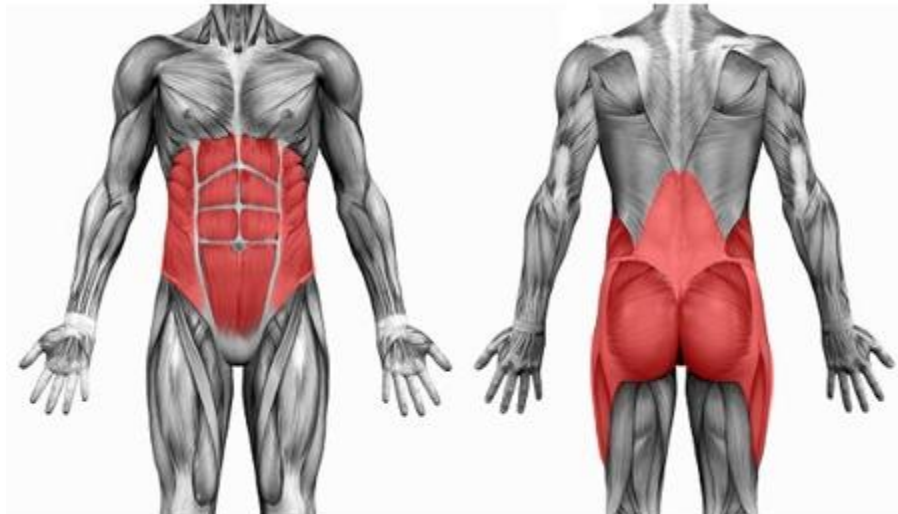


ULTIMATE GUIDELINES ABOUT CORE TRAINING FOR KARATE!



ULTIMATE GUIDELINES ABOUT CORE TRAINING FOR KARATE!

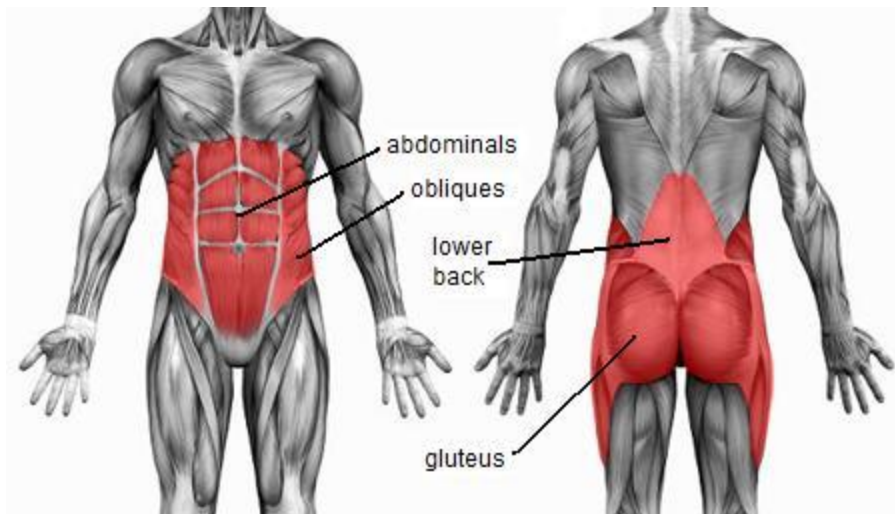
CORE TRAINING HAS A LOT OF ATTENTION IN SPORTS TRAINING AND FITNESS. KARATE IS NO EXCEPTION!

This has a reason and it's fans use it as fundamental training for performance and health.

But, first of all, what exactly is the "Core"?

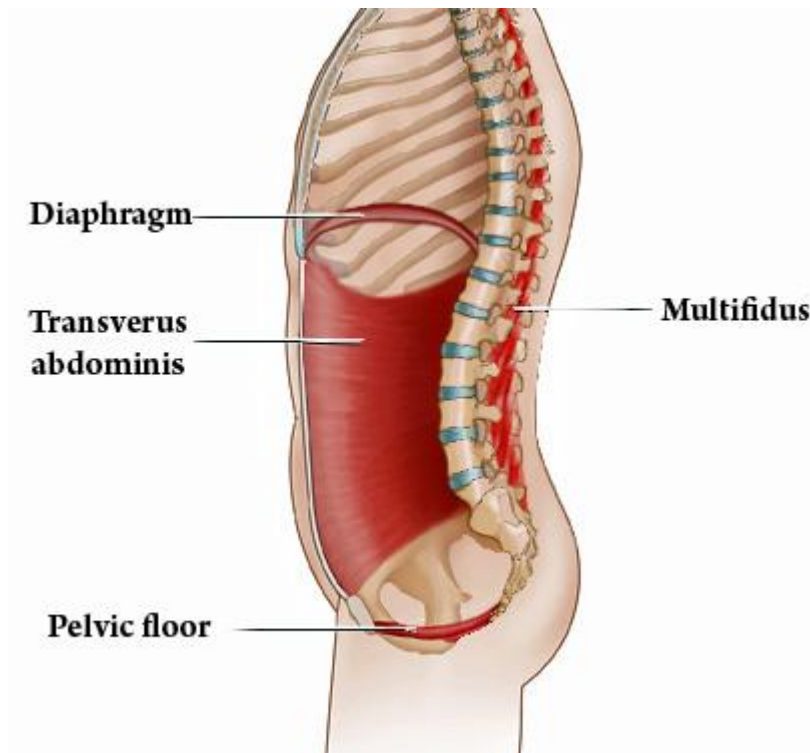
Most of Karate instructors and students associate it with the abdominal muscles...

YOUR CORE IS LIKE AN ANATOMICAL BOX



For Richardson et al (1999) and Akuthota et al (2008) this anatomical "box" includes:

- Abdominals (in the front)
- Paraspinals and Gluteals (in the back)
- Diaphragm (as the roof)
- Pelvic Floor and Hip Girdle Muscles (as the bottom)



These muscles are located in the center of the majority of the movements and kinetic chains.

Which are their main functions?

First, they are important for **stabilizing the spine and pelvis during Karate practice and daily living**. Having these muscles strong you'll prevent low back pain.

Third, **the risk of lower extremity injury is smaller** when you have strong Core muscles.

Finally, **a strong foundation of your "anatomical box" increases your performance in Karate**.

CORE MUSCLES SHOULD BE COORDINATED WITH WHOLE BODY MOTION



The demands that Karate places on your body cannot be created or dissipated by an isolated muscle or group of muscles.

Your entire body must work together to produce proper velocity, power, strength, displacement, etc.

Saying that, what's the role of the Core when you execute a Mawashi-Geri, a Zenkutsu-Dachi displacement or a Throw?

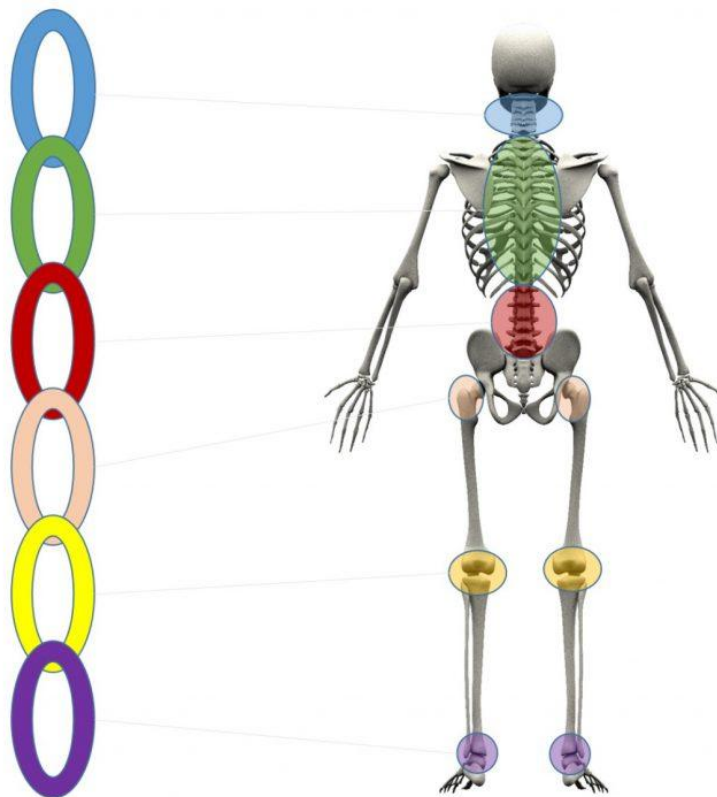
The muscles of the Core are responsible for providing the stable base for your arms and legs function and force transfer. **In well trained Karateka trunk muscles activate well ahead of the prime movers** (legs or arms, depending on the situation).

There are very few Karate activities that do not require a transfer of forces.

The Core has a very demanding job providing you **a control system on forces within the body.**

When forces are created in the lower extremity and are transferred into the arms, the Core has to react and perform with proper timing and control. For example in Kumite, if the Core reacts to early, the forces are dissipated and the arm or leg have to produce more forces placing it at a higher risk of injury.

Borghuis et al. (2008) state that **motion at 1 segment will influence all other segments in the chain.**



The Core is the central component to most Karate activities!

If it fails so does the effectiveness of the forces being created and transferred.

An increase or decrease of forces created from the improper distribution from the Core can be detrimental to performance and possibly lead to injury.

As you can see effective Core function doesn't depend only on strength or stability. It also depends on intermuscular coordination and the right contraction timing!

There is no scientific doubt that Core strength does have an effect on performance in an athletic population.

PLANKS ARE NOT THE BEST EXERCISES FOR IMPROVING YOUR KARATE PERFORMANCE

CORE EXERCISE CLASSIFICATION SYSTEM		
Exercise Classification Type	Description	Example
Traditional Core Exercises	Dynamic, low-load, commonly performed on floor, intent to activate superficial core muscles	Back Extension Sit-up
Core Stability Exercises	Minimal range of motion, low-load, floor-based exercises, intent to activate deep more muscles	Prone Plank Side Bridge
Ball/device Exercises	Traditional core and stability exercises performed with addition of a ball or device	Back Extension on a ball Crunch on a ball
Core Free Weight Exercises	Dynamic, externally loaded, intent to activate lower-body and core muscles	Squat / Lunge Deadlift
Noncore Free Weigth Exercises	Dynamic, externally loaded, intent to activate the upper-body muscles distal to the core	Shoulder Press Bicep Curl

Core Classification System proposed by Martuscello et al (2013)



Most of the scientific studies didn't find a significant correlation between Core strength/stability and athletic performance...

That's right!! And do you know why?

Because most of the studies focused in isometric exercises like planks or bridges. Those exercises are practiced in horizontal positions.

This means that there isn't an association between those Core exercises and what you really make in Karate practice. In Karate you all want to be in a standing position, right?!?

According to the fundamental principal of Training Specificity, **the Karate physical training must attempt to imitate, as much as possible, the specific movements of Kata and Kumite.**

As you can see there is very little relationship between planks or bridges and Suparinpei or a Mawashi-Geri.

But does this mean that you should stop doing Core Stability Exercises?

One part of the answer is in the next subchapter...

THE GREATER THE KARATEKA'S LEVEL MORE SPECIFIC SHOULD BE THE CORE TRAINING!



The effects of generic Core training are greater in recreational Karate students and almost null in elite and subelite athletes or non-competitive Karateka that train like athletes!!

With children and adolescents the effectiveness of generic Core exercises is still relevant.

Recreational Karate students are those who practice 2 or 3 times per week without any additional sport's training.

Above 4 intense trainings per week you can already consider your Karateka as athletes. **No matter if they are competitors or not... Lovers of Traditional non-competitive students that devotedly go to the Dojo and train almost everyday can be considered as "free athletes"!**

And think about this: What should you do with students that practice Karate only twice a week but also go to the gym or crossfit academies two more times per week and go swimming once a week?

You're right! You consider them as "athletes" and give them whatever they need to reach "the next level" faster...

Besides that planks are not the most motivating exercises in the world!!

In resume:

- **Recreational Karate students** – integrate planks, bridges and other isometric core stability exercises in your regular classes. If you want variability to increase your classes motivation you can include swiss balls, unstable surfaces or suspension exercises with Karate Belts.
- **Karate Children and Adolescents** – integrate static or dynamic planks and bridges with regularity. You can do it every class. As a motivation strategy include swiss balls and unstable surfaces. With children don't make them suffer with static exercise, please!! We promise that we will help you with practical exercises, in a near future...
- **Karate Athletes (competitive or non-competitive)** – include exercises with Medicine Balls, with Elastic Bands, Squats, Deadlifts, Lunges or any kind of standing multi-joint exercises where you can add external loads. With these group of students you can also make some generic Core training in preparatory season.

If you want to develop the best punch technique and power you can, would you restrict yourself to making only triceps strengthening exercises, like Triceps Extensions with dumbbells?!?

What you want is to practice the most similar exercises with a punch that you can find, right?

Like close-hands push-ups, punches with cables or elastic bands and medicine ball throws...

And with Core training it's the same logic. Most of the time you have to train with this concept in your mind!

But keep reading until the end! Because planks and bridges have something to say in their defense...

MULTI-JOINT EXERCISES ARE MORE EFFECTIVE AND EFFICIENT



Martuscello et al (2013) show why multi-joint and full-body movement free weight exercises are the most effective way to strengthen your Core muscles.

These group of researchers collected information from several scientific articles and made a systematic review. This review was published in The Journal of Strength and Conditioning Research.

And these were the main conclusions:

1. **Lumbar Multifidus** electromyography activity is greatest during Core free weight exercises compared with other physical fitness exercises (like swiss ball and similar equipments, traditional core training, etc.).
2. **Transversus Abdominis** (deep stabilizing muscles) electromyography activity had no significant differences between Core stability exercise, Core traditional exercises, free weight exercises or swiss ball exercises.

So, if fundamental Core muscles like transversus abdominis or lumbar multifidus aren't more activated during planks and bridges, for example, **you really should use more effective and efficient types of training like free weight exercises.**

And in addition to these greater Core muscle activity with free weight exercises you have also several advantages that you can't achieve with isolated planks or bridges! Let's see:

- Free Weight Multi-Joint exercises have multiple health and fitness benefits
- Improvement of Body Composition
- General Muscle Strength
- Bone Density
- Cardiovascular Health
- None of these benefits have been associated with core-specific floor (core stability or traditional core) or ball/device exercises.
- Free weight exercises simultaneously activate multiple major muscle groups and act upon multiple joint systems
- Additionally, the resistive load of free weight exercises can be continually progressed as the muscles adapt and become stronger. Whereas core-specific floor or ball/ device exercises are typically limited to the resistance of the body mass.
- You, as a Karate coach, may find that prescribing multijoint free weight exercises is more time efficient than prescribing numerous core-specific floor or ball/device exercises.



One important thing to retain is **the importance of execution technique** in this type of exercises. Load progression must be careful and always respecting the level of each student or athlete!

And your verbal feedback about Core activation and positioning are crucial to the efficacy and safety of more specific exercises.

Remember which are the exercises that are included in the definition of “Core Free Weight Exercises”...

... we are talking about all the exercises that have the main goal of strenghtening your “anatomical box” and that involve multi-joint movement, ideally in a standing position.

We are talking about examples like **Lunges, Squats, Deadlifts, Olympic Weightlifting and all their variations.**



And what about making exercises based on Dachi-Waza, like Zenkutsu-dachi, Kiba-dachi, Neko-Ashi-Dachi?!?

In the next weeks, we'll show several exercises that you can make in your Dojo with practical and cheaper equipment. Without having to go to the gym.

But if you have access to a gym or practice with competitive athletes, you have an easier task to develop a vast quantity of exercises.

BUT PLANKS AND BRIDGES HAVE MORE THINGS TO SAY ON THEIR BEHALF



The main goal of this Karate Science Academy article was to pass you one strong and crucial idea...

... that in your Dojo, your Core strengthening program should not be based mostly on planks, bridges and other similar exercises.

We did this because most of Karate Senseis and Sports trainers still do that!

Let's recapitulate what we said before...

Plank exercises are usually considered an adequate method of training the Core for athletes to improve Core strength and stability. Of course if you train planks with the correct training methodology you will be stronger and more stable when you perform a plank!

The problem with these exercises is that they put the athletes in a nonfunctional static position that is very rarely replicated in the demands of Karate activities.

Training Karate requires a dynamic motion.

According to the results of most of scientific studies in the last years, it is recommended to train the lateral aspects of the Core with specific dynamic exercises.

The anterior and posterior aspects of the Core should be trained in conjunction with other sport-specific training—particularly closed chain kinetic exercises. As the ones we explained in the previous subchapters of this article.

Karate students and athletes play dynamically and should be trained dynamically.

BUT let's "listen" the scientific and methodological arguments that can be stated by planks and bridges.

As you've seen generic Core strength and stability exercises are a good way of training for more recreational Karate students or for developing good foundations in children and young adolescents.

But also play role in a complete program of injury prevention for Karate athletes. But they shouldn't be the biggest percentage of their Core training. But that is what you can see in most of the Dojos around the World.

According to Lee and McGill (2015) **to reduce the risk of injury your Karate athletes must have a greater torso stiffness.**

Why?

Because that **stiffness of the Core muscles stabilizes the spine against perturbation from external load and movement.**

And also very important for Karate practice **creates an armor over vital structures enhancing resilience during contact and impact!!** You all know that by experience, right?!?

Now, focus on this:

STOP DOING HUNDREDS OF SIT-UPS AND CRUNCHES!!!!!!

If you want to take advantage of Core training to lower the risk of injury **you must focus on ISOMETRIC exercises. Like planks or bridges...**

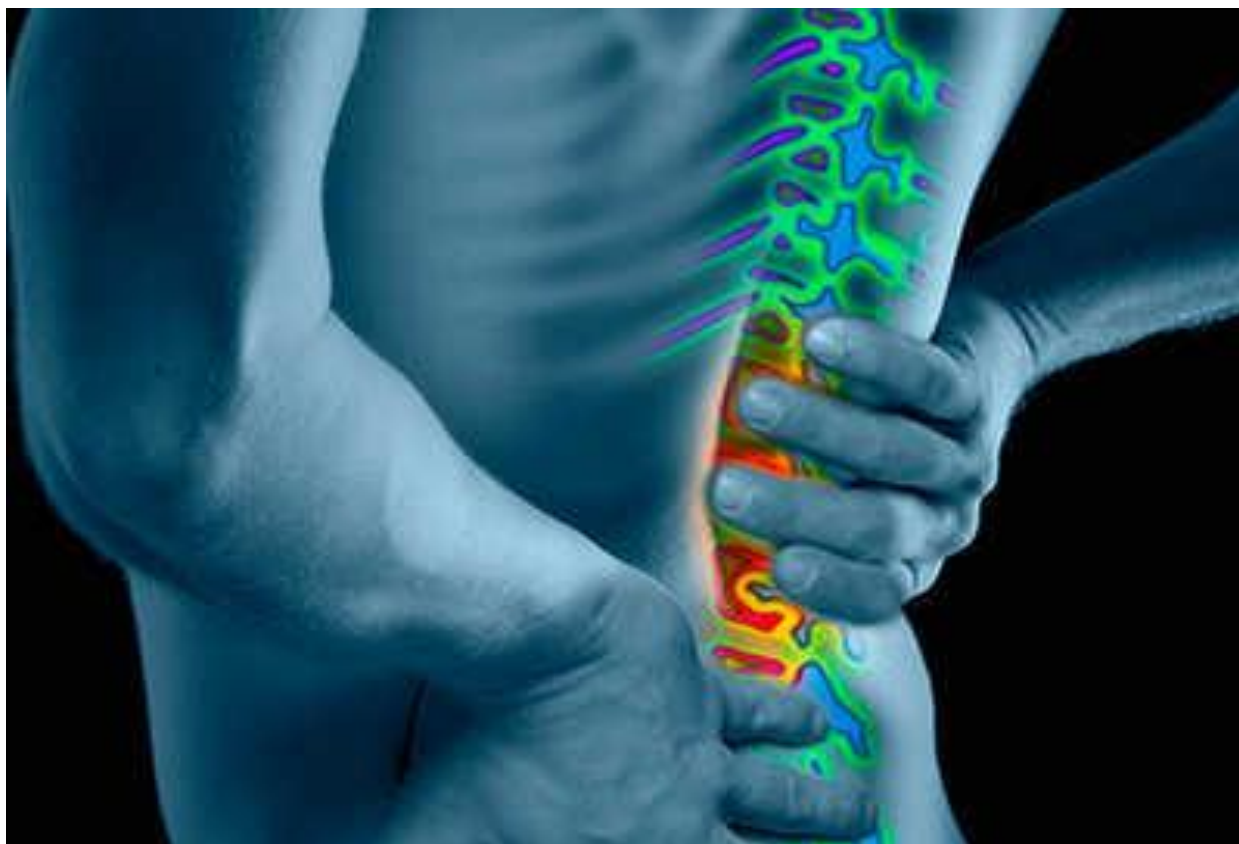
Why?

5 Facts will answer this question:

1. Many of those generic dynamic Core exercises violate mechanisms found to cause injury to the spine due to high shear and compressive loads.
2. Isometric Core exercises also create moderate levels of muscle activity while minimizing shear and compression in your spine.
3. A 6-week of Isometric exercises will be effective to increase Core muscles stiffness, even in more athletic Karate students. As you can see you can integrate a more regular generic program in the preparatory phases of each season. And reduce it along the rest of the year.
4. Time spent under muscular contraction is much higher when performing isometric exercises. For example, a 10-second plank requires continual peak activation of anterior Core musculature during the full 10-second period, whereas a 10-repetition curl up incorporates a training cycle resulting in far less time under tension.

5. That greater time spent under tension provokes two effects: increase in muscular cross-sectional area (muscle size, hypertrophy) and increase in muscle electrical activity when you perform Muscular Voluntary Contractions.

MORE SITUATIONS WHERE YOU SHOULD PRIVILEGE PLANKS OR BRIDGES



If you have students with spine disorders like discal hernias you should avoid standing or seated exercises with vertical loads.

If you have Karate athletes or students with chronic Low Back Pain you should also help them focusing their Core training on Core stability. The program should contain, essentially, exercises that help them maintain a neutral position of the spine. Planks and bridges are simple ways of achieving that goal.

In these cases, the main challenge is to know how to adapt complexity and intensity to every type of physical conditions and pain levels.

Give some extra-attention to your female Karateka because they are more susceptible of having Low Back Pain...