Info shared by Pitbull SA.

Manjaro APBT kennel.

South Africa.

My Website www.pitbullsa.co.za

My E mail "manjaro@pitbullsa.co.za"

My Facebook "Gawie Manjaro"

My Facebook page "Manjaro Kennel"

My mobile +27827838280.

Zello.com "VoIP" – ask for info.

Leverage.

American Pit Bull Terrier:

Scot E. Dowd Ph.D.

Origin of a standard or leveraging a more functional interpretation.

Looking at characteristics of the APBT that are intimately linked together within proven working type requirements.

The UKC standard for the American Pit Bull Terrier (APBT) on paper describes a functional "Type" in many fundamental ways.
Judges must be able to see a good quality APBT and pick that animal.
Of particular and noteworthy importance are those functional traits that define and have been proven as APBT working type but which have not been selected for along with other less function oriented traits.

In order to provide judges with required information needed to more accurately judge, recognize or distinguish the UKC APBT breed type we must by necessity develop effective graphics, photos and descriptions to illustrate each part of the standard.
In this conformation instalment, I will focus on a few characteristics of the APBT that are intimately linked together within proven working type requirements.
Momentarily ignoring the front assembly which is undeniably vital this article focuses on height/length and rear angulation.

Rear angulation coordinated with height and length.
UKC APBT, both males and females, are described as being slightly longer than tall.
The origin of the UKC standard for the APBT was defined by a versatile working "type" and because of this the UKC standard descriptively and correctly has indicated that the APBT should be a dog "slightly longer than it is tall".
This is for significant and logical reasons.
If selecting in breeding for a dog with a "fairly short back" for instance, a second more vital trait will inadvertently will be co-selected especially if also requiring a smooth gait.
This second trait is the degree of rear angulation.
Selection for a fairly short backed animal combined with selection for proper movement requires this animal have less angulation than an animal described as "slightly longer than tall" would require in order to gait smoothly.

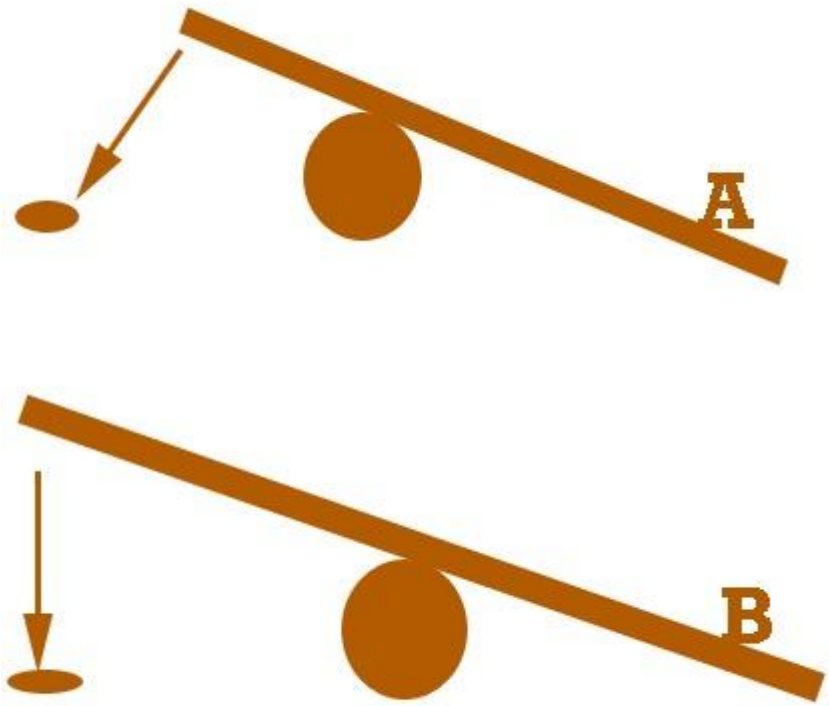
In an all-around working breed like the APBT lack of angulation and a square body results in lack of proper mechanics, torque, and leverage in the rear drive train of the animal and an overall lack of flexion, manoeuvrability, and agility.
Square dogs can be agile but we are speaking in relative terms and talking more about overall versatility.

In basic terms, lack of angulation is typically characterized structurally in the APBT by a shortened tibia in relation to the length of the femur.
The APBT tibia should be slightly longer than the femur.
This significantly results in an overall and dramatic increase in the leverage available in the rear drive train of the dog.
Lack of angulation is also typically accompanied by shortened muscle insertions that are set shallow down into the bone, often just past the joints, rather than the desired deep insertions that go well past the joint.
Poorly angled and shortened tendon insertions of the bicep femoris for instance require a greater relative muscle strength for the same amount of force.
Thus, the dog lacking angulation must have a more developed muscle to obtain the same strength that a dog with proper angulation and optimal leverage has naturally.
Said another way, lack of angulation and poorly angled muscle insertions with shallow insertions results in a demonstrable lack of optimal leverage during muscle contraction and extension.
This is particularly important in the APBT at the stifle and hock joints.
In the UKC APBT a longer tibia in relation to the femur is translated visually as a "well-bent stifle" (angulation), which in turn with proper structure and proportion leads to a "well bent hock" (angulation) which translates (when considering a dog that is "slightly longer than tall and all else being equal") as having balanced rear angulation in relation to the length of back.
See the website links below for specific illustrations that show visually comparisons between a "slightly longer than tall" dog and a square dog.
I promise your visit to the site will be worth your while.
Getting back to length of back and angulation, there are important reasons why the longer dog with better angulation will be more versatile.

For instance, if you have ever observed a dog with good angulation playing and wrestling with a dog of similar weight with a straighter hock you will notice eventually that whenever the dog lacking angulation is driven back they have very little control and spring (their movement is stilt-like rather than spring-like) and the tendency is for the under-angulated dog to be pushed over sideways resulting in a 180 degrees turn.
The momentum of this turn puts the playmate onto their shoulder and neck.
At this point the square dog becomes even more disadvantaged because the lack of length in the loin prevents them from turning and manoeuvring.
At this point the dog would either be forced to roll onto its back or continue to turn in the same direction with the playmate following at the neck and shoulder.
Neither of these scenarios are the position a wrestler typically wants to be in.
In addition to poor wrestling ability and because the rear drive train is so important to versatility we see when these two dogs are wrestling over an extended period of time, the dog lacking sufficient angulation will fatigue in the rear drive train much faster.
This is because it takes more exertion to produce the same driving force as the dog with sufficient and efficient angulation and leverage.
The angle of tendon insertion is too steep going past the joints and usually not set far enough past the joint to provide optimal leverage during contraction or extension.
Physics dictates that the longer the lever and the closer the fulcrum to load bearing point the more efficient it becomes.
In addition, the force acting on the lever is more efficient if it is properly directed (angled) "Give me a big enough lever and I can move the earth" said Archimedes.
A simplistic diagram to help visualize this is seen in figure 1.
There are additional visualizations available on the conformation website.

Working requirements have proven and defined that lack of length in the tibia in relation to the femur results in lack of leverage and a drive train that is more dependent upon muscle strength than a more efficient optimization of muscle leverage (simple physics). This translates functionally into a decrease in stamina.

When relying on muscle strength alone, rather than an optimization of leverage, the muscle becomes fatigued much more quickly and requires greater stores of energy to produce the same amount of explosive forward drive.
All else being equal, a dog that has a bit too much turn to the stifle and hock is preferred over a dog that has just a bit too little angulation.



The above simplistic diagram displays the laws of physics for leverage.

In the upper diagram the lever is shortened and because of the shortened lever the force acting on the lever has less than optimal directed force.
In the lower diagram the lever is longer and the direction of the acting force is more efficient.
If weight A was 100 lbs it would take about 300 lbs of pressure to raise it.
If weight B is also 100 lbs because of the more optimal length of the lever and direction of force it would only take a little over 100 lbs to raise it.
In today's show ring we are seeing too many square dogs lacking turn to stifle and hock and with shortened muscle insertions.
We have a need for judges to correctly identify and put up dogs that have functional traits (all else being equal).
The dog and bitch should both be "slightly longer than tall" and the rear angulation should result in a "well turned stifle" and "well turned hock" and "well laid back shoulders" of course going back to the need for front assembly to compliment rear.
The proper points for measuring height are the highest point of the scapula at the withers to the ground.
Length is measured from the point of the shoulder (where the humerus meets the scapula) back to the end process of the ischium (not the buttocks itself or the croup).
Visualization of these measurements is seen on the APBT conformation website on the pages listed below.
Of importance in judging the height and length is that the proper points of the skeleton are measured, not flesh or muscle.

A very common misperception occurs when the dog's buttocks is measured rather than the end of the ischium.
Proper estimation of height and length in the APBT are vital and translates functionally along with angulation into efficiency and versatility.

Judges that put up square dogs, even those with sufficient or balance angulation for the length of back are ignoring one of the most functionally important characteristics of the APBT and a type characteristic specifically stated in the APBT standard.
The APBT is a dog that is defined by working type to be a supreme athlete capable of working at continuous, strength related tasks for hours.
Please refer to the following web pages for many more diagrams and illustrations that will help in judging or visualizing these important aspects of the APBT
http://www.americanpitbullterrier.org/rearstudy.htm
See rear angulation, muscle structure, tail set and tail comparisons.
One UKC judge states: WOW!
I thought I had a good grasp of angulation, turn to stifle and hock, this really puts it into place for me!

http://www.americanpitbullterrier.org/skeletal muscular.htm
See a skeletal and muscular diagrams.
A UKC judge and APBT breeder states "Excellent diagrams, the best I have seen".
http://www.americanpitbullterrier.org/apbt_size.htm
See much information related to substance, height vs. length, and height to weight ratios.
A UKC 'Pitstaff" breeder states "Yeah I am breeding for overdone, oversized dogs but that is what wins".
http://www.americanpitbullterrier.org/hindquarters.htm
See breakdowns of how the APBT hindquarter relates to functionality and versatility.
A UKC APBT novice fancier wrote "Holy Cow!
So that is what angulation is!"
Simple visualization of angulation in either a square or slightly longer than tall APBT (that is properly stacked) can be achieved by dropping an imaginary line straight down to the ground from the end process of the ischium (see skeletal_muscular.htm link above).

Remember also that the bitch (because she needs room to carry puppies) can be, and actually should be, a bit longer than the dog but both should definitely be "slightly longer than tall".
Remember the functional justifications for this and note this is one of the most significant and carefully worded aspects of the UKC APBT standard.
The following in order of relative pre in a dog slightly longer than tall with correct functional angulation the imaginary line would fall either directly, or up to 1 inch, in front of the rear foot.
The stifle and hock joints should be "well bent" (45 degrees to the ground between stifle and hock: see the Rear Study page on the links above).
This results in a proper mechanics and leverage for power combined with endurance and enough angulation in proportion to length of back that movement would be correct.
This description correctly fits the UKC APBT standard.
Logically in a dog square or a dog of correct proportions "slightly longer than tall" with too much angulation, this line would land too far in front of the rear foot.
Too much rear angulation will typically result in over-reaching with the rear legs and by necessity the rear feet would land forward of where the front foot was placed, probably by crossing over to prevent interference with the front foot placement.
This is also incorrect and results in a decrease in efficiency of movement and an overall decrease in functionality related to endurance and strength.
Unless seriously over angulated this is preferred to the square dog lacking angulation.
In a square dog with correct functional angulation, required to exhibit proper movement, this line would travel through or just barely in front of the rear foot (nearly sufficient angulation).
Often we will judge softly in this case and our eye may begin to see that the square dog is longer, but we must not be forgiving in this aspect of conformation.

With less angulation the square dog would move correctly with proper and desired foot fall.
The most important aspect is that this does NOT fit the UKC APBT standard.
The functional fact is that much is lost in a square dog in functional strength, agility, manoeuvrability, and endurance all of which are vital to the versatility of this breed.
Finally in a dog without sufficient rear angulation in relation to length of body the rear foot would land behind where the front foot was placed.
The imaginary line would pass through the foot.
This is the worse of the scenarios "all else being equal".
A well-turned stifle and a well bend hock are vital to this breed as is the functional definition that the APBT should be slightly longer than they are tall.
Without proper mechanics in the rear drive train the animal is inefficient, ineffective, and ultimately less of an athlete, which makes rear angulation one of the primary and most functionally driven characteristics of the APBT.
Without adequate length of back the animal loses a great deal of suppleness and manoeuvrability.
Reference for performance (all else being equal) describes the most common phenotypes in relation to the above visualization technique "in properly stacked dogs".