Models for Internal Development and their Application in Martial Arts

By Ian Deavin

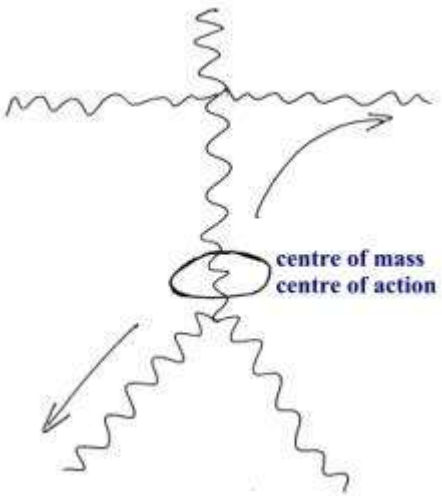
Over some years now it has been important to me to gain an understanding of the principles underlying body usage in martial arts – the following is a collection of models that have come from that study – some interpreted from descriptions given to me by teachers and others coming from my own observations – nonetheless they are all simply attempts to describe what I have experienced of an age old practice, in ways that can aid training. They are not new principles – simply descriptions of old ones. Consequently it should be remembered that these models are not exclusive but each can be considered to represent a different facet of the same real body operation in order to illustrate the concepts involved.

These are particularly western models in the main and are predominantly mechanical in nature – a style that the western mind seems to be more comfortable with in comparison to the Chinese models that are available. Unfortunately these Chinese models can be relatively inaccessible to westerners without first taking on-board a good portion of the Chinese culture to enable us to understand them. These are only simplistic models intended to convey principles – personally I have found that in order to learn to operate in this way it has proven necessary to actually change my body in terms of suppleness, connectedness, flexibility, being relaxed and developing "springy" legs. Perhaps the best way to use these models is to bear them in mind when watching a practitioner/player and also when practicing alone to learn how to link the observation to your own internal feeling through the model. For example it took me a long time to understand that when my teachers say "use the Tan Tien" – they mean it literally!

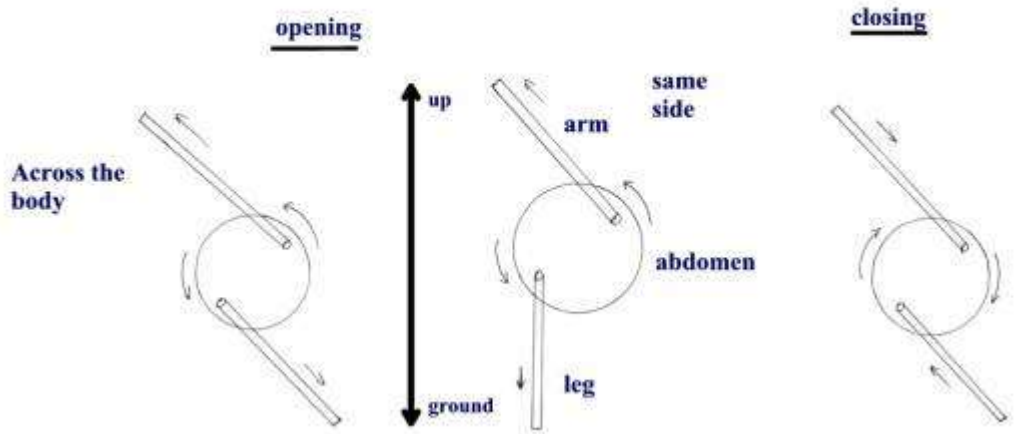
The Five Springs

(from Chinese internal systems)

Energy (chi is transmitted in the form of waves of muscular contraction. This uses the solid ground as a base to impact our opponent

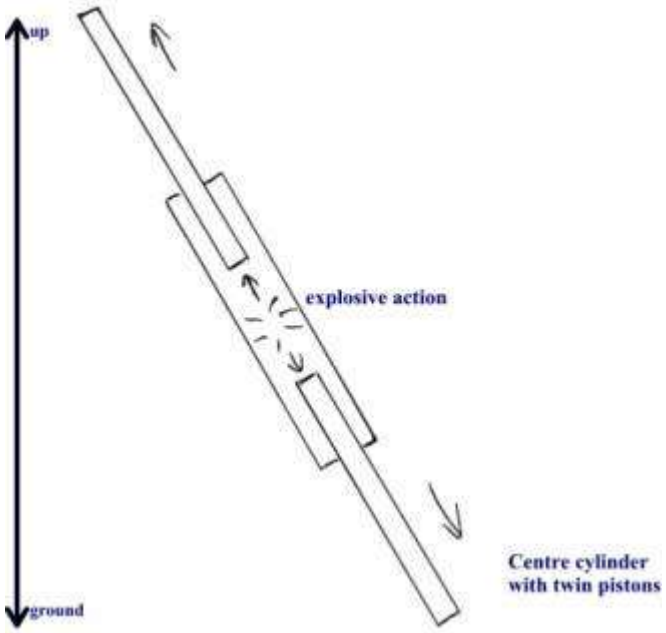


The Crank

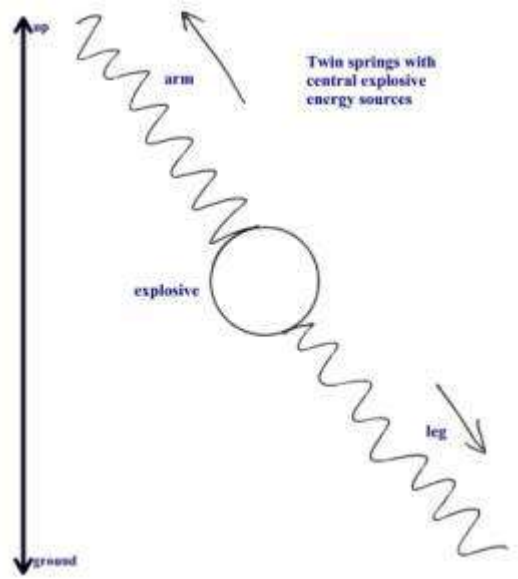


Hydraulic model

- when each end hits simultaneously then the effect is of an expanding solid rod.



The Slinky



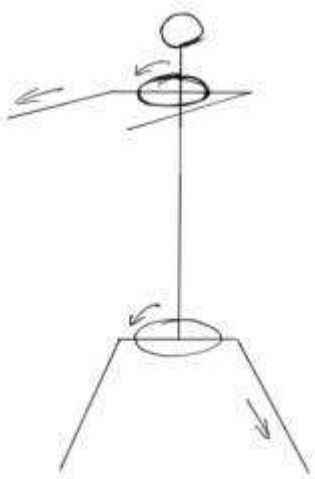
Explosive action at the centre propagates a wave in each direction. When each wave hits simultaneously then the effect is of a solid expanding object. Also the wave then rebounds from the solid ground and gives a second pulse to the initial strike. The opponent feels as if he has been hit "from the floor".

Connectivity of the muscles/tendons is needed, so that the energy can be transferred throughout the body. This requires a particular firm, resilient but relaxed structure and tissue tone since the muscles behave like a whip or a snake striking.

Stable platform

- the idea being to maintain the pelvis as a stable platform whatever happens to the rest of the body - much like an oil rig so that the motion of the lower body is isolated from the upper body. The upper body can thus stay relaxed. Hence the concepts of tucking the coccyx under and maintaining level hips

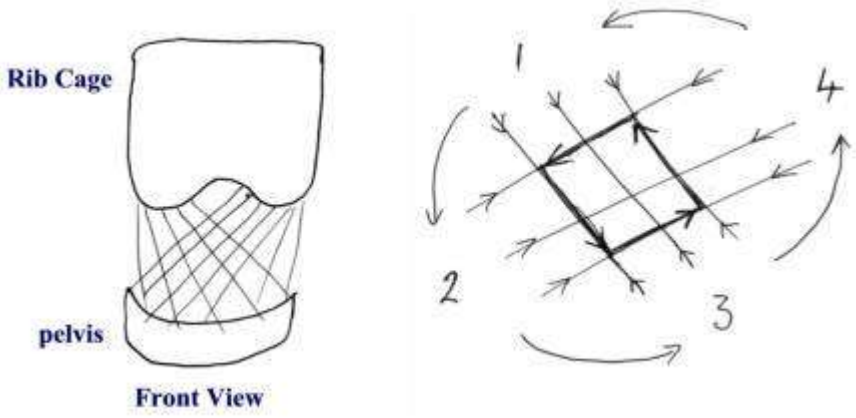
Traditional hip rotation - from Nakayama Sensei - Shotakan Karate model.



hip rotation used to twist the shoulders by acting on the trunk. This also requires good mid-section connection for maximum torque transfer.

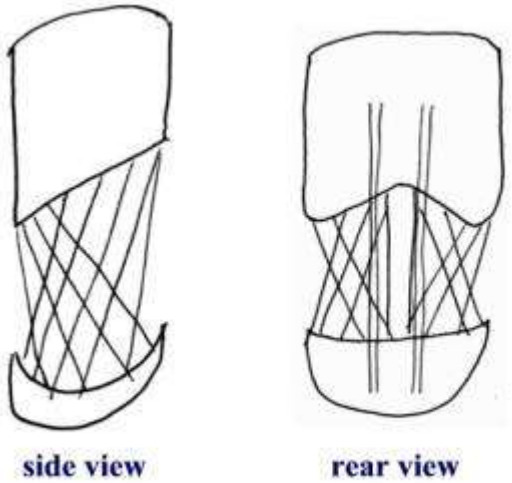
Too much hip rotation impairs the pelvic stability. Use of waist rotation is generally to be preferred with only slight hip rotation within the constraints of good structure. Thus the original simplistic model requires additional elements in the mid-section.

The "Hara" or Tan Tien"



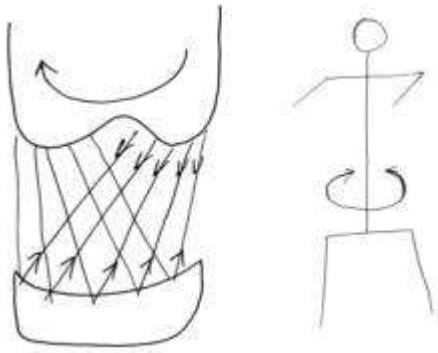
The diagonal muscle sheets can be programmed to contract in a circular motion thus moving the contraction around the abdomen - this can then be used to move the upper body by pulling on the pelvic girdle - equally by pulling the pelvis up at the front it is possible to initiate leg raising very rapidly.

The Tan Tien becomes a literal centre of action felt at the front but augmented by extension at the sides and at the rear giving an effective centre of action slightly inside the trunk.



These same muscles can be programmed to act in a horizontal fashion thus generating a powerful waist rotation, which supersedes leg driven hip action.

The combination of waist and hip rotation offers more power, more control and greater stability and sensitivity than hip action alone.

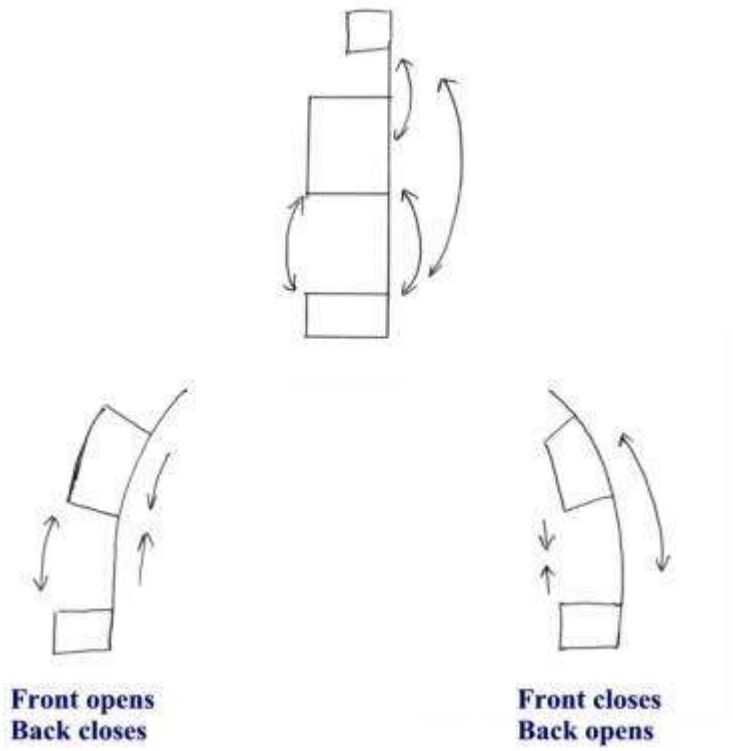


By using the flat laminated sheets of diagonal muscle in this way we create a strong but flexible connection between the upper and lower bodies. Actions initiated by these muscles in a very small way may then be propagated outward through the limbs and converted to much larger actions.

Operation of the internal models from the central Hara or Tan Tien requires the abdominal mid-section muscles to work in an active fashion. This is not a natural condition and requires that the muscles be developed and programmed to work this way.

The result is that within the stable pelvic girdle a structure of abdominal muscles is generated which can initiate movement radially. This gives 360° spherical action and control and can feel much as if there is a ball of muscle floating in the pelvic bowl.

Opening/Closing



Opening/closing in this way generates "natural" belly breathing in a bellows type fashion and goes a long way to freeing our actions from the need to coincide with an in or out breath. By simply doing actions based on opening/closing, then co-incidental breathing occurs naturally. It also permits a certain amount of power to be transmitted on in-breath as well as on the out-breath.

These models apply to all parts of the body at all times. Thus dropping the weight by bending the legs and also closing the front, gives a strong downward component of force.

Equally, maintaining a slightly closed front and opening the upper back adds forward power to a punch.

This model may be seen also from side to side, diagonally across the body, within individual limits, in generating a head butt, etc. etc.

Thus we can rotate waist and hips while closing the front to generate power down, opening the upper back generates power up.

The Pliometric Model

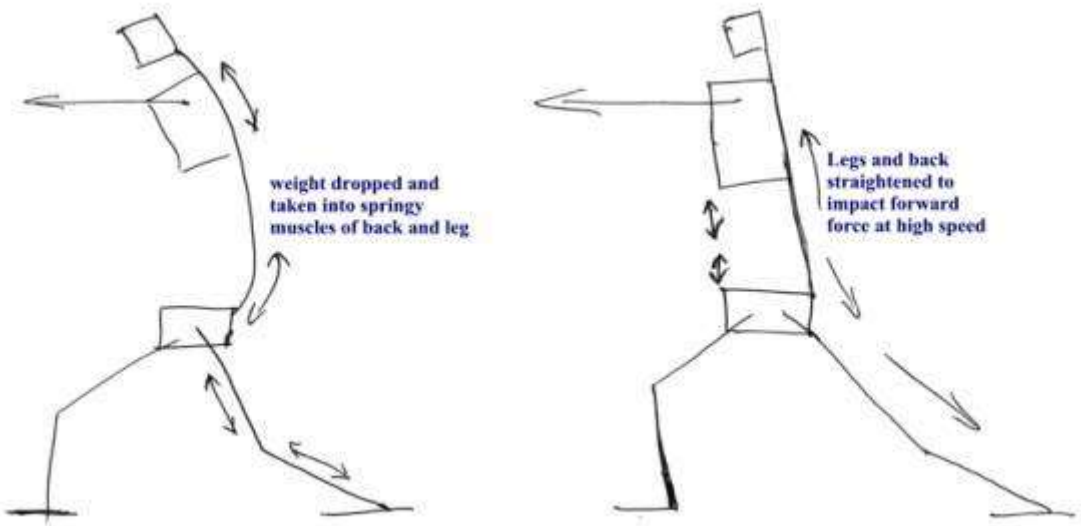
The Pliometric effect - a short term (fractions of a second) muscular rebound - can combine with these models to "load" muscle groups which then discharge in the centre activated whip-like fashion described elsewhere. In-fact the muscles and the tendons should be considered together as it is often considered that it is the elasticity of the tendons more than the muscles, which can generate this power. A view given credence by the power of many lightly muscled Tai Chi experts.

Thus, by allowing our weight to sink we can pre-load our upper back, lower back and leg muscles. Tucking the base of the spine under we stretch the lower back, bending the legs briefly pre-loads leg muscles. When done quickly there is an almost imperceptible dropping motion which serves to stretch all the lower body and back muscles - this is then instantly released and augmented by normal muscular contraction to give a powerful explosive action, rippling waves of muscular contraction outward from the centre and expanding (opening) the body while constrained from opening too far by the abdominal muscles required to connect the upper and lower parts of the body so that power can be transferred.

In operation with an opponent when we are pushed the force of their push is added to our weight drop and returned pliometrically. Thus, we absorb some of their power, neutralise the rest by the movement of our technique and return the absorbed power with our own force added.

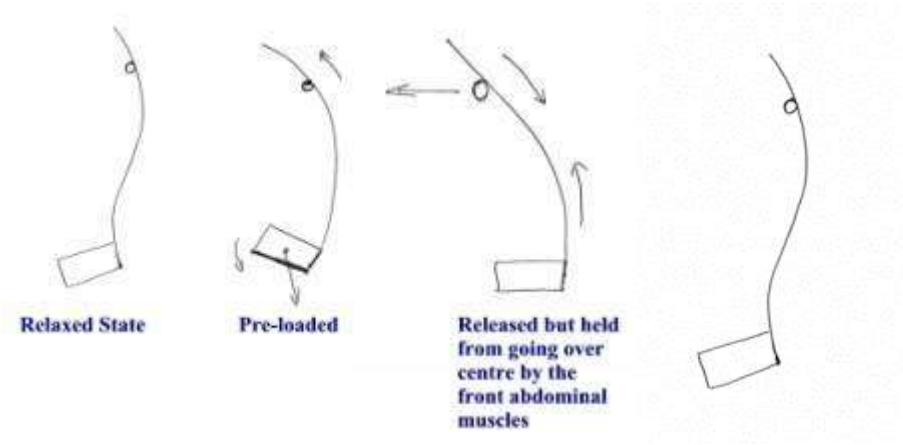
If pushed on the arms for example, then they and the upper body also react pliometrically so that our opponents force is stored in the whole body mass and returned.

Essentially, a short-range effect for one muscle, the range can actually become quite useful from fractions of an inch to many inches when used over the whole body - these small closings and openings, combined with the other models, generate power smoothly over a variety of fighting distances.



The Back as a Bow

- or as two bows - upper and lower



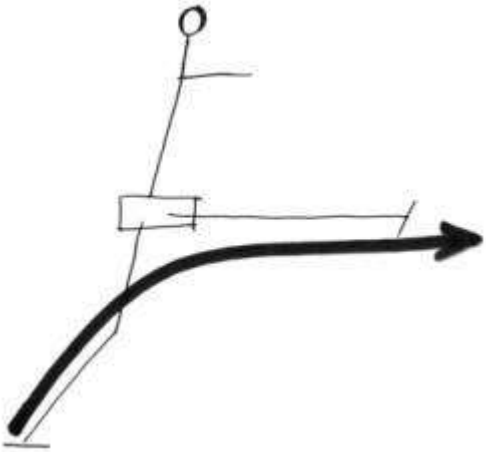
The lower back muscles may be loaded to discharge into the legs, this involves allowing the pelvis to tip up at the front but not too much or the stability of the pelvic platform structure will be destroyed. The upper back muscles may be loaded so that when released they fire the shoulders forward. When programmed to operate from the Hara/Tan Tien the lower part of the bow fires first, then the upper part. This generates a wave like whip, pushing the rear leg back then the shoulders forward.

The Arch

The principle here is that there should be an arch from floor to point of contact with the opponent and no part of the body should be behind the foot transferring power - generally the rear foot but it may be the front foot. This applies whatever part of the body is in contact with the opponent but is most easily seen with the fist or foot – the principle is the same for the shoulder, elbow, knee or head – making up the Chinese nine stars.

Thus in punching

and in kicking



As with a flying buttress which has weight above to stabilise it, the body in kicking should be above or slightly in front of the foot on the floor. An arch with a kink in it cannot transfer force. Effectively this means that the hip should be in-front of the foot and the body leaning slightly forward.

This combines with centre (Hara or Tan Tien) activated hip movement to create an expansion in the centre of the arch. E.g. for kicking and punching hip rotation generated from the waist gives the final explosive power by extending the arch from the immovable floor into our opponent.

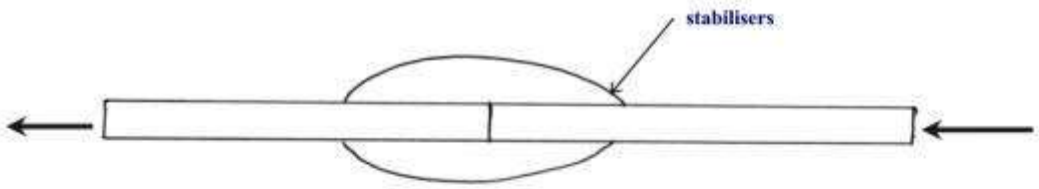
We can place the punch or kick on our opponent very quickly by a closing process. This fast delivery system is then followed by an explosive opening and the effect has the feel of a punch-push or kick-push with much greater speed and penetration than often experienced.

The Stabilisers and the Mobilisers (from Karel Koskuba - Chinese Internal Arts Association)

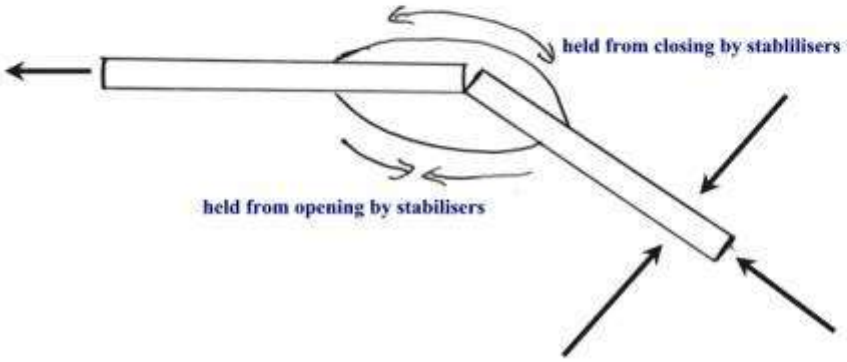
Stabiliser muscles are short action slow twitch fibre muscles near to the joints and bones and are the ones used by “statue” artists and free climbers to maintain static positions, mobilisers are the large fast twitch muscles that power movement. Generally it is optimal if we can isolate these somewhat so that our position is retained by stabilisers, which also resist external action. This gives a relaxed but poised condition ("Sung" in Chinese) such that the mobilisers are relaxed and correctly extended with "slack taken up" so that when the correct ones are fired their action is extremely rapid and powerful.

Use of the Tan Tien/Hara to initiate this firing in an outward propagation results in Fa-jing, which enables us to form a direct connection from the floor to our opponent.

The structural model

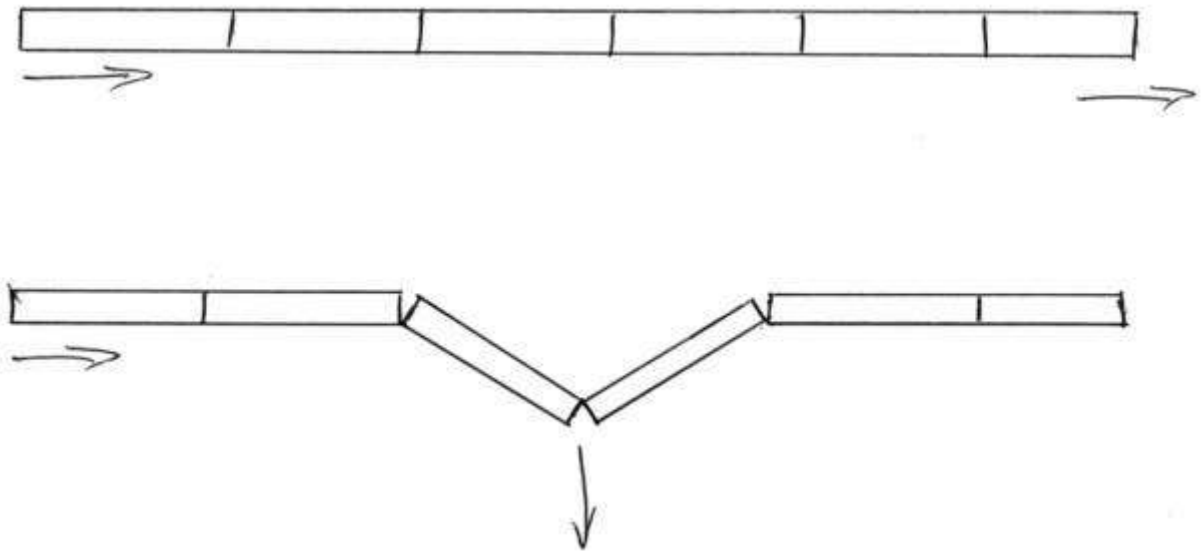


Linear alignment of joint. Stabilisers maintain alignment

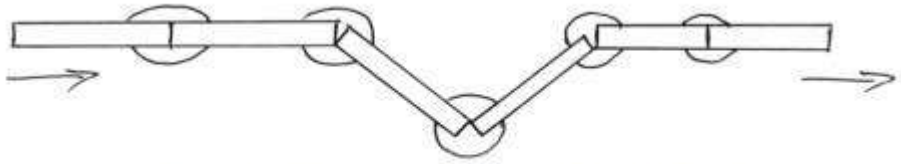


Non-linear alignment - stabilisers hold the structure to allow the force to go round a corner, but may require some other force, e.g. weight, to ensure the force is still transmitted in the direction required.

This model is akin to pushing a bicycle chain. If all the links are exactly aligned then the chain may be pushed, e.g. on a table top. But one misalignment will create a kink, which simply gets bigger the more one pushes.



The stabilisers serve to lock this link in place so that it can still transmit force. But the better aligned we can get all these links, then the more force the structure can bear.



Structure deformation constrained by stabilisers

Thus we have a need for skeletal alignment, which also incorporates a need to be dynamically positioned such that the mobilisers have maximum leverage when required. i.e. the muscular structure then needs to be arranged such that each muscle is in the best position to contract powerfully. Exact linear alignment is therefore not optimal. 45º angles are nearer dynamic optimum for initiation of action. Equally, of course, joints at +90º are in their weakest position. In particular we should of course pay strict attention to joint orientation - such as with the knees which should always act in a strictly one dimensional hinge fashion – careful "in-line" alignment of the hip-knee-foot being important when seeking to transfer power through the knee.

Body usage based on these models is not "natural", but then neither is upright posture which is why we need to learn specialised ways of moving. They do enable us to use our bodies in a lightly loaded (low stress) way and to maximise movement and power. Greater efficiency from a relaxed body then enables the body to last longer and stay mobile and healthy for longer. The principle being that if we find the best way of working then it will require less effort and create less deterioration.

The emotional model

In order to achieve the condition implied by these models, we also need to address the controls exerted on our bodies by our emotional states.

Tense emotional states, fear, anxiety, etc. feed through to our mobiliser muscles in low/high level fight/flight/freeze reaction. In order to maintain a flexible connected condition, it is important to maintain a relaxed emotional state matching the state of readiness we seek to maintain in our muscles.

There are many ways to address this fear reaction - how it is done is perhaps less important than that it should be done at all, since without it progress soon reaches a physical ceiling. Processes such as meditation and psychotherapy can assist with this. Likewise, gaining confidence in our technique will help. Indeed, the simple process of frequently repeating bodily actions has a calming effect.

Each student therefore needs to find a way to approach their basic primal fears not just of confrontation but of simple things such as falling over.

Implications in fighting applications

The body condition implied from these models is thus able to resist outside action with minimal effort (by use of stabilisers and good structure) and to operate in a way that is fast, light, grounded and centred, able to generate power very rapidly over short distances by unifying the whole body to the point of action. The opponent cannot feel this movement easily because it is light and sensitive, he is unprepared consciously and sub-consciously - he literally doesn't know what hit him.

The models can be used to describe output of power at any point of the body. Generally this will be by connection to the ground (via a Peng Path - that line of force/connectivity running through the body from opponent to floor) but it can also be used when not connected to the floor in generating power from the centre against body inertia.

Thus, for example, against a punch one arm may be used to block in a relaxed way - taking the energy through the stabiliser-supported structure. Energy is then fed into the mobilisers of the

blocking arm, pliometrically fed down to the abdominal muscles of the waist and into the legs pliometrically. The energy is then returned by the legs and by the opposite arm in the form of a punch. The block and punch occur almost instantaneously using energy from the opponent's punch absorbed pliometrically, neutralised by the stabilised structure and the waist movement, then returned to the opponent with the "centre fired" whip like action of the mobilisers.

In practice a consequence of these models is that in order to fully use their principles in a conflict situation, we find it becomes important to connect with the opponent in such a way as to be able to absorb some of their energy. This means we need to meet their attack in a resilient way as it comes to us – in fact psychologically we want to meet it, as that gives us the best chance of effective response. This requires that we address and deal with our fears about these situations since that fear of meeting an attack will prevent us taking the best possibility of survival – it is not a good idea to eliminate the fear – which will after all provide the energy for our response – but it is necessary to keep it from taking over so that we can use our training to good effect. The old Tai Chi saying of “he moves – I have moved first” can be applied in that our body needs to be moving internally in preparation for his attack even before he makes it physical, for example by putting the body in a state of connected potentiality. For most of us this is a conscious process but at high levels it may be possible to maintain this state continuously – the prior action taking place in years of training.

Development of a body in line with these models seems to add to practise of any art and to enable us to be strong in postures that at first sight appear weak. We can then operate from whatever position we find ourselves in.

Training to achieve physical body usage in line with these theories

These models are not new - they are derived from study of various martial arts, in particular Chinese internal systems such as Tai Chi. There are many training systems already in place such as Silk Reeling exercises, Qigong, relaxed stretching using the out breath and many others. Ultimately, it seems we must change our bodies if we wish to develop. They should become springy, relaxed, firm and resilient. Fortunately this theoretical model of optimum body usage also seems to be a healthy way to be, so promoting mobility into old age.

The models shown are necessarily simplified into two dimensions, their combination into three dimensions with partner interaction and dynamic movement is a sophisticated process codified in the "internal" martial arts - such as Tai Chi, but equally applicable to the external arts such as Karate where this process can help to maintain ability into old age.

Wider Applications

The models described are equally applicable in the area of sports/leisure activities as various as dance, archery, skating, skiing, canoeing etc. where we can see the athletes demonstrating many of the elements described to control their acrobatics, or the equipment they use. Crucial to our martial arts interpretation however is the development of control over an opponent and transmission of power, primarily from the ground – a factor which adds significantly to the demands placed on any development model we may use since these models must allow for the relationship with another person trying to attack and control us.

Whatever the theory we are still concerned with two animals fighting – we forget that at our peril.

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