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Chambering the Thrust Technique

Within Karate we have a mixture of snap techniques and thrust techniques. Understanding the difference between these plays an important part in a Karateka's development. Snap techniques are usually typified by setting a hinge point and then allowing the limb with the weapon at the end to slingshot around this hinge in a circular fashion. This rapidly increases the speed of the attack as a trade off against adding the full body weight behind it. The thrust technique, on the other hand, has a different mechanism for creating power. For a thrust technique, it is important to push the attacking weapon forwards in a straight line from behind, therefore trading off speed for effective body mass. We can also have combinations of snap and thrust techniques, for example in the *mae geri keage*, starting as a snap but with an element of thrust and body weight behind it at the end as we use the hips to straighten the curve of the foot travel.

I'd like to examine the thrust techniques and understand why it is so important to "chamber" these. The analogy I would use is that of a rifle, where you put the bullet into the rifle chamber. The chamber is straight and is pointed towards the target. The bullet is then 'pushed' from behind sending the bullet in straight line to the target. Applying this analogy to the thrust techniques we do in Karate, we have a direct line of sight between our attacking weapon (Front two knuckles of the fist – *seiken*, ball of the foot *koshi* or heel of the foot *kekato*) and the intended target, and this is our virtual chamber. Because the weapon is in a chamber, it can only be affected by forces from behind to move it forwards. Additionally, we must ensure that the weapon stays within our virtual "chamber" by the correct positioning of the body parts prior to, and throughout, execution. This can be most clearly seen by examining *gyaku tsuki*.

In basic *kihon*, starting from *gedan barai*, our bodies are not square to the front (*shomen*) but are half-facing (*hamni*) and subsequently our *hikite* elbow does not point directly backwards but is drawn round (Fig. 1a). The consequence of this is that if the punch was thrust from this position without any hip (*hara*) rotation first, the punch would be

completely off target (Fig. 1b). The subsequent action of the late hip and body rotation would then move the *tsuki* to the target with what is left of the power and would not hit it squarely (Fig 1c). This is shown diagrammatically below.

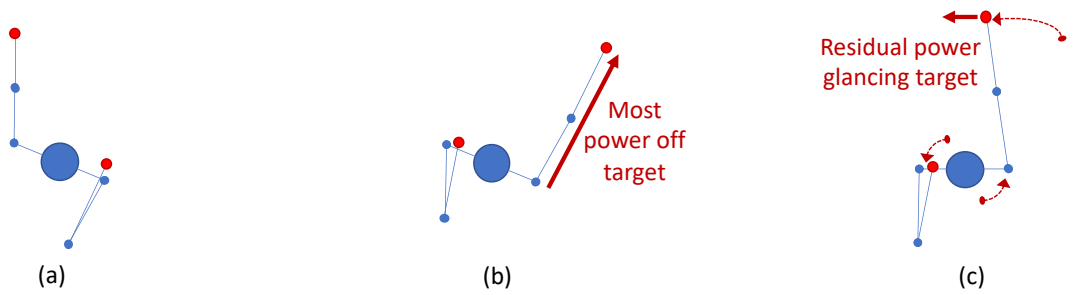

Figure 1: Incorrect timing for gyaku tsuki

The correct action is to rotate the *hara* and body to such a point where the forearm of the punching hand is pointed directly at the target and the power source is behind the weapon, effectively "chambering" the *gyaki tsuki* (Fig. 2b). From there the muscles are engaged to fire the *tsuki* in a straight line to the target (Fig. 2c). As the *tsuki* hits, the reaction of the body creates a full skeletal lock (*kime*) therefore increasing the effective mass behind the strike and dramatically increasing the power, all of which is transferred to the target. This is depicted below.

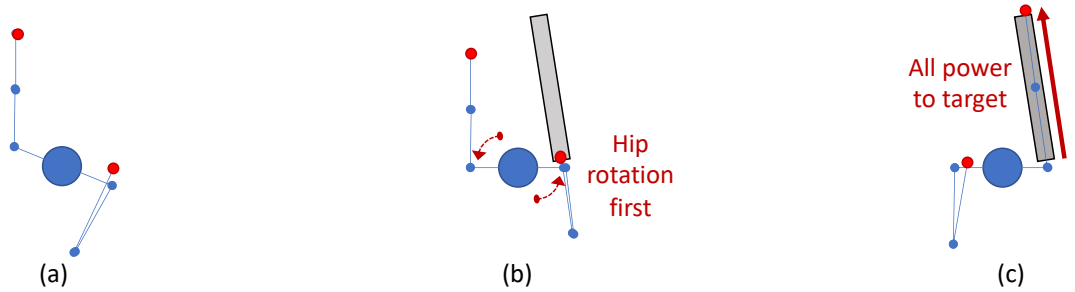

Figure 2: Correct timing for gyaku tsuki

This brings to bear the question of timing. It is important for the *karateka* to ensure the timing is correct and that the *tsuki* is not "fired" too early, as this, combined with late *hara* and body rotation will cause the *tsuki* to swing rather than driving into the target in a straight line. Whilst it is good to understand this mechanism, and the need for it, most *karateka* do this naturally without understanding the physics behind it.

With a thrust technique "chambered" and executed in the right way, when the weapon (*tsuki* or *geri*) hits the target all the power is transferred in the direction of the chamber. All the body weight is directly behind the strike adding effective mass to the technique. For techniques that are not "chambered" (e.g. snap techniques) there is a proportion of the power that is wasted moving the weapon in a direction away from the target, effectively reducing the power of the strike.

Next, I'd like to examine "chambering" the *yoko geri kekomi*. The same principles, as described above, apply when "chambering" a kick. The weapon (the heel of the foot in this case – *kekato*) is placed in a position where there is a direct straight line of travel to the

target, the power source drives this from behind and the weapon (the foot in this case – *ashi*) does not deviate from that linear progression throughout the execution. Due to the mechanics of the leg and hip, the execution of a leg thrust technique differs from that of the arm. It is not possible to align the lower portion of the leg (the structure directly connected to the weapon) to point at the target and achieve the power source driving the foot from behind. Instead, the upper and lower portions of the leg work together to ensure the propulsion of the foot is executed in a linear fashion. This co-ordination of bones and muscles is not as fast as a snap technique, however, it has all the body weight directly behind it. Since force is the product of mass and acceleration, increasing either one of these increases force, although increasing speed has a much larger impact than increasing mass.

The technique starts by lifting the weapon, the foot (*ashi*) in this case, to a position from where there is clear linear sight to the target. This essentially creates the "chamber". Whilst the bones and muscles work hard to propel the foot along the "chamber" in a linear fashion, the rotation of the *hara* must be well timed to ensure the maximum body weight is added at the right time. The timing has to be such that rotation of the *hara* completes at the same time that the *kakato* hits the target so maximum acceleration and maximum body weight is achieved at the point of impact. For *yoko geri kekomi*, full extension of the *hara* cannot be achieved without using the correct rotation of the supporting foot. The supporting foot must rotate away from the direction of the kick to allow the correct body alignment. The alignment must ensure that all the body weight is directly behind the foot, and the posture allows for body control and further attack / defence. When kicking a solid target, if the body is not correctly aligned, the "push back" from the target can cause the body to collapse and vastly reduce the effectiveness of the technique.

Finally, we can snap the technique out quickly and follow this with late "chambering" to add the heaviness from the body weight. An example of late "chambering", to get benefits of a snap technique's speed and the heaviness of a thrust technique, is *mae geri*. We are taught to lift the knee high so that the top part of the leg is pointing directly at the place on the opponent where we want the kick to land (Fig. 3b). This is setting the hinge, with the hinge in this example being the knee joint. As the upper leg quickly moves the hinge into place, where it remains, the lower portion of the leg "snaps out" to the target, striking with the ball of the foot (*koshi*), and quickly returning to where it started from; this whip effect defines the *mae geri keage* as a snap technique. However, the effective mass in this kick is only that of the lower portion of the leg (Fig. 3c, Fig.3d). Also note that *mae geri kekomi* exists to make a pure thrust technique by lifting the knee beyond the line of the attack allowing the foot to be driven in a straight line to the target and striking with the heel (*kekato*).

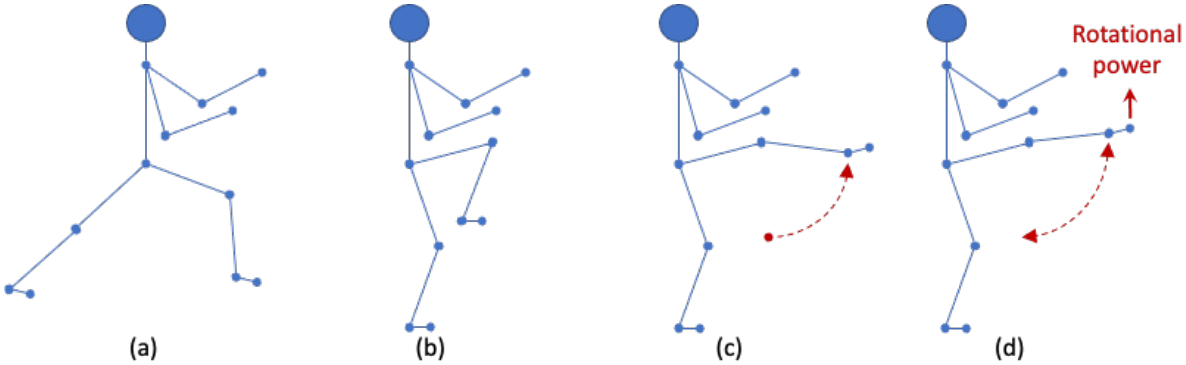

Figure 3: Mae geri keage with no "chambering"

It is interesting to note that we are also taught to thrust the hips at the very end of the *mae geri keage*. This subtle movement, that requires expert timing, is what I refer to as "straightening the curve". If we examine how the foot travels when moving around the pivot of the knee, it will move in a circular motion (Fig.4c). Therefore, at the point of impact the rotational energy of the kick is not going into the target, but is travelling upwards (Fig. 4c). As a pure snap, or rotational technique, *mae geri keage* can have value if applied to vulnerable areas, for example *kin geri* to the groin. However, to ensure the kick travels directly into the target, making the kick more versatile, we thrust with the hips (from the *hara*) towards the opponent. This adds linear power at the end of the technique adding to the rotational power already generated at the start of the kick (Fig. 4d). This has the benefit that we are now using the body weight to drive the kick directly into the target (increased effective mass) and this is the very definition of a thrust technique.

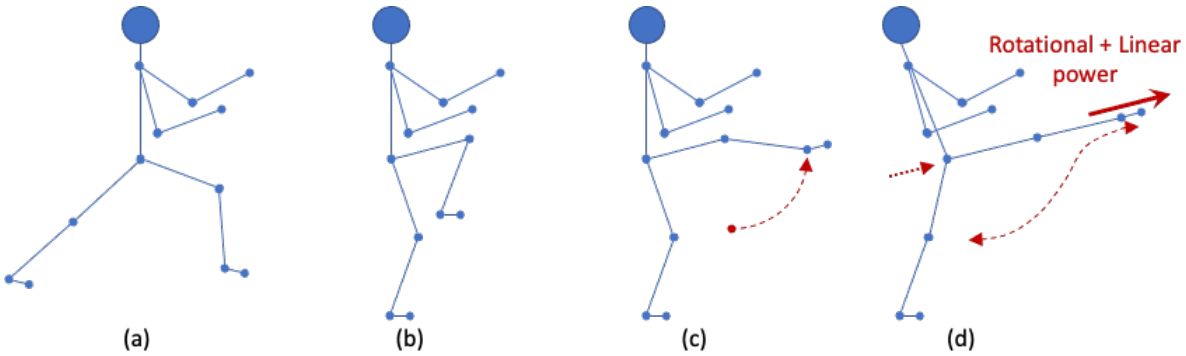

Figure 4: Mae geri keage with late "chambering"

If we examine performing *yoki geri kekomi* to the front, we can see that this is also a combination of snap and thrust with late "chambering". The start of the kick is the same as *mae geri keage* but is followed by a thrust action as the *hara* rotates towards target at the end of the kick – "straightening the curve" in a slightly different way to *mae geri*. This still produces correct alignment ensuring all the body weight is behind the kick, alongside a faster execution.

To summarise, "chambering" the technique (or loading the bullet in the rifle), ensures all the power generated by the muscles of the body and the rotation of the *hara* hits the target squarely therefore making a much more decisive technique. To do this well takes good timing and years of practice. However, this can be slower than other techniques and there is also an opportunity to use late "chambering" at the end of a faster snap technique to add

the heaviness from the body weight. Using this hybrid between a snap and a thrust technique can create devastating speed and power. When we examine our karate there are always elements of snap and thrust to all our techniques, to varying levels, as we try to find the ultimate techniques that work for our own individual body type.