

The Effects of Jujitsu Discipline on Basic Human Instinctive Reactions

by Martin Sycamore



Introduction

Imagine a situation where a citizen (male or female) has caught a train or bus home after attending a social function in town. They are walking along a semi-lit roadway and the hour is almost midnight. There are shadows on either side of the road, and the decision to walk in the centre of the bitumen has been made. Suddenly, out of the shadows springs a large figure wielding what appears to be a club and yelling a mixture of words as he approaches rapidly swinging the club from side to side. There is sufficient time to make only a hasty decision. Which one does the citizen make?

Instinctive Reactions

Much has been written on the subject of basic human instinctive reactions to sudden, stressful situations. The most common topic of discussion in this regard is often referred to as the "Fight or Flight Response". In the 1920s, physiologist Walter B. Cannon identified the sympathetic nervous system's *emergency reaction*, which prepares the body to exert high levels of physical energy. In the 1930s, while stimulating regions of the hypothalamus of the cat, physiologist W. R. Hess identified the *defense reaction*, which included tendencies to fight or flee. The fight-or-flight response is coordinated by central command neurons in the hypothalamus and brain stem which "regulate the sympathetic outflow of both the stellate ganglion and the adrenal gland" (Jansen et al. 1995:644).

The Fight-or-Flight Response is a biological and psychological change that occurs in the body when a danger is perceived. In times of anxiety and panic, the brain reacts immediately and produces a profound effect on the human body. So, what occurs?

The following list of what happens physiologically is contained in the book, *Principles of Anatomy and Physiology* by Tortura and Grabowski:

Stress excites the sympathetic nervous system, the hypothalamus, pituitary gland, and adrenal cortex. This produces the following effects:

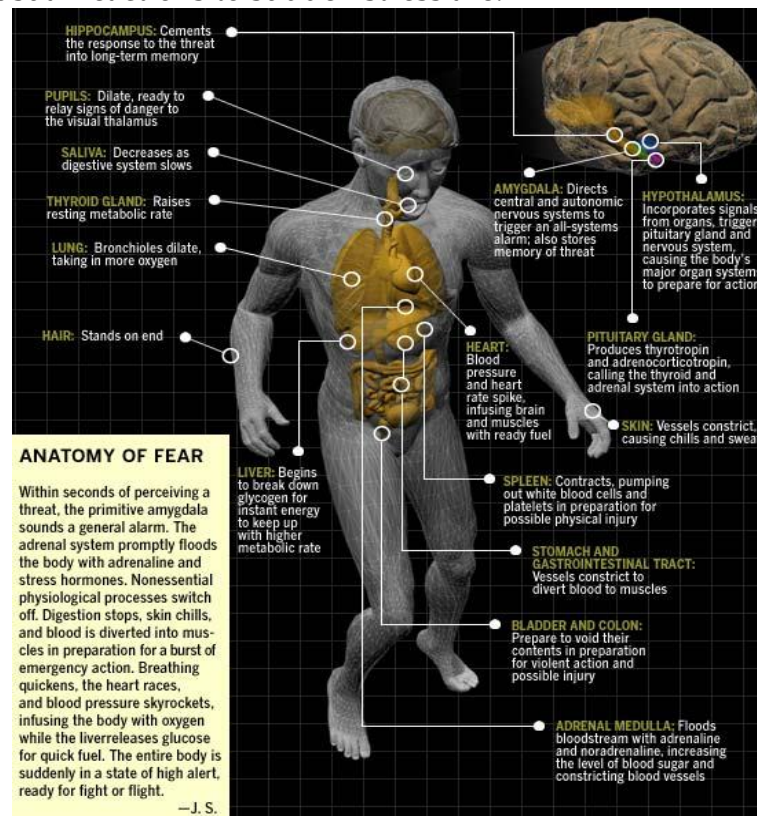
- *The pupils of the eyes dilate.*
- *Heart rate and force of contraction and blood pressure increase.*
- *The blood vessels of nonessential organs such as the kidneys and gastrointestinal tract constrict.*

- *Blood vessels of organs involved in exercise or fighting off danger – skeletal muscles, cardiac muscle, liver, and adipose tissue – dilate to allow faster flow of blood. (The liver splits glycogen to glucose and adipose tissue splits triglycerides to fatty acids, both of which are used by muscle fibre to generate ATP.)*
- *The rate and depth of breathing increase and the airways dilate, which allow faster movement of air in and out of the lungs.*
- *Blood glucose level rises as liver glycogen is converted to glucose.*
- *The medullae of the adrenal glands are stimulated to release epinephrine (adrenaline) and norepinephrine (noradrenaline). These hormones intensify and prolong the sympathetic effects just described.*
- *Processes that are not essential for meeting the stress situation are inhibited. For example, muscular movements of the gastrointestinal tract and digestive secretions slow down or even stop.*

Any split-second decision to such situations is usually made while our bodies are "paralysed by fear", or standing perfectly still - another instinctive reaction left over from years of evolution. The brain becomes highly alert, and the heart starts pumping furiously and the breathing rate changes instantaneously.

As the book outlines, if the stress remains for a long period of time, the excitation becomes more prominent and if it remains for weeks or months it can weaken the immune system. In this state, there may be a reduction of the levels of adrenaline and noradrenaline in the brain, which are two neurotransmitters that many medications given to people with anxiety and panic disorders try to alter.

According to the web-site (<http://www.discover.com>) published by *Discover Magazine*, usual reactions to sudden stress are:



In this publication, the author outlines the following assertions:

Fight or Flight is a physiological/psychological response to a threat. During this automatic, involuntary response, an area of the brain stem will release increased quantity of norepinephrine which in turn causes the adrenal glands to release more adrenaline. This increase in adrenaline causes faster heart rate, pulse rate, respiration rate. There is also shunting of the blood to more vital areas, and release of blood sugar, lactic acid and other chemicals - all of which is involved in getting the body ready for fighting the danger (a tiger, a mugger), or running away from the threat. Feelings of dread, fear, impending doom, are common.

What this means is that the brain changes the way it communicates with itself to deal with a perceived threat. Sufferers from an anxiety or panic disorder may have their brain “stuck” in this “on” position. In this respect, the book *Why Zebras Don't Get Ulcers* by Dr Robert M. Sapolsky draws an analogy between the temporary Fight or Flight Response, and the longer term chronic stress (or anxiety disorder) and offers some interesting issues:

- *During times of chronic stress, sexual drive decreases in both sexes; females are less likely to ovulate or carry pregnancies to term, while males secrete less testosterone. This explains why people with anxiety disorders have difficult sex lives.*
- *During the Fight-or-Flight response, less saliva is produced, which helps explain why people with anxiety disorders suffer from dry mouth and dental problems.*
- *The longer the stressor lasts, the longer the cumulative time of exposure to CRF, causing inhibition of appetite. (CRF is Corticotropin Releasing Factor, a hormone secreted by the hypothalamus in the brain). This explains the poor eating habits of people with anxiety disorders.*
- *Another interesting facet of prolonged periods of the Fight-Or-Flight response is diarrhoea and other bowel disorders. Relatively large amounts of water are needed for digestion, to keep your food in solution as you break it down so that it will be easy to absorb into the circulation when digestion is done. The job of the large intestine is to get that water back, and that's why your bowels have to be so long - the leftovers slowly inch their way through the large intestine, starting as a soupy gruel and ending up, ideally, as reasonably dry stool. Disaster strikes, run for your life, increase that large intestinal motility, and everything gets pushed through too fast for the water to be absorbed optimally. Diarrhoea; simple as that!*
- *Irritable bowel syndrome (IBS) is a hodgepodge of disorders in which there is abdominal pain (particularly just after a meal) that is relieved by defecating and which, at least 25 percent of the time, includes symptoms such as diarrhoea or constipation, passage of mucus, bloating and abdominal distension.*
- *All this helps to explain why people with anxiety disorders exhibit signs of physical illness - our bodies are stuck trying to fight off physical or psychological stressors, that the body simply doesn't have the time or resources to combat diseases or digest food and get the proper nutrients to build new cells.*
- *Other ways to calm one's self are to calmly tell yourself there is no danger, you are safe and surrounded by safe people. Also, forcing yourself to breath long, slow, deep breaths helps. The bottom line is there is a chemical imbalance that is stuck in the “on” position and all of the above methods are needed in order to just make it through the day without running away in fear or fighting in anger.*

In accepting these basic final words of wisdom, an analysis may be made of a third option which could well be adopted by an experienced Jujitsu practitioner, i.e. the utilisation of disciplined training to confront a situation without necessitating the Fight or Flight Response.

Disciplined Training

During a Jujitsu training session, recourse is often made to several skills within a disciplined environment:

Mokuso

At the beginning and end of each class, instructors and students often carry out *Mokuso* which is a kneeling or sitting meditation. At the start of the class one should control the breathing (in through the nose, and out through the mouth, exhaling the air from deep within the abdomen). Relax to let the troubles of the day evaporate, and clear the mind to be ready for the class and to start fresh. This is the time to clear the head. When ending the class it is advisable to also carry out *Mokuso*. This is a time to control one's breathing and relax from the rigors of training, to think of what was practised, visualise the skills of each technique, and again to clear the mind.



Posture is the first basic principle. Correct positioning of the body centres around the spine, which must be erect, and even when straight must not feel "collapsed". In oriental philosophy, the human being is the conduit between the universe and Earth. Traditionally the position adopted with the hands is of the Zen practitioner, i.e. the hands in the lap, left hand upturned resting in the right hand, with the thumbs of both hands joined at the tip. The tip of the tongue must rest on the palette just behind the top teeth. The reason for this is that the tongue acts as a connector to the cross over of two meridian channels, and without the connection vital benefits of the practice will be lost.

Concentration is of utmost importance. A wandering mind is a hindrance to advanced practice and a sound technique is to concentrate on a mental count of one's breathing. By simply focusing on the numbers, will prevent determined practice deteriorating into just idle daydreaming. In Zen training, the goal is to try and empty the mind in an endeavour to contact one's true essence.

Breathing is the keystone of correct practice. Correct breathing benefits the body in many ways, but first it must be recognized that our everyday breathing is hindered and restricted by a number of influences, ranging from stress and tension to poor posture.

When observing the breathing of a newborn baby or animal, it is noticeable that the breathing is primarily abdominal, while human adults tend to involve the upper chest. Physiologically the diaphragm controls the breathing acting as a pump. It is diaphragm breathing that is used in Mokuso. It is no coincidence that the all-important "centre", the Saika Tanden is situated two inches below the navel. The Tanden is the reservoir of vital energy. Correct breathing charges and replenishes the store of vital energy.

The breathing technique must involve long, slow cycles of breath. Inhaling through the nose, slowly drawing air into the lungs, permits the feeling of drawing it down into the lower abdomen. This encourages abdominal breathing, correct use of the diaphragm and awareness of the Tanden.

Uchikomi

Repetition practice of techniques in a stationary position is called *uchikomi*. This form of practice has many benefits:

- It allows the practitioner to become familiar with the movements required of the technique.
- It provides the ability to practice the technique with no resistance or distraction.
- It presents the opportunity to break down the skills of the technique into the various parts, to analyse and appreciate the various aspects of the technique.
- It allows the practitioner the opportunity to gradually increase the speed of the movements in an endeavour to apply a successful technique.
- It allows the mind to absorb the entirety of the movements involved in the technique.
- It permits the body to become used to the twisting, turning, balancing and use of the various muscular movements of the technique.
- It encourages the mind and the body to work together in order to perform the skills of the technique.



Butsukari

The performance of a technique, or series of techniques, in a moving situation is referred to as *butsukari*. This is undertaken after repetitious practice in uchikomi format has proven successful. Once a technique is learned in a stationary position, the next important step is to perfect the movements in a mobile environment. Successful completion of the techniques under these conditions enhances the practitioner's ability and confidence.

Visualisation

By closing one's eyes and mentally walking through the movements required of a Jujitsu technique, it has been proven in recent studies by sports psychologists that this form of mental rehearsal is significantly beneficial to enhancing physical performances. Visualisation involves running through a sequence of movements in the mind, imagining what it would feel like to perform them for real. This technique trains the mind to know what to do in certain situations and gives it triggers so that it prompts the body to react automatically.



Top athletes use visualisation in two ways:

Firstly, they use it to learn new movements - mentally running through them countless times and preparing themselves for the sensations they will feel when they perform the movements for real.

Secondly, they use visualisation to prepare themselves for competitions - imagining the upcoming event in detail - the location, the noise of the crowd, the feeling of nervousness, the exhilaration of providing a high level performance - so that there will be no surprises on the day.

Visualisation is particularly important when training for a martial art competition. When seeing one's self performing in the mind's eye, even though the body is not actually moving, it is not uncommon for minute muscular contractions to occur, which develop and improve neural pathways in the brain so that the athlete becomes mentally and physically used to the movement visualised. Visualisation helps to develop the correct neural pathways to make physical movements more familiar. The brain remembers rehearsed movements so that with more regular use, the movements become second-nature and come naturally. Visualising in detail the mechanics of certain movements in Jujitsu helps to master the technique and become adept at even the most difficult movements.

Kumite/Randori

The practice of free sparring is encouraged, and is an essential part of a grading examination within the Kyushin Ryu Jujitsu system. In this manner, one person may perform various kicking and punching techniques on their partner while the partner offers no resistance (*kumite*). When the proficiency of this is apparent, the situation escalates to a one-on-one bout of sparring (*randori*) where both practitioners endeavour to apply their techniques on each other, under combat conditions.



For safety reasons in the *dojo*, full protective equipment such as body vest, helmet and padded gloves are worn. Participation in this activity provides the opportunity for full contact of blows without resulting in injuries to either party.

Realistic Practice

The Kyushin Ryu Jujitsu curriculum requires that defences to nominated attacks be performed within three levels:

Level 1 - A simple release and withdrawal. When approached by an aggressor, it is usually difficult to undertake an immediate assessment of the level of aggression offered towards a defender. Legally, it is fraught with danger to over-react to a situation. The law requires a minimum of force to be applied to an aggressor, in an endeavour to defend one's self. In simple terms, the defender must utilise only that amount of force necessary to nullify the attack.

Level 2 - A release and retaliation. When it has been ascertained that the aggressor is determined to apply force of such a nature that bodily harm or worse may eventuate, the level of response by the defender should escalate. The initial form of attack should be nullified by an appropriate release, and a suitable retaliation applied in order to provide a distraction or deterrent from any continuance. This may take the form of a blow to an exposed target area or a standing restraint hold.

Level 3 - A release and a dislodgement of the aggressor from the standing position to a position of disadvantage on the ground. In times when fear of grievous bodily harm or death are identified, it is necessary to nullify the attack, and take the aggressor to the ground by means of a throw or takedown, and restrain the aggressor in such a manner that no further aggression is able to be displayed.



Conclusion

By the regular utilisation of all of these techniques and practices in a Jujitsu class, the practitioner acquires the skills of self-confidence, discipline and rapid decision-making under combat conditions. This disciplined training has a marked effect upon basic human instinctive reactions, such as the Fight or Flight Response. Instead of the mind reverting to the innate human responses, years of dedicated training are more likely to come to the fore.

The figure moving rapidly out of the shadows now takes the form of a partner in the dojo, swinging the club around in an aggressive fashion. Thousands of thoughts and mental images flash through the head until the mind settles upon a well-rehearsed, familiar form of attack and defence. A defensive stance is adopted, and the citizen is ready. The only decision to make is whether it is a Level 1, Level 2 or Level 3 attack and defence - and at this point of time there are still several seconds available to formulate a well practised response.



Many thanks to:

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- *Defense Reaction and Human Nervous System* - Encyclopaedia Britannica 2003
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- *Principles of Anatomy and Physiology* by Gerard Tortura and Sandra Grabowski, www.amazon.com/exec/obidos
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