability

onda SCHWARZY

Fat Reduction and/or Laxity:

1st month	1st day of the week	2nd day of the week (not following the 1st one)
1st week	Onda (Fat/Lax) + Schwarzy (Massage)	Schwarzy (Massage)
2nd week	Schwarzy (Massage)	Schwarzy (Massage)
3rd week	Schwarzy (Shaping/Strenght)	Schwarzy (Shaping/Strenght)
4th week	Schwarzy (Shaping/Strenght)	Schwarzy (Shaping/Strenght)

From 2nd to 4th month	1st day of the week	2nd day of the week (not following the 1st one)
1st week	Onda (Fat/Lax) + Schwarzy (Massage)	Schwarzy (Massage)
2nd week	Schwarzy (Massage)	-
3rd week	Schwarzy (Shaping/Strenght)	-
4th week	Schwarzy (Shaping/Strenght)	-

Schwarzy Massage Protocol

Frequency: **5Hz**

Treatment time: **14 minutes**

DEKA
Innate Ability

Effortless and Progressive Muscle Strengthening Through Neuromuscolar Stimulation

THANK YOU FOR YOUR ATTENTION