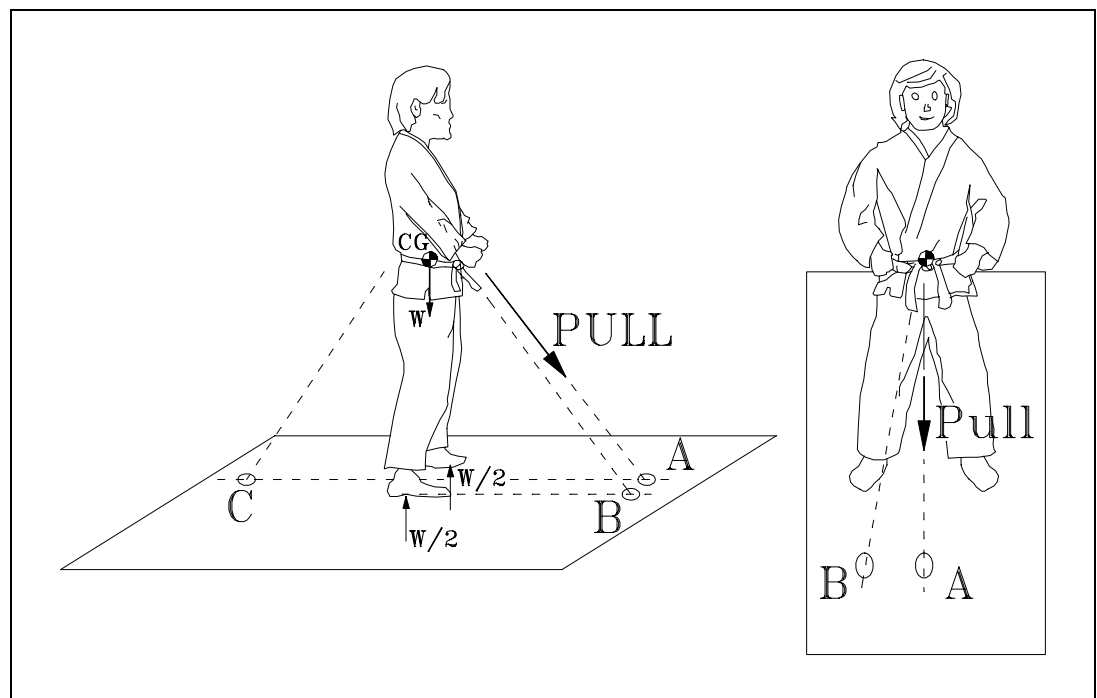


## AFFECTING STABILITY

by Jacques Chaurette, engineer and Yoshukai NiDan



Our club teaches a form of karate that includes many techniques not traditionally associated with karate, some of which are the specialties of other martial arts. The goal is to have a repertoire of techniques, which can be used in different situations; a front kick or a reverse punch is not always the best response. There are many fine martial arts such as judo, aikido, ju-jitsu and others which have powerful techniques that can be used in situations where the traditional karate practitioner is powerless. Recently, I have learned a few interesting techniques from aikido. Aikido practitioners are masters at the art of controlling the attacker's stability. All of their techniques are built around this fundamental ability. Their credo is: ***no force is required***. This ability can produce surprising effects and is the result of an understanding of how to control the attacker's stability. It is difficult to explain how to affect the attacker's stability without discussing the relationship of the forces involved. A scientific approach will help to explain, why these concepts work.



*Figure 1 Destabilizing the opponent with a forward pull*

A person in a natural standing position is in constant danger of falling over. Try it, you will notice that you are always readjusting your body to remain stable. We are so good at this that we hardly notice it. Standing on two feet is a constant struggle to maintain stability. Contrast this with a three legged-stool; this is a very stable structure. You will never find a wobbly 3 legged stool. But even a three legged stool can be destabilized if you sit on the edge (see Figure 2). As

long as your weight is within the circle that joins the contact position of the legs on the floor, you will be stable. Go outside that circle and you will not be sitting for long. If you can do this to a three-legged stool, imagine how easy it is to do to a two-legged person.

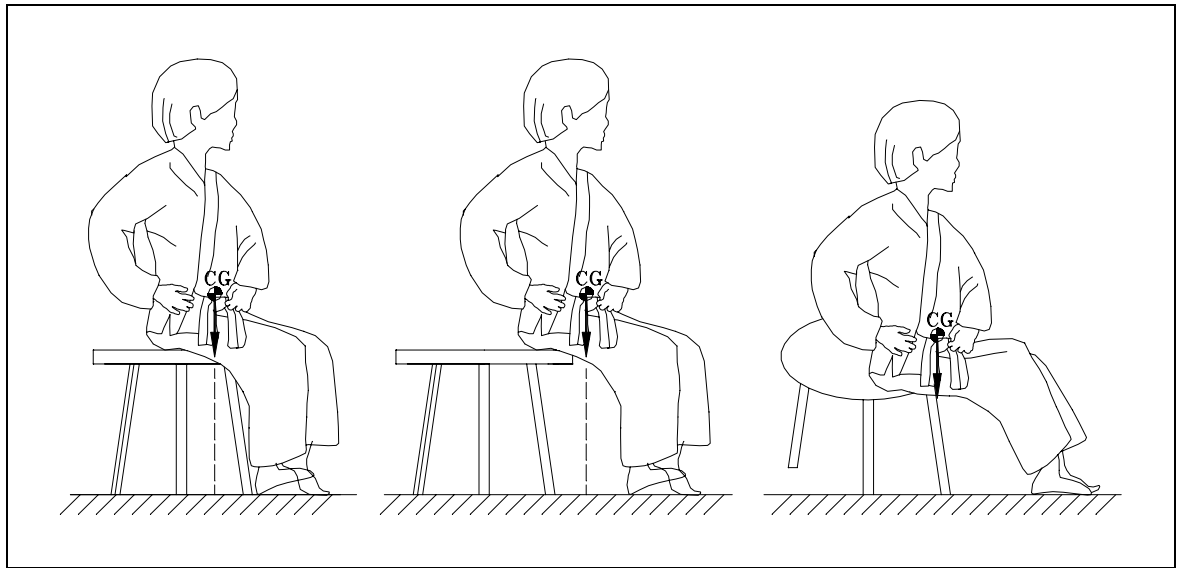


Figure 2 Destabilizing a three-legged stool

This is why it can be so easy to destabilize someone. A small pull in the right direction is all you need to bring someone to the ground. The question is: *what is the right direction?*

#### A. DESTABILIZING FROM A STANDING POSITION

Let's start with a simple attention stance position (shizen tai, see Figure 1). There are 2 directions to pull to destabilize the opponent. Those directions are towards point A in the front of the opponent and point C at his back. The goal is to bring the opponent to the ground as quickly as possible; this is why the force is directed downward. If I wanted to make the opponent move forward (stumbling) then I would pull in a horizontal direction. The pulling force is directed downward but at an angle. If you pull straight down, the opponent can easily resist. You have to experiment to get the optimum angle, it is somewhere around 45 degrees°.

Pushing or pulling on an object, will produce 2 results. One, the object will move forward and two, depending on the location of the force with respect to the center of gravity or CG, it will rotate (see Figure 3). The center of gravity is that point at which if the body were suspended it would be perfectly balanced in all positions.

How does the rotation occur? A force that tends to turn a body around a point is called a moment. If you grab a person's wrist and pull downward as in Figure 1, you will bring his upper body down thereby rotating it. How do you resist this rotation? Just as a force can be resisted with a counter force, moments are resisted with counter moments.

Take a look at Figure 3, the top part represents a man in a normal standing position, something like a square piece of wood standing straight up. If you pull, it will fall, there is nothing to stop it from rotating. The bottom part of Figure 3 represents a man with his legs spread out, an example of this would be a table. If you pull in a downward direction on the top of the table, the pulling moment tends to lift the back legs of the table. This moment is counterbalanced by the weight which produces a weight moment (the counter moment) in the other direction bringing the table back down. This is the advantage of having two legs that are spread apart, it is a very stable posture.

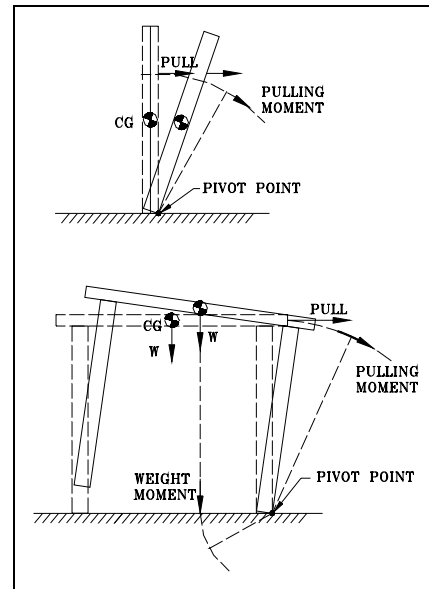


Figure 3 Balance of forces and moments

Getting back to the man in Figure 1, friction between your feet and the ground allow you to resist being moved forward, however, there are no forces which can produce a counter moment to stop the upper body from rotating. Therefore this man will fall if he is pulled in the direction of point A or point C, just as the stick falls in Figure 3..

Why pull towards point A and not point B? Pulling towards point B brings the opponent down but also rotates his upper body. This is a waste of energy and can result in the opponent landing on the ground in an awkward position for you to follow up with the next technique. If you pull towards point A, your pulling force is in the same plane as the opponent's CG (center of gravity) and will not produce the twisting effect that pulling towards point B does. Don't take my word for it, try it.

The exact distance of points A or C from the opponent depends on his size. You need to experiment and adapt to the size of your partner.

## B. DESTABILIZING THE OPPONENT FROM A LONG FIGHTING STANCE

You cannot destabilize the opponent by pulling him forward if he is in a long fighting stance (zen kutsu dachi, see Figure 4).

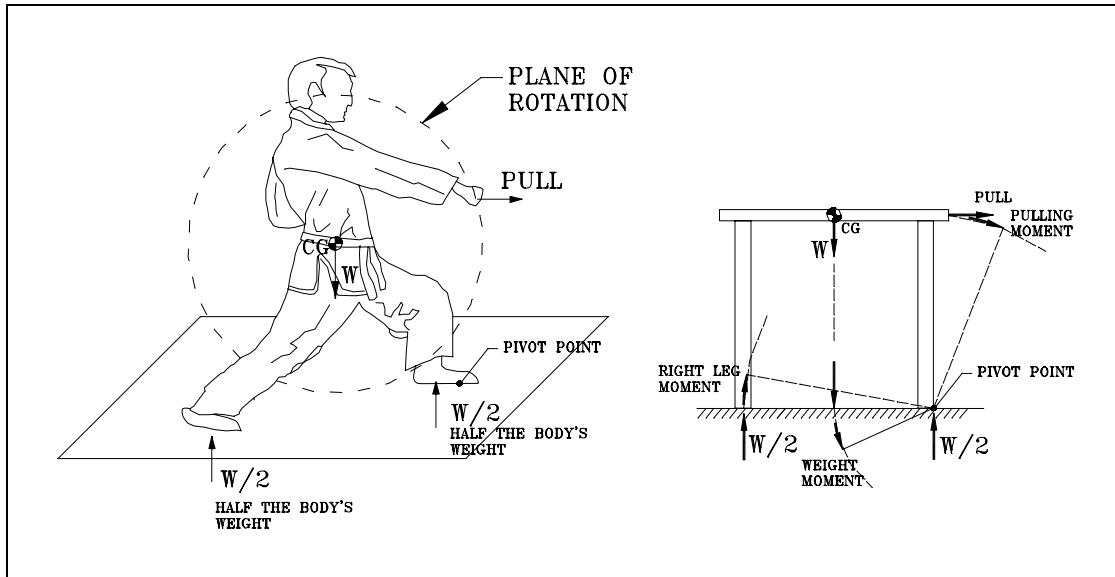
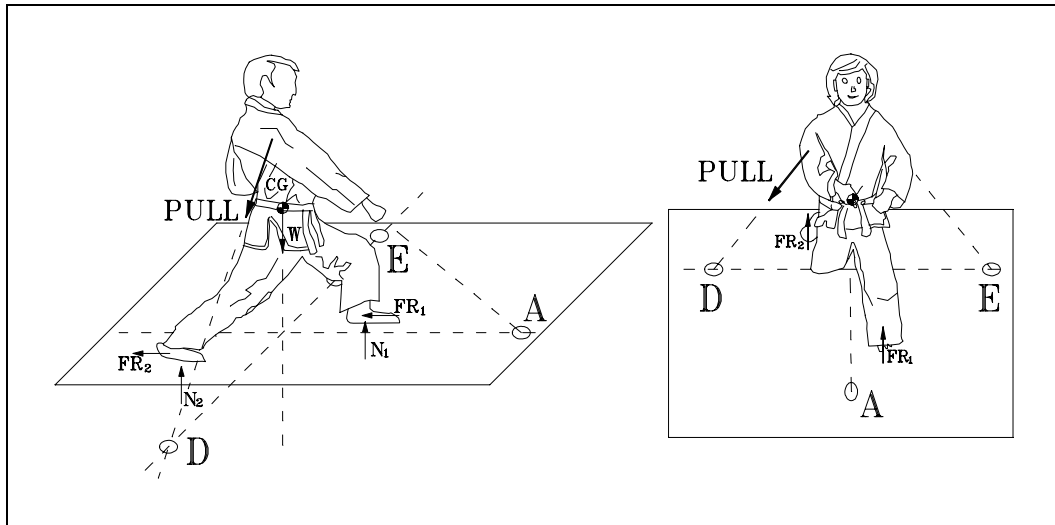


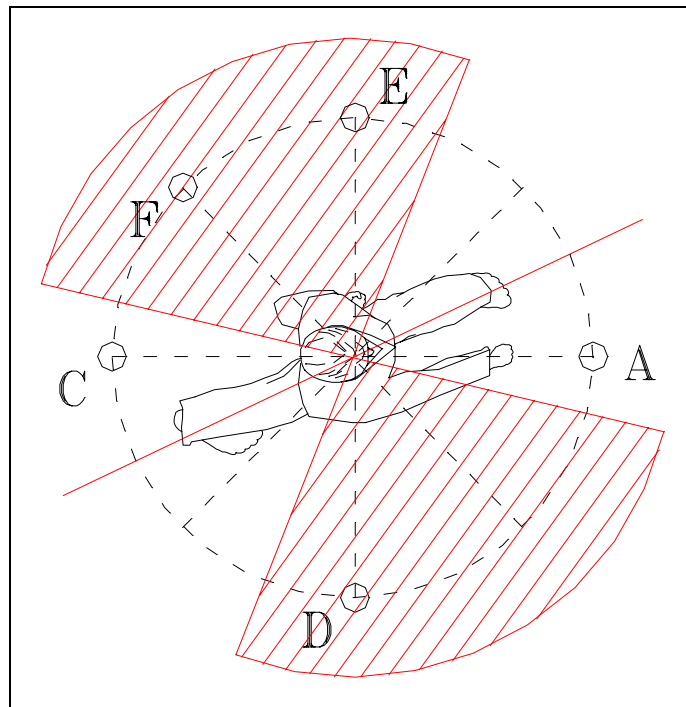
Figure 4 Destabilizing an opponent in a deep punching stance

The body's weight is transferred to the floor via the feet and is split about half and half. The weight of the karateka (located at the CG) produces a moment which counteracts the pulling moment. This is what allows you to resist having your upper body pulled downward. The magnitude of the moment depends on the weight. The heavier you are, the easier it is to resist the pulling force. In addition, the deeper the stance, or the greater the distance between the left foot and the CG, the easier it is to resist the force.



**Figure 5**

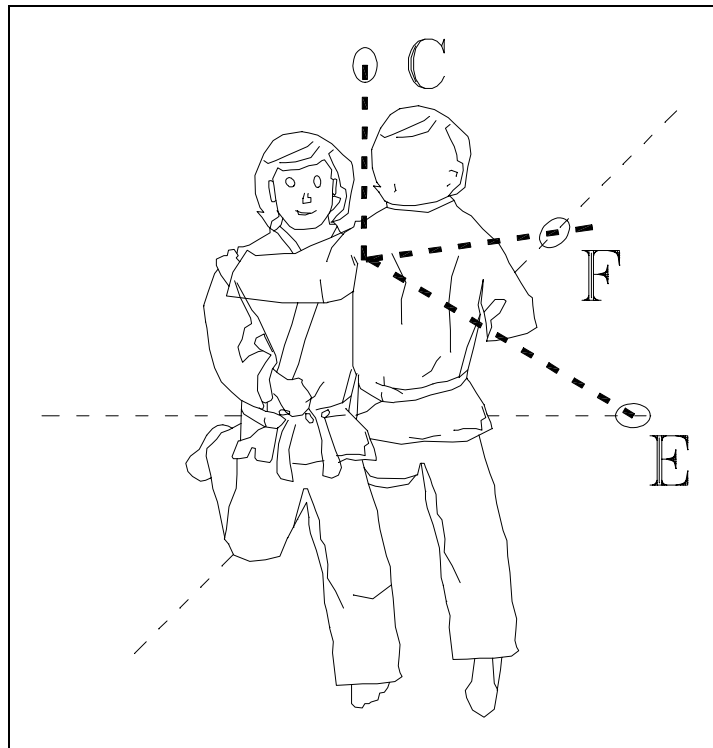
However, if you pull towards point D (see Figure 5), then it is much easier to destabilize the opponent. In fact, if you pull anywhere in the shaded areas of Figure 6, you can easily bring your opponent to the ground. Also, the closer the opponent's legs are together, the easier it is to destabilize him. This applies equally well whether you are pulling in the direction of point A or point E.



**Figure 6 Location of least resistance**

### C. DESTABILIZING THE OPPONENT FROM A CLOSE CONTACT POSITION

In many takedowns, just prior to the actual destabilization, the partner is in close contact. A typical position is a long fighting stance (zen kutsu dachi) for both people facing each other hip to hip (see Figure 7). From this stance it is very difficult or impossible to move the opponent in the direction of point E. Even though he is weak in that direction, so are you. Alternatively if you push the opponent towards point C, he can easily resist. His front leg may lift off the floor but he can easily resist the movement with his back leg. However, if you use upper body rotation you can move the opponent in the direction of point F, which as can be seen in Figure 6 is a direction of instability.



*Figure 7 Destabilizing the opponent from a close contact position*

Whether you are practicing aikido or karate, you can gain a great advantage over your opponent by knowing how to destabilize him. The strongest punching stance is unstable in certain directions, you should take advantage of this. A light tug in the right direction will bring your opponent to the ground no matter what his size. To take advantage of this, you need to change your mind set, you have to try to be relaxed and ready to shift or turn your body to avoid the attack but remain in close proximity. An old Chinese proverb says: "Keep your friends close, and your enemies closer".