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# FOREWORD

Robin Rielly, 8<sup>th</sup> dan, International Shotokan Karate Federation



It gives me great pleasure to see this book in print. In today's market there is no shortage of books on karate, many by well-known experts in the field. This work is different. For the first time we have the observations of a karate instructor who is skilled in both the scientific field of biology as well as in karate. Professor JD Swanson is a long time practitioner of karate and a certified Instructor,

Judge, and Examiner for the International Shotokan Karate Federation. He brings to the discussion a wealth of information that will help the *karate-ka* understand how and why the body moves in certain ways during the performance of stances, punches, strikes, blocks, and kicks. The book offers fresh insights into how the various muscle groups interact during the execution of these movements. In addition, the reader will be made aware of various methods of training the body that will improve karate techniques from both mental and physical approaches.

This work will be a significant resource for both instructors and the students that they teach. Instructors will have the scientific rationale available for the teaching of karate movements and how their students must perform them. Students will have an additional source of information to supplement their regular instructor's lessons.

Many instructors are proficient in teaching movements to their students. However, for a good number, their proficiency is based on constant repetition, rather than a thorough understanding of

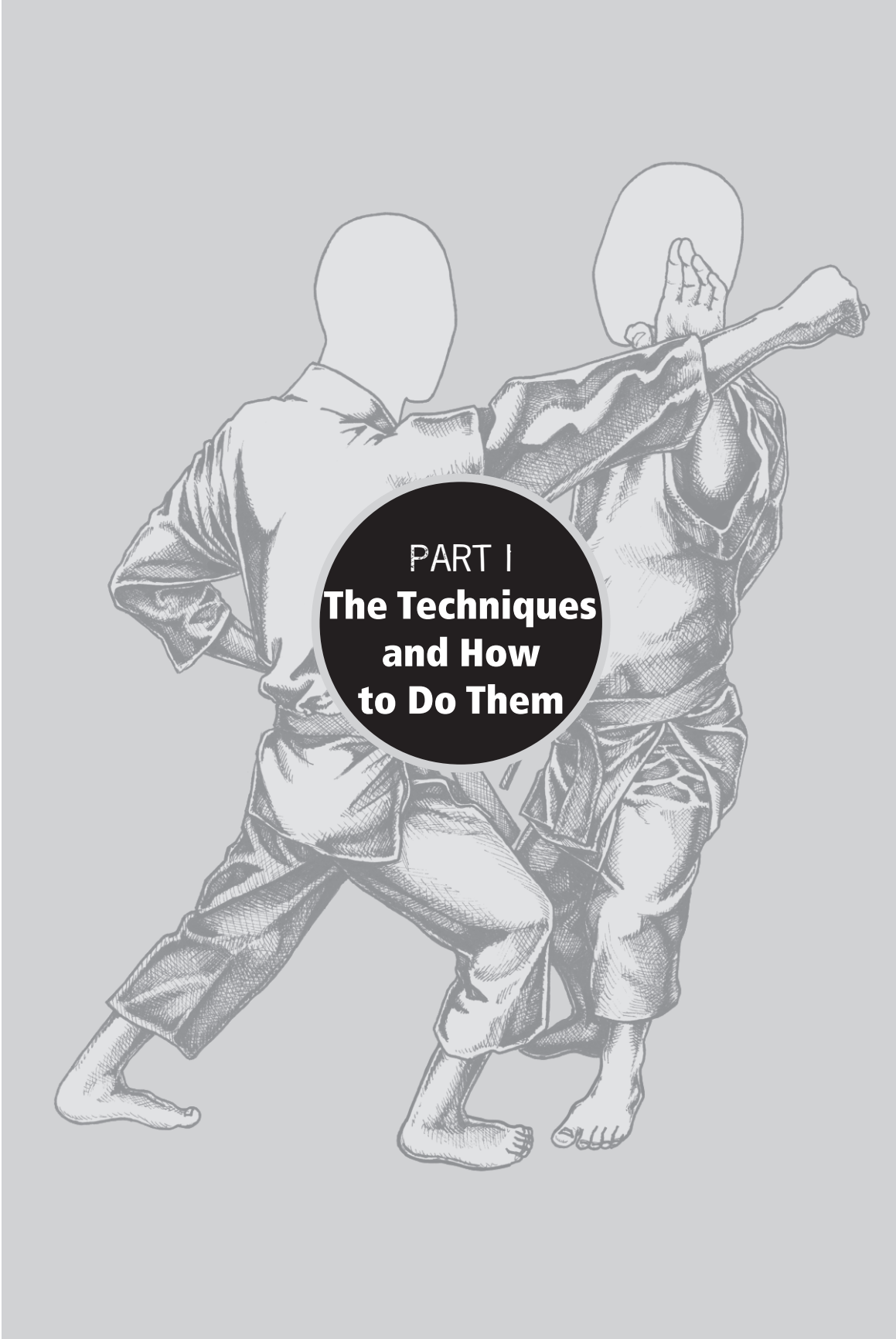
how the body actually works. Professor Swanson's approach fills in a much needed gap for instructors and students alike. In order to utilize one's body efficiently, it is necessary to understand the factors that generate strong, fast, and correct movement. Throughout the book, Professor Swanson gives valuable suggestions to help maximize body efficiency.

In all, I believe that this is one of the most important books on the practice of karate that has been published in recent years. The International Shotokan Karate Federation has continued to grow and prosper through the efforts of both the older generation of instructors and the younger ones who continually strive to improve our knowledge as we continue to develop and grow into the 21st Century. Thanks to the work of instructors such as Professor Swanson, we will continue to make progress in our study of karate.

ROBIN L. RIELLY

*Member—Shihankai - ISKF*

*Chairman—ECSKA Technical Committee*

A black and white line drawing of two martial artists in a sparring stance. The artist on the left is in a ready stance, while the artist on the right is in a more active stance, possibly performing a technique. A large black circle is overlaid on the center of the image, containing the text.

**PART I**  
**The Techniques**  
**and How**  
**to Do Them**





## CHAPTER 1

# An Introduction and How to Use this Book

### Introduction

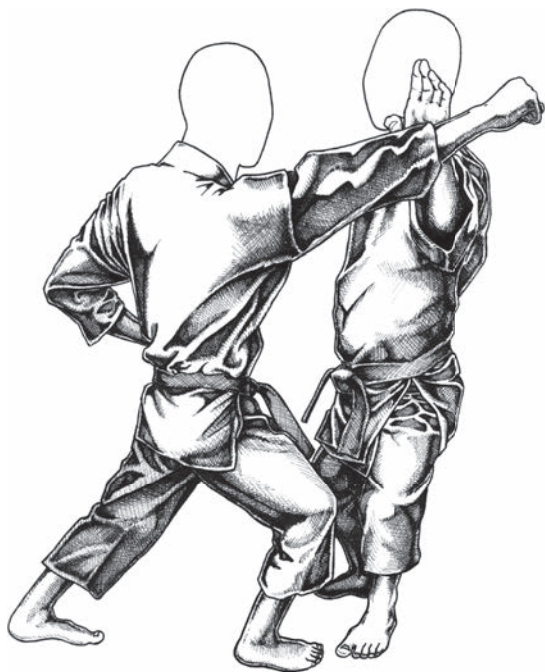
The Asian martial arts have a rich history and present variety of techniques and methods that can be used to incapacitate an opponent. The techniques used in the unarmed martial arts of Asia are of a much greater variety than many of the Western methods. Okazaki Sensei, one of my instructors and one of the world's most senior Shotokan karate instructors, tells the story of when he first came to the United States in the 1960's it was arranged that he fight in a demonstration match in Philadelphia against a boxer. While the parties concerned were discussing the details of the fight they were asked to demonstrate types of the techniques that would be used. The boxer showed a masterful demonstration of hooks, jabs,



uppercuts and crosses, while Okazaki Sensei demonstrated punching, striking, blocking, and kicking techniques common to karate. The promoters immediately stepped in and requested that Okazaki limit his techniques just to punches. Okazaki Sensei declined stating that karate was the sum total of all of these techniques, and it would not be a true karate demonstration without them. The fight was subsequently cancelled. While the outcome of the match could have almost certainly have gone either way, Okazaki's point was clear.

## How to Use This Book

There is a lot of information on how karate techniques are formed. For example the idea that to form the front stance or *zenkutsu dachi*, one simply has the feet shoulder width apart and one and a half to two shoulder widths in front of one another, both feet point to the front as the body's flexibility allows, with the front knee bent,



and the back leg straight. While this is a simple description of how the stance should look, there is almost no information given as to how it should feel, the dynamic tension that is held in this static position and therefore contribute to the transition of body weight to the technique, or body movement being

executed. Many people train in front of a mirror, but as many seasoned *karate-ka* know, the mirror is not required, it is simply a way to look at the technique. A mirror can be detrimental to training if over used as it can put you outside yourself. Karate must be felt, each technique has a particular *feeling*, therefore a change in the dynamic feeling of a well practiced technique can be enough to trigger that the technique is off or different. In some ways, I could describe this work as a book of feelings. These feelings and the biomechanical or anatomical principles that they stem from are not often discussed in regular *dojo*, so I hope that this book can provide further insight to your training. However, while I will describe them to you, it is up to you to experience them for yourself.

To do this I have used some anatomical terms for clarity. Some that are important are planar- vs. dorsi- flexing of a limb. Simply put planar flexing is when the end of a limb is pointed flat out. I.e. it is pointing in the direction of the limb, as when the toes are pointed. Planar flexing is when the end of the limb is bent. I.e. it is pointing perpendicular to the limb, like when the toes are pulled back towards the shinbone. Planar flexing is flat like a plane or flat surface. Other common anatomical terms used here are supination and pronation. For example if the arms are held by the side of the body and the thumb is stuck out like a hitchhiker, pronation is when the forearm is twisted in such a way as the thumb is pointing toward to the body, supination is when the thumbs are pointing outward from the body.

This book is in three major parts. The first part deals with the techniques themselves. In this first section the primary techniques of karate; stances, thrusting, striking, kicking, blocking, and throwing are discussed. Each is discussed in terms of the important points that form it (dynamic) and the final position (static). To do this I have used a standard way to organize many of the techniques. I have broken each class of technique, stances (*dachi*),

thrusting or punching (*zuki*), kicking (*keri*), striking (*uchi*), blocking (*uke*), and balance breaking (*kuzushi*), into separate chapters.

The second and third parts of the book focus on the core principles associated with generating power from all techniques. This includes several chapters on biomechanics and anatomy, *kime*, hip movement, and also different ways that we hit targets. In these chapters, some of the more nebulous or misunderstood concepts such as “hip vibration” and *kime*, are discussed, defined.

While many examples originate from a Shotokan karate perspective, examples from other styles of karate including Goju Ryu, Wado Ryu, Uechi Ryu, et al., as well as other martial arts such as aikido, tae kwon do, and judo are also used.

Once again it is my sincere hope that you read this book, agree with parts, learn something, argue with your friends, but most importantly, use it as a cerebral springboard to make your training better and more efficient. Work on these feelings, experience them for yourself.

## CHAPTER 2

# The Four Fundamental Requirements of Martial Arts

Karate-do, or any other martial art at its core, is quite simple. However, it can be made far more complex than what it actually is. The multitude of techniques, combinations, *kata* and partner drills combined with nebulous concepts like “use your hips”, make your “stance lower”, “do *Budo* karate”, “make more *kime*”, and “use your *ki*” can make martial arts overwhelming. While these concepts are important within the correct context they are often propagated and used as doctrine in the teaching of karate. This can lead students down a road that can foster misconceptions and hamper their understanding, and therefore practice.

Additionally, when attending seminars, clinics, or even everyday class, students are often overwhelmed by a multitude of techniques and spend much of their time trying to understand the technique being taught.

## Good Posture

Good posture is fundamental to all karate and martial arts practice. Posture refers to the back being straight from head to hips (Figure 2-1). This refers to the backbone being straight. This means



that the head sits atop the shoulders and is not slumped forward, and that the tailbone is tucked and the pelvis tilted in such a way that the lower back is straight. It is important not to have the lower back relaxed so that the buttocks sticks out, and contracted so that the pelvis is pushed forwards and under. Finally, note that straight back does not mean perpendicular to the floor. It can be tilted relative to the floor, as long as it is straight from tailbone

to head and it contributes to the structural integrity of the technique. A perfect example of this is in *yama zuki* or mountain punch (see Chapter 6).

## Good Structural Alignment



One of the main goals of karate is the have to body postured in such a way as to allow a direct connection from the floor to the striking limb at the point of impact. In fundamental karate this is how techniques such as *oi zuki* finish (Figure 2-2). The final position, although held very briefly in a real encounter, it is vitally

important. These alignments provide the strongest position of the body for a particular technique, or a particular target.

## CHAPTER 3

# **With What and How Do I Make a Hitting Surface?**

The Asian martial arts are notable for the range of body parts that are used to strike an opponent. This range of weapons allows a greater variety of targets and angles that can be used by the practitioner to thrust (Chapter 6), kick (Chapter 7), strike (Chapter 8), block (Chapter 9) or to generally make contact with an opponent. This chapter will review the major body parts used to strike an opponent.

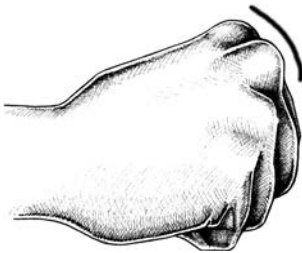
While the parts used to strike an opponent are important, and the focus of this chapter, it is important to keep in mind that all body parts are used in karate. Of particular note are the hips that are used as the fulcrum of body movement as well as the abdominals that are used to connect the upper and lower body together. This will be discussed in depth in the second part of this book.

## Ready-Made Weapons

Before we begin discussing the different weapons that can be produced in the body, it is important to consider the fact that some body parts are not ready-made for striking an opponent and must be conditioned to do so. Conditioning may need to happen to the weapon itself, or its associated support structures so to brace the weapon so it does not break upon impacting a target. A classic example is that of the fist. First the knuckles need to be conditioned to be able to take impact. Meanwhile the wrist also needs to be conditioned so that it does not buckle during impact. There are many ways to do this, but the most popular is to do push-ups on the knuckles (*seiken*) that impact a target. This develops wrist strength as well as letting the bones in the hand receive stress in the distal/proximal direction providing a stimulus for the bones remodel their internal architecture to be able to take impact in that direction. Once this is achieved, it is important for the practitioner to hit targets. These must provide some feedback, but must not be so rigid as to cause damage. *Makiwara* or pad work can aptly serve this purpose.

### *Seiken*

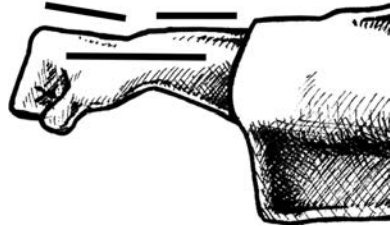
The first weapon is *seiken* or the fore fist (Figure 3-1). This consists of the front two knuckles of the fore fist (index and middle finger knuckles). In order to construct a correct fist the fingers are rolled tightly starting at the tips and progressively rolled downward into the fist. The fingers dig into the meaty part of the palm just above (not into) the first line in the hand, creating a strong compact ball. The thumb then pushes down firmly in the middle knuckle of the index and middle finger on the underside of the fist. The strongest squeezing finger is





the little finger that has the feeling of winding both tighter and back towards the center of the hand.

The wrist must be held straight so that the knuckles of the hand leading from the index and middle finger are in line with the radius and ulna of the forearm (Figure 3-2). This can be observed when the hand is held straight and the fingers are flexed downward at the knuckle that connects the fingers to the hand to a right angle. The region of the hand between the wrist and knuckle naturally makes a slight angle. This angle must be maintained in the fist and it biomechanically the strongest position

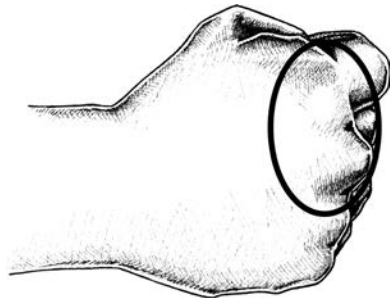


for the hand and wrist when clenched in a fist. It is common to be taught that the top of the hand is in line with the top of the forearm (e.g. you could lie a ruler along the forearm and top of the fist) but this is incorrect, and will lead to the wrist buckling and getting injured if a target is hit, and eventual tendon strain over the long term. For openhanded techniques, if the hand is held flat, then the hand is held directly in line with the forearm.

As previously stated, *seiken* is not a ready-made weapon and needs conditioning of both the knuckles and wrist to allow it to be used effectively.

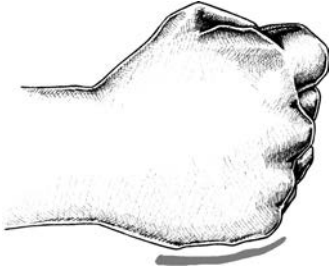
### *Uraken*

*Uraken* or the back fist is formed the same way as *seiken*, however the back of the knuckles of the index and middle finger are used (Figure 3-3). Generally *uraken* is used when the radius



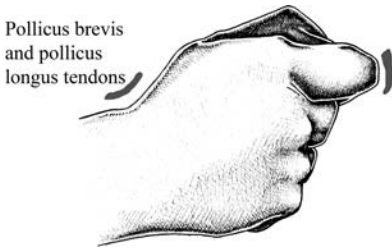
and ulna are in the fully supinated position. This is a fairly ready-formed weapon.

*Tettsui*



*Tettsui* or the bottom fist is also formed the same way as *seiken* however the bottom of the fist is used (the surface provided by the curled little finger) (Figure 3-4). This is a very strong ready-made weapon that can be used to strike hard surfaces.

*Ippon-ken*



Pollicus brevis  
and pollicus  
longus tendons

*Ippon-ken* or the one-knuckle fist is constructed the same way as *seiken*, however the index finger knuckle is extended out of the fist to make a point at the second finger joint (Figure 3-5). The thumb is moved

to a slightly higher position in the hand so that it presses into the second joint, pushing both down in and away from the hand. It is a ready-made weapon for attacking precise soft vital points of the body.

This thumb position provides both support to the striking surface and stabilizes the wrist. This is through both the *pollicus brevis*, and *pollicus a longus tendon* that connects the thumb to the wrist. The innervation of these tendons through their associated muscle can greatly stabilize the wrist and is why many hand positions have the thumb in this general position.

Interestingly *seiken* used in *Shotokan karate* does not have the thumb in this position and really only makes use of the *pollicus*

*brevis* to stabilize the wrist. However, through development of several years of training the muscles of the forearm and the underside of the wrist are developed and create a much better stabilizing position. This alternative thumb position is used in the *seiken* position of other types of karate e.g. *Isshin Ryu*. This is because this style of *karate* was often taught to Marines visiting Okinawa who did not have the years to develop the correct muscles in the wrist, therefore the use of these two tendons was employed as an easier and quicker method to develop wrist stabilization, although when compared to a fully strengthened and conditioned wrist this final position is not as stable.

### *Nakadate-ippou-ken*

*Nakadate-ippou-ken*, or the middle finger one knuckle, uses the same setup as *seiken* (Figure 3-6). However the middle knuckle is extended to expose the point of the second joint of the middle finger. It is a ready-made weapon for attacking precise soft vital points of the body.



### *Hiraken*

*Hiraken* or the fore-knuckle fist has the same wrist setup as *seiken*, however the entire hand is extended so that the striking surface is the points of the second knuckle joints of the hand



(Figure 3-7). It is a ready-made weapon used to slot into narrow spaces, such as the *phylum* or throat.

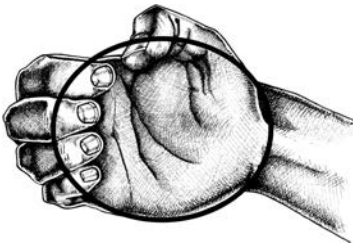
There are two ways to create this weapon. The first is where the hand is flat to the second knuckle joint with the thumb bent. The second is the same position as *ippon-ken*. All knuckles are extended



so that the fingers form a triangle when looking down at the thumb side of the hand. In this second configuration the thumb is able to support by pushing in and out from the hand. Either position is satisfactory for wrist support, since the *pollicus brevis*, and *pollicus longus* tendons are employed due to the

position of the thumb. The weapon is braced by the flat alignment into the hand, and the thumb pushing into the index finger.

### *Teisho*



*Teisho* or palm heel is constructed the same way as the flat version of *hiraken*, but the wrist is extended upward exposing the meaty part of the palm (Figure 3-8). This is a very strong ready-made weapon.

### *Kumade*

*Kumade*, or bear hand, is constructed the same way as the flat version of *hiraken* (Figure 3-9). The weapon is the palm and can be used to attack the face or ears of an opponent.

### *Ippon Nukite*

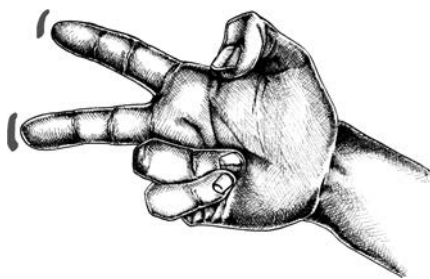
*Ippon nukite*, or the one finger spear hand, has the same construction as the flat version of *hiraken* except the index finger is extended completely out and its tip is the striking surface (Figure 3-10). This is not a ready-made weapon but can be used to attack very soft targets such as the eyes.



Recent work by Iain Abernethy<sup>1</sup> has suggested that the extended index finger is rather a guide and that the bent thumb is the actual weapon. Therefore suggesting the eye attack is constricted with the thumb in the eye socket.

### *Nihon Nukite*

*Nihon nukite*, or the two-finger spear hand, has the same construction as the flat version of *hiraken* except the index and middle fingers are extended completely out (3-11). It is used to attack the eyes.



### *Koko*

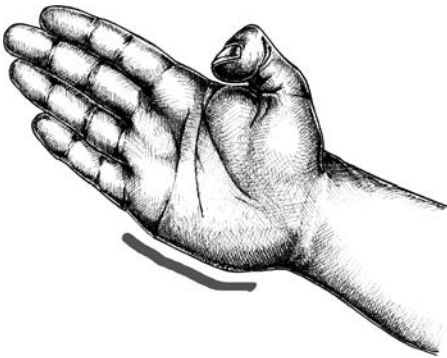
*Koko*, or tiger's mouth, is formed the same way as *hiraken* however the hand is rotated in an ulnar deviation (flat and away from

1. <http://www.iainabernethy.co.uk/content/practical-kata-bunkai-unsu-ippou-nukite-video>

the body) so that the apex of the “V” of space between the thumb and hand is in line with the *radius* and *ulna*. The thumb is still bent. This ready-made weapon is used to strike the Adam’s apple.

### *Shuto*

*Shuto*, or knife hand, is formed by holding the hand straight and flat out from the wrist (Figure 3-12). The thumb is bent inward. The striking surface is the knife-edge surface of the hand between

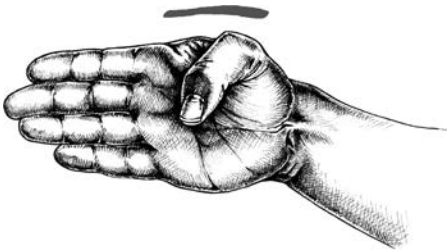


the little finger and the wrist. It is important to make sure that the fingers are squeezed together tightly to compress the muscles of the hand. This is a ready-made weapon.

### *Haishu*

*Haishu*, or the backhand, can be configured either in the same configuration as *shuto*, or in *kumade*. This time the striking surface is the back of the hand.

### *Haito*



*Haito*, or the ridge hand, is the area of the hand between the index finger and wrist (Figure 3-13). To form this weapon the thumb is tucked and bent under the hand to expose

the correct surface. This ready-made weapon is useful to attack the neck or temple.

### *Kakuto*

*Kakuto*, or the bent wrist, is formed by having the hand palm down, then flexing the wrist downward and extending the fingers and thumb to a point (figure 3-14, lower). The fingers squeeze together hardening the tendons and ligaments. The striking surface is the top of the wrist joint.



*Kakuto* also can be inverted so that the fingers are pointing upward and the wrist brought in line rather than flexed (Figure 3-14 upper). The fingertips are then the striking surface (normally under the chin) such as in the kata *Gojushiho Dai*.

### *Keito*

*Keito*, or the chicken head wrist, is formed by making *shuto*, then supinating the wrist so that the thumb is facing upward. Next relax the hand and ulnar, and deviate (drop the fingers downwards) the hand. This will expose the top point of the wrist as the striking surface.



### *Seiryuto*

*Seiryuto*, or the ox jaw hand, is formed in a similar way to *keito* (Figure 3-15). It is formed by making *shuto*, then supinating the wrist so that the thumb is facing upward. Next relax the hand and radially deviate (lift the fingers upwards) the hand. This will expose the palm heel edge of the wrist as the striking surface.





## CHAPTER 5

# The Dynamics of Stances

*Dachi* or stances, as previously discussed, provide the connection of the practitioner to the ground so that they can execute karate techniques such as *zuki*, *uchi*, *keri*, and *uke*. They provide the strongest possible position for the technique to be executed and also provide reinforcement for the reaction force the body generates when it comes in contact with the target.

To make proper use of stances, the practitioner needs to be aware that a stance is much more than a set leg and body position. It is more a dynamic relationship with the floor that allows quick movement through the use of ground reaction force. Therefore, it is important to consider the dynamics of stances both in the static final positions as well as dynamically during movement. To have a strong dynamic stance, considerations such as weight distribution, foot position and connection to the floor, leg tension, and hip position and tension all need to be observed. One must also understand how they relate to the static stance as well as the dynamic movement.

This chapter will discuss the major considerations for the dynamics of stances in both static and dynamic settings. In addition, we will discuss major considerations with other aspects of karate.

## Stance Tension



In karate there are two major types of stances. They are differentiated based on the direction of tension to the floor and can be either inside (*uchi ni shime*) or outside (*soto ni shime*). Outside tension stances refer to the tension in the stance pushing away from the body center. This is a feeling experienced when the feet have slight pressure on the floor in a direction that is away from the body center. For example, if the practitioner were standing in slippery socks, their feet would split outward based on the tension

(Figure 5-1). The opposite is true of the other stance type, inward tension. For inward tension, the feet feel as if they are pulling together (Figure 5-2). For example if the practitioner were again standing in slippery socks, their feet would slide together toward the body center.

Tension in the stance is crucial as it provides several very important roles. Due to the feet being connected to the floor in a dynamic way this allows the practitioner to have a better grip the floor and provides a stable connection, stabilizing the stance. Secondly, the dynamics of the stance allow quick movement, as the practitioner just needs to relax the stance to begin movement to the next position. Thirdly, it keeps the stance active throughout the movement allowing the body to connect to the floor and provide feeling of directionality for the technique that is being executed.

It is important to note that these tensions do not in any way come from the knees, but rather a relationship between the inward tension and outward tension of the foot and the inside tension and outside tension of the hip and upper thigh. The knees are simply bent to some degree over the toe depending upon the stance. Any tension on the knee laterally is very dangerous and will damage the knee joint over time.

In addition, the feeling of tension to the floor should not be excessive. The feeling is just to catch the foot to the floor and provide adequate pressure to let the practitioner push off it. If there is excessive pressure, two things will happen: 1) the upper hip will lock up, preventing fluid hip motion, and 2) the practitioner's hips will rise upward as the tension increases (like squeezing the tube of toothpaste, it will overflow).

Examples of outside tension stances include many of the fundamental stances such as the straddle leg stances discussed in the previous chapter and include *zenkutsu dachi*, *kiba dachi*, *kokutsu dachi* and others. Inside tension stances are the half moon stances discussed previously and include *hangetsu dachi*, *sanshin dachi*, and *nekoashi dachi*. It is interesting to note that generally full-length fundamental stances such as *zenkutsu dachi* are outside tension stances, while shorter length fundamental stances such as *hangetsu dachi* are inside tension stances.



## Muscles and Joints Involved in Moving the Wrist.

The wrist has two major positions (using the pivot joint of the radius and ulna), fully pronated and fully supinated (Figure 11-2).

Pronation is when the wrist is fully rotated towards the body with the palm down and thumb rotated towards the body, and can be exemplified by the final wrist position in an extended straight punch (*choku zuki*). In order to fully pronate a wrist the muscle that needs to be contracted is the pronator teres, while its antagonist, the supinator, needs to relax. Supination is when the wrist is fully rotated away from the body with the palm up and thumb rotated away from the body. It can be seen in the final wrist position in *soto ude uke*. In order to fully supinate a wrist the muscle that needs to be contracted is the supinator, while its antagonist, the pronator teres, needs to relax.

Generally in karate the wrist is kept in a parallel position to the forearm, however in some techniques the wrist needs to bent upward or downward. To articulate the hand by flexing downward (flexion), or extending upward (extension), several sets of muscles in the forearm need to be employed. To let the wrist extend, the extensor carpi radialis, and the brachioradialis (if in a supinated position with the hand open), or the extensor digitorum and anconeus (if in a supinated position with the fist closed) are employed. To flex the wrist back toward the body the extensor digitorum, extensor digiti minimi, and the extensor carpi ulnaris is employed, such as in a palm heel strike (*taisho uchi*).

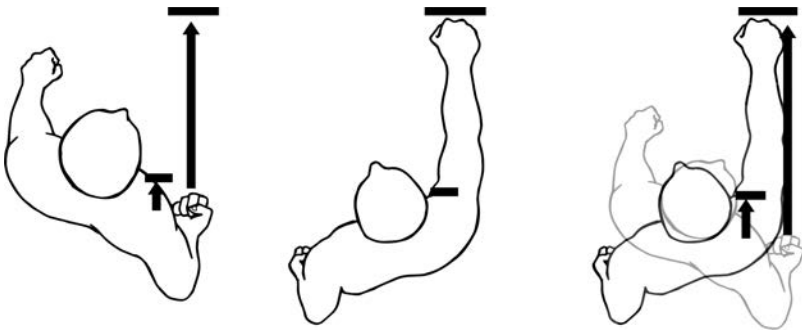
## **Correct Recruitment of the Hips and Body Center**

The hips are the origin of power in karate. They co-ordinate and provide the link between timing, control of body center, and the articulation of the upper and lower body for all techniques and movement in karate. There are several ways that a practitioner can move the hips including: translation, elevation, direct and reverse rotation, and vibration. These five concepts will be discussed at length over the next three chapters.

The hips, by virtue of their location, house the body center, often called seika *tanden* in karate. This point is located approximately

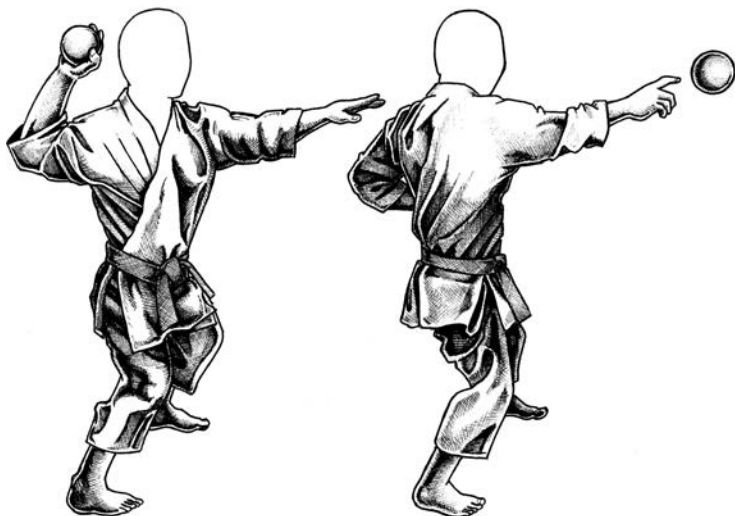
two inches below the navel, and two inches inside the body and should be constantly in the practitioners mind when training. When striking a target, the body center should be in motion directly towards that target and never moving in any other direction, otherwise speed will be lost. Quite often speed in karate is defined as the speed of the hips and not the speed of the limbs.

The hips develop speed of technique since they function as a small lever. Simply put, they move a very short distance while the limbs need to move a longer distance. Therefore, in order to hit a target while the hips or body center is in motion, the practitioner needs to work on their timing of techniques in such a way that the striking weapon moves through its complete range of motion before the hips finish moving (Figure 13-4). This means that in a typical reverse punch, or *gyaku zuki*, the hips may move a total distance of one foot, while the arm moves a total distance of three times that. Therefore the arm has to move three times as fast to have correct timing.



Often practitioners misinterpret speed as their hand or foot speed, but in actuality it is the speed of the hips that is important. In short, providing that a practitioner has good timing between the hands/feet and hip, as described above, it can be argued that speed in karate should be defined by the speed of the hip. This just makes sense since the hip and body center is the fulcrum of all

movement in karate, then the faster the hip moves, the faster the limbs have to move to keep up (Figure 13-5). This can be difficult to develop and will take some time. This is because the muscles that work the hips are primarily slow oxidative types of muscles and are not often suited to fast twitch movement.



## How do I Develop Mass?

While we have spent a great deal of time discussing speed and its importance, it is also vital to discuss mass as well. All of the formulae we have discussed above concerning speed (or acceleration) are multiplied and not added together to produce the resulting metric. This means that even if we generate as much speed as possible, if we do not couple it to our mass then our resulting impact, whether measured in kinetic energy or momentum, will be reduced. After all, a million m/s multiplied by zero kg is still zero.

One of the tenants of karate is the correct application of power and this leads to one of the greatest conundrums in the martial arts. When and where to apply mass is key to correctly couple mass and speed. Many beginners muscle their way through a technique,

## Be Bigger

Fat vs Muscle  
Muscle does something  
:- Push Toward Target

Mass.

## Connection

### Connection of Upper + Lower Body

- Hip Vibration

↓  
Intra Abdominal Pressure

↓  
Solid Connection Between Two

Move Body Center Towards  
Target ○ → ○

### Alignment Mechanics of Stance + Posture A Point of Contact

- Upper Body shoulders Connect to torso (No Shoulders)
  - No Breaks in ARMS
- Lower Connection of Legs in Correct Shapes



"Ki?" is just correct alignment?

### → Co-ordination + Timing

Kime "Perfect-Finish"

- initiated by wrist rotation as hit target
  - Drive from floor
- Breath co-ordinates + allows IAP

### - Internal vs External Timing

- Internal

- IAP
- Mental focus on target
  - will to hit
- Spiritual - want to hit target
- Timing of muscle flexation

- External

- Get limb to target
  - Economy of Motion
- Calculus to hit - aim
- Timing to Target

## Kiai

"Energy Bring Together"

Both Internal + External  
come together in  
Breath

⇒ SOUND  
Produced

that is they try to create as much muscle mass towards the target as possible. Unfortunately this has the effect of simply innervating the antagonistic muscle group and slowing the technique down.

Here we will introduce methods to correctly apply mass to our techniques (Figure 13-6). The actual coupling will be introduced briefly, but will be discussed in depth in chapter 17. In short there are several ways to increase mass: be bigger, move the body center towards the target, proper final alignment of technique, correct connection of the upper and lower body, and correct co-ordination and timing of the technique.