ESSENTIAL Anatomy

For the Martial Artist

WHAT YOU REALLY NEED TO KNOW TO ENHANCE YOUR MARTIAL ARTS SKILLS

A serious study of USEFUL Anatomy and Physiology of the human body with Explanations of WHY these areas are important for the Martial Artist



Based on the Quan Li K'an System of Martial Arts By Bruce Everett Miller

An ANATOMY book SPECIFICALLY for THE MARTIAL ARTIST

Every martial artist knows that knowledge of anatomy is essential for understandings of techniques but who can figure out all the information in the standard anatomy books.

While other anatomy books contain tons of detailed annotated information and pictures none of the information is explained in terms that are relevant for the martial artist.

Why because they are designed for medicine and not for the martial artist!

FINALLY there is a reference of Anatomy and physiology that is referenced for them. Instead of detailed pictures and no reference ... this book cones down the information to the body points that are of specific interest to the martial artist. And even more important, unlike any other anatomy book out there.

This book tells you WHY these areas are important! Try to get that from a standard anatomy text!

So if you really want to know ANATOMY that is important for MARTIAL ARTS... then this book is THE book you have been waiting for

WARNING

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This book is contains information and techniques which are potentially disabling and/ or lethal.

This book is definitely not for children or the emotionally immature!

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Don't EVEN READ IT!

Essential Anatomy For the Martial Artist

A serious study of USEFUL Anatomy and Physiology of the human body with Explanations of WHY these areas are important for the Martial Artist

By

Bruce Everett Miller

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Everything is vague to a degree which you do not realize till you have tried to make it precise. Bertrand Russell (1872 - 1970)

Introduction

The purpose of this book is to teach MEANINGFUL anatomy for the martial artist not general anatomy. PLEASE note the difference! Many martial artists buy and study general anatomy books. Why? The answer is obvious, the more you know about the body, the better you can make it respond when you are doing techniques/strikes/etc. It doesn't matter which style you study; knowledge is power!

However, GENERAL anatomy books are not designed for the martial artist and much of the relevant information that the martial artist really wants to know is hard to discern from the huge amount of material available. Therefore, most of the relevant information is missed in the wash of total information presented. Even worse, considerable time is spent learning about structures that have very little or no significance to actual combat applications. In the end, the average martial artist usually gives up and puts these esoteric anatomy references on the shelf; having gained little from the time they spent.

This Book/e-book is different for a number of reasons;

1) The format ... the PDF format allows me the luxury to put in pictures and comments that would be size-limited by a conventional book ... Pictures that show information that is relevant. Please note that I did not put in a lot of fancy cut away pictures, which would have only driven up the cost. Instead I put in diagrams that showed position of important structures. I think they will show you want you need to know!

2) The cost as you may have noted this book is now FREE. With regular printing, this book would otherwise be very expensive to produce and buy ... Most anatomy books are ... and it becomes very expensive to get the reference manuals that show what you want to know

3) This book is limited in its scope. While that might not seem like a good thing to be "limited," it really is, as I have tried to limit the book to the 100 most useful locations and terms in the body ...(While I didn't quite make it, I did come close). These are the locations and terms you need to understand to have a good grasp of the anatomy behind martial arts. This manual won't spend times on thing you won't need in combat... so in this case (IMHO) Limited is good!

4) Unlike other anatomy books, I explain WHY chosen areas are relevant **to the MARTIAL ARTIST**. Try to find that in another anatomy book.

Be aware though that there will be significant work to do as I have to teach you the relevant medical terms so that you can get a good explanation of what I am saying (and also to check up on me and to use other references)

So if you want to study Anatomy to go into medicine or healing, then this is definitely NOT your best choice. However, if you want to study anatomy to understand and enhance your martial arts, then I think you will find this material extremely useful.

I encourage you to supplement this book. If you find an area of particular interest, then please research it further. Use what I have here as a starting point, not the final answer. Remember I have deliberately kept what I felt were unneeded details to a minimum (but you may not agree with these limitations).

SO, for more information, you can always do the classical anatomy textbook found in most libraries (especially medical libraries). However, now days you can also look on the Internet. With all the body building and anatomy sites out there, you can easily get pictures to accompany this book which will help you visualize the location of the structures we are talking about.

Okay, so that we have some sort of order to what we are doing ... and hopefully to make it more logical ... we are going to break the body into areas and try to define the different important structures in each area.

An important note: I do not plan to name every muscle that can be attacked nor every ligament, etc. that would be a waste of time for both of us, And there are far better illustrations than I can do here!.

Instead what I will do is name some, of the more important structures and give you the reasons why they work. With this knowledge you should be able to understand the principles and be able to extrapolate to other similar areas of the body. Thus I will not be wasting your time on some of the most obvious spots/ comments.

So, unless I have something to add that is not generally known, I will skip over the most obvious structures.

Again, this book is not meant to be a full-featured in-depth anatomy book. Instead it is an anatomy text specifically designed for the martial artist who needs to restrict their study to what is useful on the street.

By the way, we will not be using Traditional Chinese Medicine (**TCM**) points or markers. Everything in this book is from the Standard Modern Western Medicine (**MWM**) concepts.

That gives you two advantages:

1) It provides a standard so that you can check up on things I say... clarify/etc...and the terms that you learn here will apply everywhere else that MWM is used.

2) You can research any area of subject we bring up in much greater depth.

I will freely admit that one of the problems I had with this book is keeping it simple. I could (and found myself on multiple occasions), trying to expound on areas way past the point where it is meaningful for the marital artist. However, if you find that you want more information, you can sure find it. Because I have used standard MWM terms and concepts, you will find there is a LOT of information out there.

Which is what I said when I started. It is not that the information is not there, it is that there is too much out there, for the average (non-medically trained person) to filter out what is meaningful to the martial artist and what is not useful.

Hopefully this book will be a starting point for you to do just that!

Also ... So that you will know at least one place to get more information I have provided references at

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certain points to which of my books cover the details in far greater depth.

Okay, time to get to work!

The first thing we are going to do it to review some important terms so that you will understand how each part of the body is orientated better then we are going to work on defining the areas of interest in the upper extremity.

NOTE: I have tried to reference the other books I have written when the subject is relevant. My intent is NOT to sell you another book but rather to give you something that can provide more information than is provided here.

Note: all the eBooks are now free, on the Quan Li K'an website.

http://quanlikan.com

See the reference library [top left of the page] for a link that will take you to where you can read or download them.

It is actually all free... No tracking no subscriptions, no hidden costs!

Yes I am actually giving these away totally free.

Why?

Because I think people should know!

Chapter INDEX

in order the chapters will be

Chapter 1: The Upper Extremity

Chapter 2: The Lower Extremity

Chapter 3: Head, Face & Neck

Chapter 4: Chest

Chapter 5: Abdomen

Lecture : An art of transferring information, from the notes of the lecturer, to the notes of the students without passing through the minds of either.

TERMS

You may want to buy a medical dictionary for definitions of words not defined here. Most of the material we will cover in this course depends on knowing the proper terms in order to get the most out of this book. Yes it is BORING. But it is also necessary to be able to understand and use anatomical structures in Martial Arts. [This is the reason you are learning this right?]

It is therefore important to know that the terms and references for which anatomic terms are based on.

So references are based on a person standing facing towards you with their hands open and palms forward. Right and left refer to THEIR (not your) right and left.

(PLEASE don't think this section is just dry terms, as I have included a lot of relevant information on how to use these structures to make it worth the work of learning ...

I have always believed it is easier to learn if you know WHY something is important.)

Some of the terms you must know are as follows:

<u>ANTERIOR</u> - Pertaining to the part of the body facing you, when it is in the neutral position. The front part of the body. The part you are usually trying to hit (because it USUALLY has the most important target points).

<u>ARM</u> - Upper extremity from the shoulder to the elbow. (Versus the FOREARM, which is below the elbow and the hand, which is distal to both of these structures.)

<u>AXILLARY</u> - Commonly called the armpit. The AXILLARY area is a general reference to the whole area and all the structures contained in this area. (It contains the AXILLARY nerve, which controls

much of the upper extremity. Thus striking it is very painful and may in fact paralyze the upper extremity – PERMANENTLY. Many upper Dan advanced strikes target this nerve in way that will stretch it and destroy the nerve, thus the opponent's use of that upper extremity.)

<u>**CARPALS</u>** - Pertaining to the bones of wrist. These hurt significantly especially if you twist them (especially medially) as in a wristlock. One of the more well known wrist lock is kote gashi ... Please do not think that simply applying a wrist lock is, by itself, the best you can do however for you need to remember that you can add the pain of the torque on the wrist with the pain of stimulating the fingers and the back of the carpel bones. ... Done correctly it is easy to get to the pain overload point and cause your opponent to pass out ... (Ahh, gee officer, all I did was hold his hand <Grin>)</u>

<u>CENTRAL</u> - Along the midline.

<u>CERVICAL</u> - Pertaining to the neck. The part of the body targeted for fracture by many (especially Okinawan katas).

<u>CONDYLE</u> - The rounded part of a bone that comes in contact with another bone. (See Epicondyle for a more useful structure).

DEEP - Found below the surface, usually below the top layers, as opposed to superficial. Important because deep structures are not only harder to get to, but they usually have less nerves going to them meaning they hurt (relatively) less when struck (not true for some organs ... like the kidney).

<u>DISTAL</u> - Farthest from any given reference point, as opposed to proximal.

DORSAL - The back part of the body, or the top part of the foot or back of the hand.

EPICONDYLE - A general term referring to the part of the bone above or on top of the condyle. Epicondyles are probably one of the MOST IMPORTANT structures, in terms of bones, that you need to know from a martial art point of view.

This is because this is one of the easy areas to grab on to and stimulate a level 1 pressure point. The targets are the tendons and ligaments (and yes, the bone somewhat) that attach to the epicondyle.

(See the free eBook Pressure Points the Deadly Touch for more details)

What you do is to compress the tendons and ligaments into the epicondyle. This can be done with a drag down (or push into) type of technique or simply by twisting the joint so that these structures are compressed. The drag down technique is by far the best.

FEMUR - Also known as the thighbone. The femur is the bone under MANY fine pressure points that can make it real hard for your opponent to stand, let alone walk ... See the Vastus Lateralis (femoralis Lateralis) and the Sartorius muscles.

FIBULA - The small bone of the leg. Found along the lateral (outer) aspect of the tibia. (Not a very good target. Focus on the tibia ... especially the leading edge of the bone. This is the main target to strike. Yes scraping the forward edge of this bone produces notable pain)

FOREARM - Pertaining to the part of the upper extremity distal to the arm and located between the elbow and the wrist.

<u>GOLGI TENDON APPARATUS</u> – A special collection of nerves that has the purpose of sensing the rate of contraction of the muscle fiber bundle it is attached to. The purpose being to prevent muscles from contracting so fast that the muscle fibers are torn.

(See the free eBook <u>Poison Hands Truth Techniques and Reasons</u> for more details of the Golgi Tendon apparatus and how it is used in Martial Arts.)

HAND - Most distal part of the upper extremity. It consists of the following digits. (see picture below)



DORSAL VIEW OF HAND

<u>THUMB</u> - Digit on the Radial side of the wrist.

INDEX FINGER - Also known as the first finger. Located between the thumb and the long finger.

LONG FINGER - The second finger. Located between the index and ring fingers.

<u>RING FINGER</u> - The third finger. Located between the long and small fingers.

<u>SMALL FINGER</u> - The last finger. Located on the ulnar side of the wrist.

<u>HEAD</u> - Also called Surgical Head. An enlarged area of a bone, by which it articulates or moves with another bone. This term does not just refer to a person's head.

HUMERUS - The bone of the arm.

INFERIOR - Lower part or below a part. (Usage: Inferior Vena Cava, Inferior to the Head of the Humerus (below the humerus)).

INSERTION POINT - The point at which a muscle or tendon or ligament is attached to the bone.

LATERAL - Away from the midline and horizontal to the plane of the floor.

LEG - The part of the lower extremity from the knee to the ankle.

LIGAMENT - A band of fibrous tissue that connects bones or cartilages and helps to support and strengthen joints. Ligaments hurt as long as there is significant pressure on them ... small ones hurt much more than larger ones! Note that last sentence!!

<u>MALLEOLUS</u> - The rounded protuberance on either side of the ankle. (Actually a fancy name for the Epicondyles of the ankle region.) This is one of the true targets for the knife-edge kick. Roll the

tendon on the lateral malleolus of the ankle and the opponent will drop like a rock. (The medial works better ... it is just harder to get to most of the time... You can use a cross step to get to the medial ankle epicondyle).

MEDIAL - Toward the midline as opposed to away from the midline.

MEDIAN - Located on the midline of the body.

METACARPALS - The bones of the hand between the wrist and the fingers.

PAIN - See the end of chapter. The type of pain is just (or more) important than the amount.

<u>PALMER</u> - Pertaining the palm side of the hand or the inner aspect of the forearm or arm.

<u>PERIPHERAL</u> - Away from the midline, as opposed to towards the midline.

PLANTER - Pertaining to the sole of the foot.

<u>POISON HANDS</u> – A Chinese system of martial arts with five subsystems; 1) Soft blocks, 2) Poison Points, 4) Nerve strikes/kills, 4) Vertebra locks, 5) Organ shut down. The system was "supposedly" designed to cause damage without killing, but such is easily possible to kill, if techniques are used at full force.

<u>POISON POINT</u> – Part of the Poison Hands System, also referring to the point where the Golgi Tendon apparatus can be stimulated causing weakness of the muscle.

[See the book Poison hands: Truth Techniques and Reasons for more on this subject]

<u>POSTERIOR</u> - Pertaining to the part of the body away from you when it is in the neutral position. The back part of the body.

PROXIMAL - Nearest or closest to any given reference point, as opposed to distal.

<u>RADIAL</u> - Pertaining to the radius.

<u>RADIUS</u> - One of two bones of the forearm. Located on the thumb side of the forearm.

<u>SHIN</u> – The anterior part of the tibia ... usually referring to the leading edge of the tibia bone. A very tender target because of the exposed bone edge.

SOLAR PLEXUS – also known as the Gastric plexus, it is the nerves around the junction of the stomach and the esophagus. When struck it tends to temporarily paralyze the lower diaphragm and the esophagus.

SUPERFICIAL - Pertaining to or located near the surface (the opposite of deep).

<u>SUPERIOR</u> - Upper part or above a part. (Usage: Superior Vena Cave, or superior to the malleolus (above the ankle).)

TENDON - A fibrous cord, which attaches muscle to bone.

<u>THIGH</u> - Part of the lower extremity from the hip to the knee.

<u>TIBIA</u> - One of two bones of the leg. Located medial to the fibula.

<u>RETICULAR ACTIVATING SYSTEM (RAS)</u> – The Nerve area located in the upper spinal cord, which is responsible for regulating the level of consciousness. The RAS keeps the brain activity level from being too high or low and if stimulated causes a loss of consciousness as a reflex.

See the <u>Complete Book of Light Force Knockout</u> for details of this subject.

<u>ULNA</u> - One of two bones of the forearm. Located on the small finger side of the wrist.



Standard Anatomical Position

Classic book: A book that people praise, but do not read.

<u>PAIN</u>

You also need to know about pain. NO, not experience it, although any martial artist does during their training. What I mean here is the type of pain because it is very important to being able to control or produce it as a way of communication.

First off, there are two general types of pain.

<u>Sharp</u>: Like someone sticking you with a knife. This is called A fiber pain and it is transmitted VERY fast and is very hard to block.

And

Dull: Like a toothache. This is called C fiber pain and it is transmitted much slower than A fiber pain. Even if intense, this type of pain can be blocked much easier. C fiber pain is also not as well located, meaning that it is harder for your brain to pin-point the exact location where it is coming from ... yes, you will know the general area (like the groin, in general) but not the exact spot in the groin. Whereas with A fiber pain, you will know the exact spot.

Please note that I did not say anything here about intensity. There is intense dull pain and there is mild sharp pain and vise versa. We were ONLY talking about the type of pain.

You can also subdivide the pain by quality: burning, cramping, pressure, etc. but that is not so relevant for martial arts reasons.

I will tell you that if you are trying to create a pressure point reaction, then you are FAR more likely to succeed if you produce SHARP A fiber pain than if you try to create dull C fiber type pain. It may seem obvious, but sticking your fingers in his eyes will cause a greater disability than a kick to the groin... well, the same goes for ligaments that cause A fiber pain, compared to tendons which usually cause C fiber pain.

NOTE: Both INITIALLY CAUSE A fiber pain, but with tendons the A fiber pain goes away quickly where as with ligaments it does not.

(See the book <u>Pressure Points the Deadly Touch for more details.</u>)

Better you tackle the dragon in its lair, than anger the wizard in his library.

Chapter 1: The Upper Extremity

Here we start listing some of the structures of interest. ... AND more importantly why they are of interest.

The ARM

The DELTOID muscle

Actually, despite its name, the Deltoid has three separate branches based on where the muscle originates or starts from. These three origin branches are:

- Inferior surface of the lateral third of the clavicle
- Acromion
- Spine of the scapula



The reason the Deltoid is important is that when you strike it correctly (usually targeting the Golgi tendon apparatus) it makes it VERY hard to abduct the arm or raise the arm. This is a very useful trick in dealing with the boxer as they

1) Usually don't guard their deltoid muscle, foolishly not realizing that this muscle is your true target

and

2) When they can't lift their arm it is REALLY hard to throw a punch ...

[See the book Poison Hands Truth Techniques and Principles for more on Poison points].

The fact that there are three separate branches is only relevant to the fact that you actually have three times as many Poison Points as you would have if there was only one branch. This allows for a larger Poison Point strike area.

AXILLARY Nerve

The AXILLARY nerve progresses from the Axilla, or the armpit), down the inside or medial aspect of the arm. It is most accessible in the proximal or top part of the arm.



The AXILLARY nerve carries sensory and muscle input for a lot of the upper extremity; thus if it is damaged, paralysis is a high possibility. Many high level strikes to this area are, in fact, designed to damage this nerve.

TRICEPS muscle

Actually the term Triceps applies to any muscle with three heads, or points of origin. However in our case we are particularly talking about the large extensor muscle along the back of the upper arm in humans. The Triceps originates just below the socket of the scapula or shoulder blade and at two different distinct areas of the humerus, which is the bone of the upper arm, and extends downward and attaches to the upper part of the ulna in the forearm. Its major action is extension or causing the forearm to straighten out. Please Note this view is from the BACK of the arm



The reason the Triceps is important is that when it is stretched **suddenly**, it causes a pressure point action where the body will move in the direction of the stretch so as to protect the muscle. The Triceps is far more sensitive to stretch then the Biceps muscle is.

Because of that reason, we don't focus on the **biceps** in this manual.

The FOREARM

The forearm is comprised of a lot of structures. However the two structures we are going to concern ourselves with are the radius and the ulna.

The Radius is located on the thumb side of the forearm, which is the part below the elbow. Contrary to popular belief, the radius is NOT used primarily for blocking (you should block so that BOTH bones take the force, not just one, it dramatically decreases the chance of a fracture). Instead, the Radius is primarily used for carving or rolling muscles and causing a Level 2 Pressure Point Attack.

The ulna is located on the small finger side of the forearm. It also primarily used for carving.

BRACHIORADIALIS Muscle

Probably one of the most important structures of the arm (from the martial arts point of view) is the muscle called the brachioradialis.

NOTE: For affecting/controlling your opponent, the brachioradialis and the Sternocleidomastoid (on the side of the neck) are the two most important muscles in the body.



What makes this muscle so important is that it is NOT primarily a strength muscle, but instead is a position sense muscle and thus has special splayed nerves that make it very sensitive to being twisted or struck. When you stimulate the brachioradialis muscle correctly, you will cause a level 2 Pressure Point response. [See the book <u>Advanced usage of Pressure Points</u> – the chapters on Muscle Pressure

Location: The brachioradialis muscle is located on the superior lateral aspect of the distal humerus and runs to the lateral side of base of styloid process of the Radius (or in plain English - it is located on the top of the forearm, the same side the thumb is on. You can always find it by paying attention to where the thumb is.)

Nerve: Radial Nerve (a special **splayed** portion of the Radial nerve)

Function: The function of the brachioradialis muscle is both twisting the forearm (a minor function) and also of position sense... telling the brain to what position the forearm is rotated. The brachioradialis muscle also flexes the elbow, along with other muscles, however its muscle action is actually strongest after flexion has been initiated.

Information: What is unique about the brachioradialis muscle is that it is enervated with a splayed nerve rather than regular nerves. This dramatically increases its sensitivity to being struck or to pressure.

Importance from a Martial Arts point of view: Striking the brachioradalis muscle causes the forearm to weaken. Also, because of the pain involved with striking it in a fast downward motion, a pain withdrawal reflex motion is initiated where the body will move downwards and the arm will move forward - away from the body, twisting the shoulder on that side forward and the other one backwards. This also exposes the side of the neck on the side of the body where you struck. Thus opens targets for Light Force Knockouts

[See the book: <u>The Complete Book of Light Force Knockouts</u>].

Ligaments of the Fingers

The ligaments of the fingers (like any ligament) connect the bones together. Note that the ligaments hurt when stretched in any direction. (The smaller the ligament, the more it hurts when stretched. Meaning that attacking the small finger will hurt more than attacking the index finger or the thumb.) However, stretching ligaments dorsally (towards the back of the hand) hurts more than in any other direction. (See the book <u>Pressure Points: The Deadly Touch</u> for MUCH more information on the maximal use of pressure points.)

Tendons

Tendons connect muscle to bone... every muscle has a tendon attachment. The difference between the pain of a tendon stretch and ligament stretch is that ligaments hurt as long as there is pressure applied where as tendons ONLY hurt as long as there is changing pressure. Thus constant pressure on a tendon will quickly stop hurting.

Anything worth fighting for is worth fighting dirty for.

Miller's Corollary: Any technique I use is NOT dirty; it is an appropriate educational tool.

Chapter 2: The Lower Extremity

Vastus Lateralis

A long muscle located at the outside of the thigh. A frequent attack site (using Poison Points/Golgi tendon apparatus locations) used to disable an opponent's ability to put weight on the leg. (See the book <u>Poison Hands Truth Technique and Reasons</u> for more information on this subject.)

See the picture below.

Sartorius

See the picture below.

A long muscle, which runs from the anterior iliac spine ,on the upper outer end to the medial aspect of the knee on the lower end. The Sartorius is also a splayed nerve muscle like the brachioradialis and the Sternocleidomastoid, but is somewhat less tender, due to is size and the fact it has far more muscle underlying it, to soften the effects of strikes to the muscle.

However, it is still effective in causing great difficulty in turning the foot when struck ... thus difficulty in walking

See the picture below. Note that the Sartorius muscle dives below muscle structures in the lower third of the medial thigh. So if you are going to strike this muscle, the strike has to be located in the top two-thirds of the thigh.

Femoral Nerve

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See the picture below.

The femoral nerve is one of the most important NERVE structures in the lower extremity simply because of the fact that damaging it can cause paralysis of the entire lower extremity

Femoral Nerve: The femoral nerve is much like the AXILLARY nerve in that it is located in the medial aspect of the extremity (thigh), is one of the main nerves that supply muscle and sensory control to that part of the lower extremity and also shares the fact that many high level techniques actually target this nerve. The reason why they target this nerve is that if struck and damaged, temporary or permanent paralysis of the lower extremity will occur.



Pyriformis Muscle (also the Obturator Internus and the inferior Gamellus muscles)

See the picture below.

Okay, these three muscles have names that are a mouth full and frankly the names are not important to know. However you should know where they are located and what they will do to your opponent, because this WILL give you a definite advantage.

Located on the **posterior** lateral aspect of the hip these three muscles run over and under the Sciatic

nerve. When you strike this area, (usually with a knee strike) you can cause very significant pain in the sciatic nerve. (You also trap muscle against underlying bone AND since the muscles are short in length, if this area is struck with a knee, you will also probably strike the Golgi Tendon apparatus.)

It is very probable that the person will have severe problems bearing weight on that extremity Maybe even problems standing. Regardless if they can stand or not, a strike to this region (even a moderately light one if aimed correctly) will cause the person to rotate their body and shift their weight ... (a typical set up move in Tai Chi ... at least in Chen form) which then opens up all sorts of targets.

Note that all three muscles are on the posterior aspect of the thigh and attached to the greater Trochanter of the thigh so an **upward and lateral** approach (knee strike) is best approach. I recommend that you strike just BELOW the buttocks (in the crease that is formed between the buttocks and the posterior thigh).

PLEASE note this picture (below) is showing the structures of the BACK of the thigh and buttocks (for orientation: the right side is shown).



KNEE

The knee is the largest weight-bearing joint in the body. The knee is also one of the most complex joints in the body, as special a combination of ALIGNED muscles, ligaments, and other important soft tissues are required to hold it together.

The knee is really nothing more than a modified hinge joint held together by soft tissue, tendons and ligaments.

The knee is one of those structures that I could write a whole book on and, in fact, many physicians have. However, from a martial arts point of view, it is not really that complicated and the detailed discussion about the functioning of every little part is not that important. There are essentially four structures you have to consider:

- 1) The ligaments on the side of the Knee called the Collateral ligaments
- 2) The Patella (kneecap)
- 3) The internal ligaments and structure of the knee
- 4) The muscles just behind the knee (Gastrocnemius muscles)

Again, **Please** note there are far more (sub) structures here, but we are restricting our study to what is useful from the Martial arts point of view.

Note: I consider being fixed by an orthopedic surgeon a Temporary Condition, as they will be able to walk again ... eventually! (Editor's note: Sick humor!)

1) In order to target the lateral (outside) or the medial (inside) collateral ligaments (which are located on the sides of the knee) it is actually best to attack from a 45-degree angle forward and drive your force straight through the opponent's knee. Otherwise these collateral ligaments will twist and cause the knee to bend, removing a lot of force that you are trying to deliver. Again if you do force the knee to bend along this unnatural line far enough, the ligament will rupture/tear and the fight WILL be over.



2) As far as the patella it is especially useful as a target not only as above but a good snap kick to patella will lock up the knee (possibly damaging the internal structures if done hard enough) and will cause that leg to straighten, the balance to temporarily to be lost and the face to come forward.

3) In accordance with the Martial artist combat application view point, the internal structures of the knee are not going to be considered separately. Instead, we will simple state that if you get a person to fall forward on their knee ... especially if they fall on a hard surface, landing on the knee, (or more probably if you place your foot behind the knee, push and drive the knee into the ground/hard surface) they are going to damage the patella AND the internal structures; causing swelling and the inability to use the knee (temporarily or permanently) ... thus the fight ends.

4) Now the Gastrocnemius muscle (located behind and directly below the knee) is not really a part of the knee, but should be thought of as part of the same structure FROM A MARTIAL ARTS point of view. This is because when you use the edge of your foot and drive this muscle downward (not through, but stretched lengthways along the direction of the muscle) the knee will collapse forward. In fact, this is one of the easiest ways to get an opponent to fall forward and drive their knee into the ground. This technique will damage the patella and the internal structures - see above.





Posterior Knee (Right Leg)

Gastrocnemius Muscle (posterior Leg)



Shin/Tibia

(See pictures - The two above)

The main (larger) of the two bones in the leg and the one that is located to the medial (inside) is called the TIBIA. The anterior shin (TIBIA) is very tender to being struck along it leading edge or flat surface.

Also and this is VERY important: The that reason that many Kata techniques are designed to trap the foot and cause the opponent to fall in a twisting motion is that it will cause the Tibia to fracture, especially in spiral fracture pattern.

This is especially true of techniques found in Tai Chi – Yang Style. Now if you have ever seen a person with a spiral tibia fracture, then you already know (and I can assure you this is true if you have not) that the fight is OVER!

Whether from pain or simply from the fact that the person will not be standing on the lower extremity (or both) they are simply no longer going to pursue the attack!

In the old days this also caused a high chance of a (delayed) kill due to secondary infection. In fact, infection was such a common occurrence after an open wound that in the (US) civil war it had become standard medical practice to amputate the extremity, not from the damage which had been done, but because the bullet carried dirt and bacteria and clothing into the wound; essentially guaranteeing infection which would spread though the rest of the body. While martial arts wounds did not inject material (and thus bacteria) directly into the wound of a compound fracture, death was still just as likely, prior to the understanding of bacteria as the cause of infection.

Ankle

(See picture below)

The ankle is a complicated joint with many tendons and ligaments. However, for the martial artist the situation is relatively easy as the main point to attack is just above the collateral ligament of the ankle.

IMPORTANT NOTE: A special location is the distal aspect of the medial leg. The reason why this area is so important is that the muscles of the leg do not extend fully to the ankle on the medial side as they do on the lateral side. The importance of this is that if you strike this area

1) It hurts more because there is a bone edge which is not protected by muscle

And

2) Even more importantly, if you stretch the tendons in this area downward, they will stimulate the Golgi tendon apparatus and through reflex arc will cause the ankle to buckle, rolling the foot outward and causing the opponent to fall.

Please note that while you can roll the collateral ligaments on the outside of the ankle, the muscle is not as thin and there are more layers, thus you will NOT get as nice of a reaction; but you can definitely get a reaction especially if you increase the force somewhat.

Foot:

See the picture below.

The reasons for attacking the foot are as numerous as the hand but obviously there is very little chance that you are going to grab a toe and twist, so there is little reason to worry about most of the actual foot. However, attacking the foot is much easier than attacking your opponent's hands simply because all you really have to do is to stand on the correct part of the foot to cause significant effects. In order to attack the correct points, though, what you should know is that there are tendons and ligaments located on the top (dorsal) part of the foot that when stretched cause significant pain and, more importantly, cause the balance to shift dramatically. Now the best place to attack these tendons and ligaments is where the toes meet the metatarsals. (The proximal end of the toes)



These areas should be attacked with a sliding and rolling pressure

Truth is not what you want it to be, it is what it is and you must bend to its power or live a lie. -Musashi

Chapter 3: Head, Face & Neck

Eyes: The eyes are obvious targets. They hurt if struck, it is reflex to try to avoid being struck in the eye, if you strike hard enough the eye will be damaged and the opponent cannot see... forever. There is no real point in discussing them further here.

Nose: While the nose would seem to be an obvious target, it is better NOT to strike the nose. While it may easily cause a bloody nose or a fracture of the nose, striking it also causes the nerves (of the nose) to temporarily lose sensation and usually causes the eyes to water. The inside of the nose is far more sensitive than the outside. So, for maximal Pressure Point effects, stick your finger UP, INSIDE their nose ...

NOTE: The eyes may water but it is usually **not** enough to block vision with a nose strike - at lease of a serious attacker.

<u>Mouth</u>: The mouth is an obvious target. Striking the lips may cause lacerations as they are compressed against the teeth. The lower jaw, called the mandible, however, is designed to redirect force when struck so as not to direct such force to the Reticular Activating system.

Ears: While not acutely tender to being struck, a finger stuck in the ear will cause a Pressure point withdrawal reaction.



<u>Maxillary sinuses</u>: Located just lateral to the nose these areas are tender to be struck and if fractured may cause a very dangerous (meningitis type) infection.

Zygomatic Arch: The Zygomatic arch is also called the cheekbone. What is important about it is that it can be fractured with a moderate blow.

<u>**Temporal Nerve</u>**: Located directly above the Ear the Temporal nerve is very tender to be rub or struck, partly because it has hard bone underneath it.</u>

Temple: The temple is an area of indented skull located just lateral to the eye. Unlike what many people believe, it is NOT an area of weakened skull bone, but instead is the insertion points of many muscles. Thus it is very tender when struck.

<u>The Reticular Activating System</u>: An area located in the top part or the Spinal chord. The RAS is a major factor in controlling consciousness. This is the area responsible for causing loss of consciousness in most light force knockouts.

[See the book <u>Complete Book Of Light Force Knockouts</u> for more information.] ... See also the definition in the TERMS section



Cervical spine

The Cervical spine is also known as C-spine.

Location: Between the Skull and the Thoracic spine

Cervical Vertebrae (especially C1 and C2, C3 and C4): The vertebrae, which are fractured in most fatal neck fractures. This is the target area of Quan Li K'an and Okinawan Katas. Especially Nihanchi and many more similar katas which are designed to cause a neck fracture.

Information: Fractures of the C-spine can cut the spinal cord contained within it. This will paralyze the person from that point downward. Cutting the cord above the C4 level causes loss of control of the diaphragm and therefore loss of control of the ability to breathe.

Neck

C-spine fractures have been a mainstay in many techniques (found in kata) intended to kill the Essential Anatomy For the Martial Artist Copyright © 2006 By Bruce Everett Miller Page 35 of 52 opponent.

Importance from a Martial Arts point of view:

The C-spine is relatively well protected from most minor traumas both by the muscles and tissues that cover it and also by its own bony structure. The spines which stick out from the two sides (see picture below) and back of the Cervical vertebrae not only allow attachment point for muscles and ligaments but also help stabilize if from movement in those directions. Additionally the spine has a lot of flexibility in the forward direction before damage occurs and additionally has a lot of structure located directly in from of the spine which resist forward bending or motion also thereby providing protection.



However the C-Spine does have some significant anatomical weaknesses that can exploited with only moderate physical force. However, the angles to exploit these weaknesses are very critical.

Luckily these angles are not at all what is seen on the TV or in a movie depiction of a neck break. (Those depictions do not work!) Instead the force to cause a neck fracture (without requiring super human strength) is almost always delivered at a 45 degree angle though the neck at the C1 – C6 area. While the C-Spine vertebrae (with the exception of C2 as above) are relatively protected in the lateral, forward and posterior directions they are relatively poorly protected in then posterior 45-degree angle (to either side).

In fact, snapping the neck in this direction is what happens when a person was hanged in the past. It was found that if the knot was placed behind the ear, the neck snapped and a quick death occurred where as if the knot was placed in any other position, then the neck did not snap and a slow strangulation occurred.

This fall with the knot placed correctly cause a forward snap at 45 degrees through the C1-C6 region ... where as most katas force the neck POSTERIORLY though the same 45-degree angle frequently with a hand or forearm placed at the location the fracture is to occur. **PLEASE DO NOT PLAY WITH THIS, AS IT WILL KILL!**

Part of the reason this happens is that C-2 has a pinnacle which projects up and allows the skull to pivot. It does not take much force if delivered in the appropriate direction to cause dislocation and fracture of this pinnacle.

Sternocleidomastoid Muscle [SCM]

One of the main structures of the neck is the Sternocleidomastoid muscle. This is one of the most useful Pressure Point muscles in the body.

Like the Brachioradialis muscle it is also a position sense muscle, which is also used for turning. Pushing the Sternocleidomastoid causes that side of the body to move in the direction that you push. Hint: moving the Sternocleidomastoid in a circle, has the greatest effect on balance. The lower you position your finger on the SCM, however, the larger the circle; the higher, the tighter the circle!



Anterior Triangle

(See Pictures above and below)

The area located directly anterior to (in front of) the Sternocleidomastoid muscle. The anterior triangle is useful for a multitude of launch points... Just about any point in the anterior triangle will stimulate an opponent to move backwards, IF the point is pressed quickly. Use a small attack point like finger or a knuckle fist rather than a punch. (This effect can be intensified greatly by turning the hand outward.) (See the Book and Or Video <u>Pressure points The Deadly Touch</u> for more details]

Posterior Triangle

(See Pictures above and below)

The area located directly behind the Sternocleidomastoid muscle, posterior to the clavicle and anterior to the Trapezius muscle. The best points in the posterior triangle are located along the leading edge of the Trapezius muscle. This area is useful for pulling the opponent backwards and downward. (See the Book and Or Video <u>Pressure Points The Deadly Touch</u> for more details.) The Posterior Triangle is a minor target area compared to the Anterior Triangle but since it is best attacked from the back it is used in different circumstances.

Carotid Sinus.

(See Pictures below)

A blood pressure sensing organ located at the bifurcation of the internal and external carotid arteries. Despite beliefs, the carotid sinus will not cause a dramatic drop in blood pressure. The most pronounced changes occur with elderly people with significant plaques in the carotid arteries and may reach up changes of 40 points in older adults (NOT enough to cause a loss of consciousness). I reluctantly (simply for completeness) put in a picture of the Carotid sinus. My reluctance is because the carotid sinus is NOT a useful target for a strike, regardless of what folklore you have heard. Light force knockouts do NOT occur from striking the carotid Sinus! Instead they come from the force being delivered through the neck structures to the Reticular Activating System. If you do not understand that then you will have to use far more force than is required and cause much more harm.

Epiglottis

(See Pictures below)

This structure is actually the Voice box that allows Politicians to run their mouth and annoy the general public and each other.

If struck to hard it can fracture and swell causing closure of the trachea and inability to breathe.

Lower throat: Gag Reflex.

Located just above the Sternal notch is an area of the neck that is very sensitive to being struck. This area has firm cartilaginous rings protecting the trachea underneath, but a portion of the branch of the vagal nerve, which stimulates the gag reflex, is also located in this area. Stimulating this area (rapid stimulation) will produce very significant effects in an opponent.



Chapter 4: CHEST

Chest

In this chapter we are going to break structures up into 2 sections ... The first section is structures which you are not going to reach directly (meaning they are inside the chest wall) and the second section are those structures you can directly reach.

1) **Deep Structures**: Those you cannot reach directly.

Okay, Let's get real ... the fact is that you are NOT going to be able to reach in and rip out someone lungs or heart out. Surgeons need special rib spreaders that provide tremendous force to move ribs apart or separate them so they can operate in the chest. So you are NOT going to be able to do such a feat with your hands ... no matter what someone told you or what you have seen on television.

In fact, most people only have the ability to strike the chest and cause a bruise or broken rib ... which while it may hurt, will NOT stop a person determined to get you.

While it may seem like that is your only option for this target area, there are in fact some legitimate targets that will take your opponent out of the action and the area.

NOTE: You must understand that you are NOT reaching these structures directly. Instead you are sending force though the body to cause these structures to be activated. Thus you really have to know where they are located, what strike to use and what you expect the structure to do if you are going to get any effect at all.

Cardio-Thoracic plexus

This plexus is a carotid body type and as thus has a dramatic effect on blood pressure. (In fact FAR more than the carotid sinus located in the neck does)

However one cannot reach this location by going directly through the chest and unless you are strong enough to totally smash the ribs into dust, you are not going to reach this plexus with a straight in punch.

You can reach (send force to or stimulate) this structure with a blow, which is aimed upward and to the opponent's right shoulder (45 degrees) ... which, by the way, can only be done with right hand ... Hint: this is why some techniques are done ONLY with right hand.

Please RE-READ the note above carefully ... the force of your strike has to penetrate into this plexus. This is will be the force of the shock wave from your strike and not your actual hand that reaches this plexus ...this applies to all the plexuses below also!)



Lung Plexuses

These are definitely secondary (in importance) plexuses which when struck do invoke a temporary difficulty in breathing. These plexuses are located at the bifurcation of the major lung bronchi on each side. The right side is larger and thus has more effect.

(See picture Below)

Heart

Yes I have read the research that says that a certain timed strike can cause the heart to go into fibrillation. However, if you have also read it, you will know that this is a very rare sporadic occurrence ... probably happening when the repolarization for the heart just happens to be in the right phase, and the blow lands, at just the exactly right **millisecond** ... notice I said MILLISECOND. Far shorter of a time period that either of us could ever focus on!

Thus there are FAR TOO MANY variables for me to depend on when my hide depends on it...

Instead I will target other structures that have a much greater chance of stopping the attacker!

However, please know that if you do strike the heart in the right position with a compression wave strike (like a Ji strike or possibly a hard palm heel strike) then it is very possible to rupture a heart valve, causing a dramatic loss of ability to pump blood and maybe causing death ...

For the position of the heart in relation to the ribs see the picture above about the cardio-thoracic plexus



2) Structures that you CAN reach from the outside of the body:

Clavicle

The Clavicle is an S shaped FLAT bone which provides stability for the shoulder joint (particularly the Acromial Clavicular joint) on the lateral end and attaches to the sternum on the medial end. It all provides attachment for the Pectoralis major muscle; and an upper for the attachment of the lower end of the Sternocleidomastoid muscle.

From the Martial arts point of view the clavicle is a relatively easy bone to break (about a difficult as a rib ... (it is slightly larger but is also fixed so that it cannot compress/bend and absorb as much force). Once broken the affected shoulder area is very painful and thus it causes great difficulty moving the arm ...which makes it very hard to punch (with either arm as the movement of either arm causes the broken clavicle to shift).

Please be aware that severe fractures of the clavicle do run the risk of lacerating the subclavian artery or vein, which are located in that area. Lacerations of such would cause a person to bleed to death.



Sternal Notch: The Sternal notch, which is located at the top part of the sternum, (or breast bone) is important simply because of its location close to the throat. Like all the flat bones of the body, it is tender to be rubbed or struck. This makes it useful as a target that can be struck on your way to strike

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the lower throat. The combination of the sharp pain (from the bone) plus the gag reflex stimulated when you strike the throat (even the lower throat) will create a great pain withdrawal response... Frequently causing your opponent to launch themselves backwards (IF you do the strike quick enough ... notice I said quick not strong).

Xiphoid process: the Xiphoid process is the lower piece of bone located just below the sternum and above the solar plexus. The Xiphoid is a useful target because it adds sharp pain to the reflex induced pain when the Solar plexus is struck.

Axilla: we already covered the Axilla in the section about the upper extremity so I will not repeat it here.

Rotator Cuff

The rotator cuff is comprised of 4 muscles (Supraspinatus, Teres minor, Infraspinatus, and the Subscapularis muscles if you want the names) and is actually somewhat of a misnomer. It is a misnomer because the Rotator cuff is not a cuff at all. What the rotator cuff really is a collection of 4 muscles that are attached to the proximal head of the humerus to keep it from moving out of place (the glenohumeral joint) when you move your arm.

What is important from a martial arts point of view is that the last few inches of each of these muscles, before they attach to the humerus, are VERY tender to being struck because they are relatively thin and are pinned against bone.

Thus a strike like a knuckle punch or an eye of the phoenix will cause significant pain and thus upper extremity dysfunction. The two muscles that are the most important are shown in the picture below (the Subscapularis and the Supraspinatus).

The Subscapularis is the most important, as it is located in the front and is easiest struck. The Supraspinatus is easiest struck only when you have forced the arm to extension and the opponent has been pulled forward into an extended arm position.



Pectoralis Major AND **Pectoralis Minor**

Both of these muscles are primarily designed to move the arm and rotate it ... The significance as far as the martial artist is concerned is the poison point of these muscles ... simply because when these points are struck then it makes it hard to move the arm and even take a deep breath ... (this causes the obvious loss of arm movement but also causes an increase in anxiety due to decreased oxygen ...



You can worry about Linage or you can concern yourself with effectiveness.

Sensei McCarthy

CHAPTER 5: Abdomen

Please pardon the crudeness of my illustration here, but the location of the structures are relevant and the why and what you need to know is contained here... even if the pictures aren't pretty.

The main structures of concern in the abdomen (to the Martial Artist) are the;

Liver



Location: The liver is located in the upper right quadrant of the abdomen fairly well protected under the lower floating ribs. The Liver is a spongy blood filled organ that compresses when struck.

It takes CONSIDERABLE force to rupture the liver, especially as it is covered by the lower rib cage. However, it can be done. Compressing the liver, however, is definitely possible.

Importance from a Martial Arts point of view: The Liver is filled with a significant amount of blood. If struck correctly (with a percussive strike) blood is pushed back into the major blood vessels and the pressure wave is transmitted into the superior vena cava and a pressure wave (due to resistance) is also transmitted into the abdominal Aorta. This can result in blood pressure changes through the body due to baroreceptor reactions. For more on this see the book <u>The complete Book of Light force knockouts.</u>

Information: The liver is primarily a detoxifying organ that process blood coming from the intestine and tries to detoxify any substance that enters the blood before that substance can reach the general blood stream.

Solar Plexus

Solar Plexus (also called the gastric Plexus) is a collection of nerves located just under the Xiphoid bone at the junction of the lower esophagus and the stomach. When struck the solar plexus causes multiple effects including temporary paralysis of the diaphragm (making it hard to breathe).



Spleen

(See the pictures above and Below)

The spleen is located in the upper left quadrant of the abdomen fairly well protected under the lower floating ribs. Like the liver, the spleen is a spongy blood filled organ that compresses when struck. (See the book <u>Complete Book of Light Force Knockouts</u> for more details ... including dangers of this.)

Even more important is the tendency of the spleen to swell after being struck. In fact, it can swell and burst with only minor (or no trauma) hours later that can result in death.

Kidneys

(See the picture below)

Located in the poster lateral flank up and under the floating ribs, the Kidneys are extremely tender to being struck. The best attack approach is with a 45 degree angled strike as the floating ribs that cover them are designed to protect from such blows.

Pelvic Plexus

(See the picture below)

Located just behind and to the lateral aspect of the Urinary bladder this plexus is involved with controlling bladder and bowel emptying. Striking such correctly cause the opponent to move backwards and downward (a frequently used technique to counter Muy Thai Head grabbing technique).



INTESTINES

(See the picture above)

Contrary to what you may have heard there is no real advantage from trying to strike the large or small intestines. You may cause some pain when you strike the abdominal wall above these structures, but the organs themselves are very soft and flexible and you are not going to do any significant damage with your hand alone.

Groin

NO you don't need a picture to know what I am talking about here.

Groin: Obvious location with obvious results when struck. (Pain, pain withdrawal reflex, possible nausea and or vomiting.)

Note: there is a significant different between striking the groin (testicular sac), which causes C fiber type pain and the tip of the penis which causes A fiber type pain.

See the discussion on pain in the anatomical terms section.

Conclusion

I hope that you have found this book a helpful reference.

I know that it is not going to be your final or a complete reference but I intended it as a START of learning about what points matter to the Martial Artist

The Fact is, as I have said earlier, there are plenty of resources to look through. In fact too many to decipher if you don't know what you are looking for. Especially with all the resources of the Internet!

I hope this eBook has allowed you to narrow those points down to those that may be of interest!

So hopefully this eBook will allow you to know where to start and that you therefore can spend you time in researching better pictures knowing what you are looking for

Bruce Everett Miller