

The Biomechanics of Self-Defence (Part 1 for stand up striking)

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Abstract

As Martial Artists, I'm sure most of you at some time would have been asked questions such as "when someone grabs you like this, what is the best way to escape?" or "if someone goes to punch you in the face what is the best way to defend yourself?" Well the answer is there is no best way, there are different ways, and the way you go about defending yourself will largely depend on your particular Martial Arts background. In this article we are going to look at the key points to defending yourself against strikes (in the stand up position) as well as giving you some insight into what to look for when developing your own self defence techniques for in the Dojo and out on the street. **Before reading this article you should read "What do all Martial Arts have in common".**

Starting out as a Martial Artist

I remember when I first started out in martial arts at the age of 15, a large part of our curriculum was devoted to learning how to defend ourselves against various kicks, punches and grabs. We first learnt the basic blocks and strikes, we then practiced our blocking and striking techniques in one on one drills until we perfected them, we would then go onto further refining our blocking and striking techniques in sparring. In addition to sparring we would also apply our blocking and striking techniques in mock self-defence situations which were designed to give us the confidence and skills to defend our selves out in the street.

In addition to one on one drills and sparring, we learnt self-defence techniques through our grade Kata. Each time we graded to a new level we had the challenge ahead of learning our new Kata, understanding our new Kata and applying the techniques learnt in our kata to various self-defence situations.

As we further develop as Martial Artists, we start to develop a memory bank of various self-defence techniques, then later on as instructors we get to pass our knowledge of self-defence on to our students, by this stage we have a grading syllabus of set techniques we must pass onto our students as well as other techniques developed outside the grading syllabus. These techniques developed outside of our grading syllabus are usually learnt through our instructors, books, magazines, videos, seminars and cross training with other Martial Arts disciplines, while some of these techniques we have had the insight to develop ourselves.

Developing your own self defence techniques for striking

When developing self-defence techniques for strikes there are 3 questions you must ask yourself (these were briefly covered in "What do all martial arts have in common").

- 1) What can I do to stop the strike?
- 2) What can I do to deflect the strike?
- 3) What can I do to get out of the way of the strike?

Stopping a strike

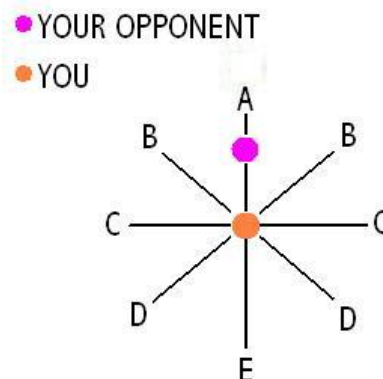
The most effective way to stop a strike is to make an impenetrable barrier, which will meet the angle of your opponents strike head on. Boxers do this by bringing their forearms up to cover their face, bracing their hands firmly against the top of their forehead, Kick boxers and Thai boxers use the same principle when using a check to stop a leg kick. Both of these blocks make use of short levers in close to the body for stopping strikes.

Stopping an oncoming strike is more effective when your body weight is behind your block. If you were a boxer and you were using your forearms to stop a jab or a cross, you would use a front lunge to get your body weight behind your block, moving you directly towards your opponent (angle A). If you were a Kickboxer/Thai boxer using a leg check to stop a leg kick, you would use angles B to C to meet your opponent's kick dead on with your bodyweight over the leg performing the check, making it harder for your opponent to kick through your check.

When using blocks to stop strikes you need to override your body's natural tendency of moving backwards, away from the oncoming strike. If you move in a backwards direction (angle E) while blocking a strike, the force you opponent has generated is likely to move you further backwards, this causes 2 problems

- 1) Moving backwards while blocking your opponents strike makes it hard to launch any serious counter strikes as your body weight is moving in the wrong direction to strike effectively.
- 2) Moving backwards while blocking your opponents strike creates distance for your opponent to throw more strikes at you.

Stopping an oncoming strike with your body weight behind your block will at least stop your opponents momentum, making it harder for your opponent to throw consecutive strikes and more than likely put your opponent on the back foot, making it hard for them to throw effective strikes, while giving you room to throw strikes and execute stand up grappling techniques.



Deflecting a strike

Deflecting a strike is changing the path of a strike, ensuring the intended strike won't hit you. A well executed deflection can change the path of an oncoming strike enough to effect your opponents balance making it easier to launch a counter attack. If we look at strikes that move in a straight line (linear motion) such as jabs, crosses, front kicks etc. a well executed deflection will change the path of the oncoming strike, effecting the intended path of movement of the strikers body mass, particularly if your opponent has their body weight behind their strike.

A well executed deflection that moves an oncoming strike to the left or right will cause the body of the striker to rotate.

A well executed deflection that moves an oncoming strike in a downward direction will cause the body of the striker to stumble forwards.

A well executed deflection that moves an oncoming strike to the head in a upward direction will cause the body of the striker to stumble forwards, however if the defender is moving forwards when executing their deflection, their opponent can be forced to stumble backwards.

Deflections are most effective with short levers, however long levers used to deflect front kicks are also effective so long as the arm used to deflect the kick is held close to the body.

Deflections work best against strikes that move in a straight line (linear motion) such as Jabs, crosses, front kicks, sidekicks' etc. Deflections don't work well against strikes that have an axis of rotation (angular motion) such as hooks, round kicks, spinning crescent kicks, spinning hook kicks etc, with these types of strikes you are better off stopping the strike with a block or getting out of the way of the strike.

When deflecting a strike, footwork should be used in conjunction with the deflection to move your body or target area out of the line of the oncoming strike.

Using deflections with out footwork keeps you in direct alignment with the oncoming strike, if the timing of your deflection is out, chances are you'll get hit.

The advantages of using footwork are.

- 1) You can move your body or target area out of the line of the oncoming strike.
- 2) More often than not, the use of footwork will place your body in a position that makes it difficult for your opponent to strike you.
- 3) More often than not, the use of footwork combined with the deflection will set your body up to deliver a quick and powerful counter attack.

When deflecting an on coming strike an angle lunge is often used to move the defender out of the path of the oncoming strike, followed up with footwork designed to better position the defender to execute their counter attack. You execute your angle lunge and as soon as your front foot makes contact with the ground the front foot pivots while you draw your rear foot back far enough to be in either a fighting stance or a shoulder width stance. When stepping back into a fighting stance, you need to make sure you keep your body weight positioned over your front foot or your body weight will travel in a backwards direction, increasing the time needed to execute a counter attack. When stepping into a shoulder width stance you are perfectly poised to start executing short-range techniques such as elbows, knees, punches and stand up grappling techniques (as you execute your counter attack, your shoulder width stance will change accordingly).

FIGURE A

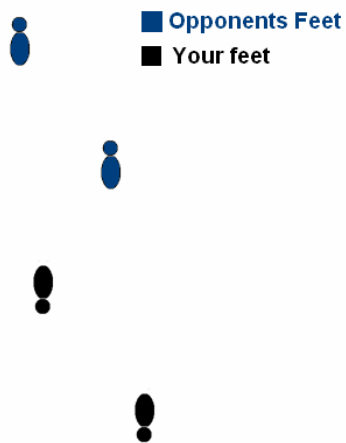
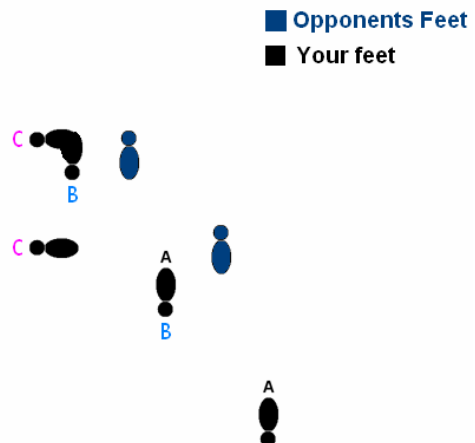


FIGURE B



In figure A you are squared off against your opponent.

In figure B your opponent is moving towards you, you execute your angle lunge (feet position A assume feet position B) and pivot on your front foot while drawing your rear foot into a shoulder width stance (feet position B assume feet position C).

FIGURE A

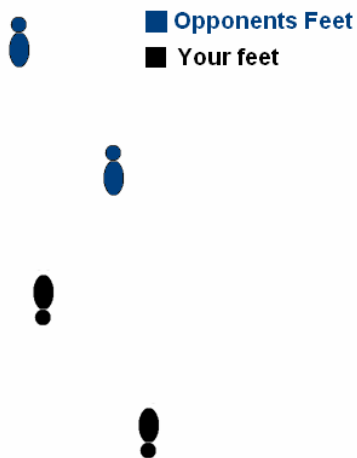
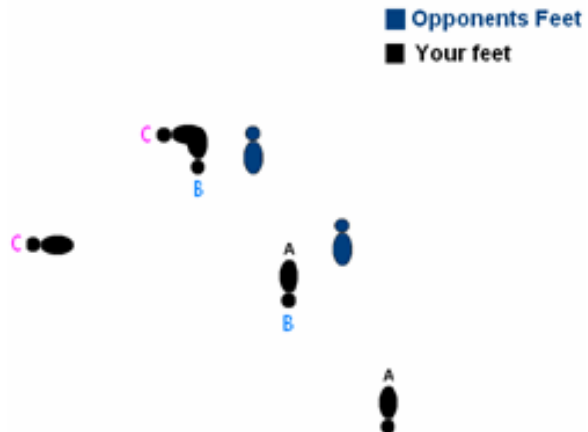


FIGURE B



In figure A you are squared off against your opponent.

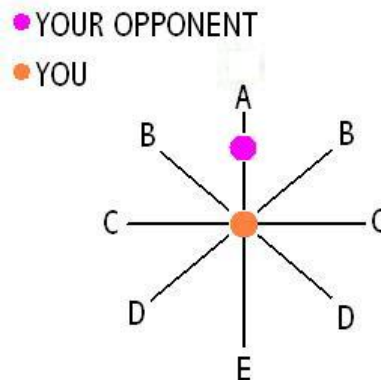
In figure B your opponent is moving towards you, you execute your angle lunge (feet position A assume feet position B) and pivot on your front foot while drawing your rear foot into a fighting stance (feet position B assume feet position C).

After executing an angle lunge and pivoting into a fighting stance or a shoulder width stance, you'll find your opponent is now too close to you to effectively kick you and for your opponent to effectively strike you with short range techniques, they must first turn 90 degrees, giving you time to execute your counter attack.

Moving sideways while deflecting your opponents strike (angle C) or angle lunging backwards while deflecting your opponents strike (angle D) is fine if you plan on side kicking or back kicking your opponent, however it creates space for your opponent to sidekick or back kick you (assuming you are in the Dojo) it also moves you further away from your opponent eliminating the possibility of using short range strikes such as punches, elbows, knees and stand up grappling techniques.

If you were to move backwards while deflecting a strike (angle E) you'll encounter the same 2 problems as moving backwards while blocking a strike.

- 1) Moving backwards while deflecting your opponents strike makes it hard to launch any serious counter strikes as your body weight is moving in the wrong direction to strike effectively.
- 2) Moving backwards while deflecting your opponents strike gives your opponent distance to throw more strikes at you.



Getting out of the way of a strike

Getting out of the way of a strike is our body's instinctive form of defence against strikes, you can see this time and time again in new students as they nervously attempt to stay out of reach of the oncoming strikes, the problem being that staying out of reach usually means moving backwards in an untrained student, which as explained previously can lead to problems.

Training your body to move your head out of the way of a strike without attempting to block or deflect a strike, or moving your body moving between angles A&B while your opponent is throwing a strike at you and not offering a block or a deflection is an extremely difficult skill to acquire, however the advantages of perfecting this skill are enormous when it comes to launching counter attacks.

Out of all the different disciplines of combat, boxers seem to have the edge when it comes to perfecting this type of skill; they will slip and weave potentially devastating punches without attempting to block or deflect them.

Slipping a straight punch

Slipping is a defence used against punches that move in a straight line (linear motion) such as a jab or a cross. When a straight punch is thrown, boxers will move their head to the side just enough for the oncoming punch to miss their head by a few inches, as well as moving their head out of the path of the oncoming punch, the boxer will ideally rotate their upper body around 45 degrees which will roughly position their lead shoulder in line with their opponent. The head movement will help the boxer avoid the oncoming punch, while the body movement as well as assisting the boxer in avoiding the punch, will load the rear shoulder for a quick and powerful counter punch. Often boxers will accelerate their body towards their opponent approximately 1/2 way between angle A & B when slipping a straight punch, this will better position the defender for a counter attack, while cramping and disadvantaging the offensive fighter.

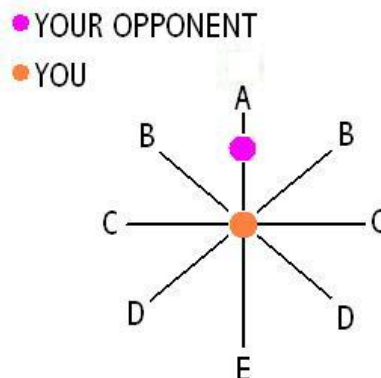
Weaving a hook

Weaving is a defence used against a hook and because a hook is a strike that has an axis of rotation (angular motion), your best options for a defence are to either stop the hook with a block or move out of the path of the hook. When a hook is thrown (we'll assume a left hook is thrown and both fighters are orthodox) the defenders body weight should be either over their front foot (left foot), or their body weight should be distributed evenly between their stance. When executing a weave, the defenders head virtually ducks under the hook, while moving backwards, roughly towards angle D, at this point the defenders body weight is over the rear foot (right foot), their front shoulder (left shoulder) is pointing at their opponent and their rear shoulder (right shoulder) is loaded ready to deliver a quick and powerful counter punch. Now the defender is positioned to drive off their rear foot putting their body weight behind their punch, delivering a very powerful right cross.

As well as slipping and weaving punches, the footwork mentioned previously used to deflect a strike is extremely effective when moving out of the path of an oncoming strike.

Angle B is your preferred angle when moving out of the path of an oncoming strike. Angle C & D you are too far away from your opponent to throw short range strikes or execute stand up grappling techniques, however these angles are fine if you plan on side kicking or back kicking your opponent, (keeping in mind your opponent can do the same to you).

Angle E causes you to move backwards, making it hard for you to effectively strike your opponent while your opponent has the distance to continue his assault.



Finishing off your opponent

Once we've dealt with the strike, the way in which we go about finishing off our opponent will depend on distancing, our angle of defence, the direction our body weight is moving, whether our opponent is off balance and whether our opponent is on the back foot. When finishing off your opponent there is an endless selection of strikes, throws, pressure points, joint manipulations, restraining holds, chokes, strangles etc. to choose from. The fun part is experiencing other Martial Arts to see what's out there and what you can add to your repertoire.

Conclusion

This article is a simplistic and an effective approach to defending yourself against strikes in the stand up position. When defending yourself against a strike you need to decide just 3 things, whether to block the strike, whether to deflect the strike or whether to get out of the way of the strike. After you have dealt with the strike, your angle of defence and the distancing between you and your opponent will determine your best course of action for a counter attack, if you are a competent Martial Artist your counter attack is the easy part and should flow unrehearsed.

Traditionally self defence techniques for strikes is taught in a manner where you are given set techniques for set situations, the problem with being that when someone throws a strike at you, you have less than a second to

- 1) Realise that a strike is on its way and is about to hit you.
- 2) Decide out of all of the set techniques for set situations you have learnt, which one best matches the current situation. Once you've decided on the technique that best suits the current situation you then have to remember the finer points of the self defence drill such as, does your opponent have their left foot or their right forward? Which foot should you have forward? Etc.
- 3) Execute your self-defence technique.

As you can see, step 2 (your decision making skills) can be a pretty long process when you have memorised dozens of set techniques for set situations, compared to deciding whether to block, deflect or move out of the way of a strike.