

# Rational Method of Handling Sword / Shinai

Kendo Study Site from はくどー / 佐々木博嗣- translated by Ted Imoto, 04/13/2014

## Know the Way of Sword

In general, when you swing Shinai, you swing from Tsuka Gashira (柄頭) so that the Shinai tip can make a big arc. However, this causes a big burden on your left-hand wrist, because Tsuka Gashira (柄頭) is used as a fulcrum. That also necessitates right hand to supply force; therefore, it becomes necessary to train hard with Suburi (素振り) using heavy Shinai or Bokutō to develop strength on your arms and hands.

However, Miyamoto Musashi (宮本武蔵) says in his “Gorin Shō (五輪書)” the followings: To know the way of sword you must be able to swing your sword with two fingers always freely with correct Hasuji (刃筋).

## Swing with Shinai's Center of Gravity (C/G)

- Let's focus on Shinai's center of gravity (C/G). Try to balance your Shinai on your, say, fingertip. You can find one point that balances Shinai horizontally. This point is C/G of the Shinai. Usually, it is slightly toward the tip of Shinai measured from the fattest portion of the bamboo joint, and this is about 20 cm away from Tsuba Moto (鐔元).
- If you try to lift the C/G of an object you need relatively large force, but if the C/G is fixed and try to rotate about C/G of the object you do not need much force.
- Namely, a large force is necessary to swing Shinai from Tsuka Gashira (柄頭), because the C/G is moved; however, you do not need much force if you swing Shinai by rotating about the C/G.
- When you have to swing a Shinai with one hand in case of Nitō-Ryu or Jōdan stance, you should consider this method of Datotsu using the C/G of Shinai. That is a secret that you can handle Shinai with least amount of force. This principle is basic and applicable for Morote Ittō-Ryu (諸手一刀流), style holding one sword in two hands.

## Method of Shifting C/G of Shinai

- Consider what you can do to move the C/G of Shinai from Kamae Chudan (中段) to Men strike position quickly and efficiently.
- Moving Shinai's C/G in a straight line from the point A, starting, to point B, finishing, will obviously give the best result.
- Therefore, if you want to strike opponent quickly, you need to move the C/G of Shinai from the starting point A to the finishing point B in a straight line (the shortest distance) and strike by rotating Shinai about the C/G.
- That is the most effective way if you simply want to touch opponent's Men with Shinai. This method is easily used when you need to strike with one hand like Nitō-Ryu or from Jōdan stance because the point A for these styles is placed above the point B, and all you need is to bring it down in one direction.
- However, the point A is lower than point B in Kamae Chudan.
- Therefore, if you want to strike from the point A, Chudan position, to point B, Men position, you must move the C/G of Shinai diagonally up. The force, moving C/G diagonally up, is offset by the weight of Shinai, and the power of Datotsu becomes weak. To strike effectively with Monouchi (物打ち) in kendo it is important to use downward motion with the rotation of Shinai.
- It is important to accelerate the speed of Shinai at moment of the strike to keep/maintain Datotsu power. This operational technique is referred to as Teno Uchi no Sae (手の内の冴え), which uses wrist and elbow very flexible to make the quick rotation of the Shinai.
- If you try without this Teno Uchi (手の内), the hit may be fast but will end up with a weak hit showing that you just touched Men rather than striking. This Men strike is seen among young high school kids and vulgarly called it as “Sashi Men (刺し面).”
- Then, to produce strong, powerful strike it is necessary to shift the C/G of Shinai to a higher level. Namely, it is necessary to lift up the C/G higher level than the point B and then apply this technique using the weight of Shinai.
- This operation of lifting Shinai up is called Furikaburi (振りかぶり). The normal Datotsu movement starts with this Furikaburi and then swing down. That is, move the Shinai's C/G higher than point B, say a point C and then move the C/G from point C to B at the same time rotate Shinai about the moving C/G as you strike.

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## Shinai's C/G Draws a Parabolic Path

- An image of the Shinai's "Furikaburi" is that you move the C/G of Shinai from the front of your body, passing over your head and to the back of your body. Again, the C/G is brought back to front when you strike an opponent.
- If you look at this from the opponent side, he sees the Shinai, supposed to strike him, is moving away from him first and then come back at him in two steps, two count rhythm timing. This method of Furikaburi is easily perceived by the opponent, and he will take advantage of this fact to beat the two counts, two-step Datotsu movement.
- Then, you need to consider what method of Furikaburi is best to avoid this problem.
- Let's review the movement of this Shinai's C/G again as you swing up and down for a strike. The path of Shinai's C/G is as follows: It goes up from Kamae Chudan above opponent's head by Furikaburi and then comes down by Furioroshi (振り下ろし, swing down). A question is what locus is it mathematically that the point follows a smooth path that moves up and down.
- You can find the answer by throwing your Shinai from Chudan position to Men strike position noting the path that the center of gravity (C/G) of Shinai will take. The Shinai's C/G will fry taking locus of the projectile, a path of the parabolic arc. This method is easiest (least energy to consume) way to swing Shinai up and down to strike an opponent.

## Koshi Shidō (腰始動) and Ude Shidō (腕始動), Hip Start and Arm Start

- Now, how do you swing Shinai so that the C/G of the Shinai will follow a path of the projectile?
- If you swing Shinai up without moving your body and swing down to strike Men as you move forward, the C/G of Shinai moves up and back and then forward. That is basic, Kihon (基本), Suburi (素振り) for Men Uchi Sankyodō (面打ち三挙動). In order not to move the C/G of Shinai backward as you strike, your body must move forward as you swing up as if you go under the C/G of Shinai.
- Namely, you move your right foot forward and your body under the C/G at the same time when you swing Shinai up so that when it reaches the peak of the parabola, you swing down to strike with your left foot pulled in.
- This method is called Koshi Shidō (腰始動) and should be used on the basic, Kihon (基本), Suburi (素振り) for Men Uchi Ikkyodō (面打ち一挙動), one count rhythm timing Men.
- However, this method (Hip Start) makes it difficult to practice Ki Ken Tai Itchi (気剣体一致) for beginners. Therefore, they are taught to swing Shinai up without moving the right foot (and body) and swing down to strike Men as you move forward with right foot and immediately followed by left foot pull in. This method is called Ude Shidō (腕始動).
- Ude Shidō(腕始動) is relatively easy to get the timing of Ki Ken Tai Itchi (気剣体一致) because you are stable with two feet on the floor during Furikaburi. However, this Ude Shidō method becomes two steps, two count rhythm timing that makes it difficult to apply Seme against an opponent, because the C/G of Shinai goes back during Furikaburi and does not draw a continuous parabolic path to connect to forward swing.
- Moreover, this method tends to jump with left foot (knee and ankle straight & extended) and with right knee raised high, and strikes when the right foot is still in the air. This form, by the way, is termed "Piston Type" by Imafuku Ichiju (今福一寿), author of "Study of Body Movement in Kendo Men Strike."
- The form is seen as Tobikomi Men (飛び込み面) among young high school kids in Kendo Magazine, characterized with right foot raised high, and body stretched to form an almost straight line with left foot toe, knee, hip, shoulder, and the tip of Shinai.
- It has been said in a sense that this form is a polished form of sport with very beautiful posture as far as the technique to hit Men with the tip of Shinai is concerned. However, it is also said that this form finishes the technique at the moment the target is struck.
- In other words, the technique shown in this form is refined and maximized to hit target Men; therefore, it accomplishes the purpose at the moment Men is hit.
- However, the original purpose of Men Datotsu movement is not just hitting Men, but showing necessary body movement after the Datotsu. That may be as simple as showing Zanshin or finishing with another strike to make sure you win.

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- Therefore, when speaking the Men Uchi as kendo, right foot must be on the floor at the same time target Men is struck and left foot must be pulled in next to right foot at the time of Kirikomi (切り込み), charging to cut.
- There is the difference in timing of body/footwork between the “Men Uchi as a kendo” and Men Uchi method of Ude Shidō (腕始動) which is focusing, the purpose of sports aspect, hitting or touching Men with Shinai. Easy to understand the way of telling the difference is that Men Uchi as kendo is **“Foot is ahead of hand.”**
- Miyamoto Musashi’s Gorin Sho (五輪書) has paragraphs: “Body replaces Sword.” “One cannot attack body and sword at the same time.” “Attack with the body first and strike with sword regardless of body,” according to enemy’s circumstances. “Body go first, then strike with the sword,” carefully study this and train oneself. That is teaching of Koshi Shidō (腰始動) type Datotsu.
- Datotsu method of the Koshi Shidō (腰始動) type is difficult to master for a beginner because the timing for the Datotsu requires a good balance of your body. Therefore, many kendo instructors today teach to use Ude Shidō (腕始動) type.
- However, if you only learn Ude Shidō (腕始動) type for kendo Datotsu, you will have difficulty when you get old (30-40 years), and your leg muscles get weak, or when you apply for higher rank 4-5 dan kendo promotional examination. It is desirable to change gradually from Ude Shidō (腕始動) type to Koshi Shidō (腰始動) type if you can.

## Main Points on Men Datotsu Movement:

- A thing to watch when you strike Men using Koshi Shidō (腰始動) is that you never use right hand to bring your Shinai over your head (Furikaburi, 振りかぶり) because the center of gravity (C/G) of Shinai is directed backward unnecessarily.
- Instead, extend your left hand and swing up as if you throw your Shinai over your opponent and at the same time advance your body with right foot so that your body moves under the C/G of your Shinai. And when the Shinai's C/G is at highest point right foot is stepped on the floor, left foot is pulled in, and Shinai is swung with all the three motions simultaneously. The important thing is to master this technique by consciously being aware of the movement of Shinai's C/G and by practicing this Suburi (素振り), so that locus of the Shinai's C/G takes a path of a beautiful parabola.
- The difference between the large Men Suburi and a practical small Men Uchi is the size of this parabola drawn by the C/G. If the parabola is large and the peak point of C/G is high, you can make strong Datotsu using the weight of Shinai; however, the speed of Datotsu movement gets slow down due to the longer arc length of this parabola that you have to swing.
- On the other hand, you lose the power of Datotsu if the parabola becomes small, and the peak point of C/G get lower when you want to speed up the Datotsu movement. Therefore, it is necessary to speed up the motion of Shinai's tip by rotational force with Tenouchi (手の内) to make up for this power loss.
- Therefore, training Men Uchi technique is to pursue the most effective parabolic path that results in Yūkō Datotsu (valid strike).

## Principle of Sae (冴え, sharpness) of Datotsu (打撃, strike)

- The power of Datotsu is determined physically by the speed of Shinai tip and force transmitted from hands at the time of the strike. Faster the speed and stronger the force, the more powerful the Datotsu is.
- But, swinging Shinai fast, blindly and forcibly, is a waste of energy, because this does not transmit power to the tip of Shinai as you think you would. Therefore, an efficient Datotsu method that accelerates the speed of Shinai tip and results in maximum power at the instant of the strike must be studied.
- This method utilizes Newton’s Law of Motion. When an object rotates, it rotates about the C/G of the object. To increase tip of Shinai speed, you must increase the angular speed centered about the C/G of Shinai, not on your left hand.
- To see why it is, consider an image of a Figure Skater who is spinning with her arms and leg extended out. To increase the speed of rotation, she brings in arms and legs closer to her body, toward the center of rotation.

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- If the force to rotate is same, then the point closer to the axis of rotation rotate faster than away from the axis. Another word, instead of swinging (rotate) Shinai from left hand at Tsuka Gashira (柄頭), the speed of the Shinai tip will be faster if rotated at C/G of the Shinai.
- On the other hand, the power of Datotsu, largely the weight of Shinai, is more when Shinai has held away from the C/G. Datotsu power is greater when Daitō (大刀) is used than Shōtō (小刀) for this reason.
- So, it is understood that the method of powerful Datotsu is to produce Datotsu movement away from C/G and transmit the rotational force toward C/G, increasing the rotational speed of Shinai tip at the moment of strike.
- Namely, at first, lift and start rotating a heavy and large object rather away from the C/G, and gradually reduce the distance of force from C/G to increase the speed of rotation, thus, producing the power of the strike.
- The method of reducing this distance in case of the Figure Skating example was to reduce the distance by shrinking arms and leg toward the axis of rotation, C/G. On the contrary, you can shift the axis of rotation to reduce this distance. In the case of Shinai, you can speed up Shinai tip by shifting the point of rotation toward the tip of Shinai.
- For example, at first, you swing Shinai with the left hand and rotate at Tsuka Gashira (柄頭) and then, shift the point of rotation to the C/G of Shinai where it is most effective.
- A good example of this method used is a "Whip." Whip is designed to transmit a force generated by hand by a big swing. The force travels toward the tip of the whip by shifting the point of rotation, thus, making the motion smaller and faster toward the tip.
- The old saying, "Swing Shinai like a Whip" comes from this teaching. Note that the whipping exhibits more power if the root is fat, heavy and the length is long.
- Therefore, Shinai, too, will yield more power if it is fat and heavy at Tsuba Moto (鐔元) with a longer length. However, Shinai's weight and length are limited by regulation, and also there is a limit of strength depending on who swings the Shinai.
- Then, an idea of using arms and body as extensions of the Shinai is naturally brought up.
- Instead of using left-hand wrist at Tsuka Gashira (柄頭) as the axis of rotation when you swing Shinai, using the elbow as the axis of rotation will increase power. And the use of shoulder should be better than the use of the elbow. Eventually, it is concluded that use of the body at hip and abdomen as the axis of rotation should yield the best result to strike powerful Datotsu.
- Therefore, the starting point for Shinai swing is the use of hip as the axis of rotation and then, shift it to shoulder, to elbow, to the wrist and finally to C/G of the Shinai. Thus a whole body is used as a principle of the whip to transmit the striking power to Shinai tip. This method enables you to produce very strong and powerful Datotsu movement.
- In the old days, they were taught to **start from hip and swing Shinai from the shoulder** for this reason.