

GIVING PUPS A HEAD START

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When pups are born they are little more than blobs. Muscles and their nerve connections are only in the process of forming so coordination is poor, and that's overstated. The pup can crawl. The direction is toward its mom and her nipples. Olfaction, the sense of smell, leads the pup in the right direction and the lips, nose, mouth area in general, touch a nipple and lips, tongue and their associated musculature react reflexively to produce the sucking response. Not a lot of brain work going on there. Sucking is a reflex with no conscious effort or thought involved in it. It is an involuntary act, which functions with only rudimentary neural development and little or no brain involvement.



A detour problem is solved by one pup and pondered by the other who will also solve it in a day or so.
(photo by: Dr. Ed Bailey)

Gradually muscles and nerves become better organized, coordination improving concomitantly. With practice the sucking reflex improves, becomes more efficient, the pup's crawling becomes more directed even though front and hind feet are not usually in synch. By three to four weeks the synchrony improves to the point that the pup can walk.

At first there are mistakes, pup may stumble, trip over nothing, get one foot or two moving at the wrong time, a klutz. Nothing like the elegant bird finder one would hope for. Even at four months, many pups are still gawky, ungainly, and foot plopping clumsy. The road from the four week old stumbler to finished elegance is paved with practice, pushing the muscles and their associated nerves to never fail myoneural connections and strengthened muscles with lightning speed and totally smooth contractions. But the pup can't do this all alone; it needs help from its dam. It needs even more help from the breeder because only the breeder can control the environment in which the pup grows up.

Borrowing the adage- if you don't use it you lose it- and paraphrasing it to make it applicable to developing pups, we can say- if you don't use it, you won't ever have it to lose. More than forty years ago physiological psychologists, the only people working on behavior of animals in North America at the time and that only for application to human behavior, performed all sorts of experiments on rats, cats and to a small extent on dogs, to demonstrate both the old adage and the revamped version. These experiments ran the gamut from immobilizing a limb of a young animal from weaning to adulthood, patching an eye from birth, to single muscle denervation, to partial brain ablation. The effect on muscle development in all these experiments, and there were hundreds of them, was the atrophy you would expect but the effect on nerve and brain development was not predicted. Immobilization of a limb also prevented the formation of neural connections and the portion of the brain that dealt with the limb that was immobilized was smaller and had far fewer nerve cells present than the normal contra lateral leg. Animals that had visual input to one eye eliminated by a patch or by sewing the lid shut and patching it, failed to develop the ability to focus, developed strabismus and other visual impairments in that eye. Optic nerves connecting

visual projection areas of the brain with visual cortex had no or far less than normal myelinization than in intact animals. The eye itself was complete in all respects and was normal size, but because of the effects on the nerve development, vision in the covered, unused eye was always drastically impaired.

The implication for the "use or lose" or, "use or it will never develop" on pups is that the more physically challenged the pup is the better the coordination. Environmental enrichment, to borrow a term from the animal care and welfare dictionary, means adding things to the rearing pen to provide objects that the pups (in our case) can manipulate, chew on, carry, climb onto, or over or around. These objects of enrichment provide the physical and mental challenges needed for young developing dog bodies and dog minds.



Climbing a see through ramp to a see through bridge in an environment enriched with a variety of play ground apparatus.(photo by: Dr. Ed Bailey)

The wild canids, wolves, coyotes, foxes all provide pups with these challenges by selecting den sites with rocks, tree roots, down tree limbs, hilly and uneven ground around the entrance, or they move the pups at four or five weeks of age to a secondary den site that does provide it. For five years running there was an active fox den nearby that I could see each day as I drove to and from work. Each year the dog and vixen appeared in March. In April and May the dog fox brought food to the vixen in the den. The den was an old renovated woodchuck burrow on a south-facing slope with weeds and grass typical of an old field in this part of the country. In late May the pups emerged from the den and could be seen playing or sunning at

the mouth. Within a week the vixen moved everybody, troop and baggage, to a den about 100 yards south of the natal den. This rearing den was at the base of a fallen down rock fence with a few split rails lying on it. From then on until the pups were weaned and out hunting on their own, each day was play time games in the rock pile. They used the rocks and split rails the way our kids use all the constructed apparatus we build for them in the playground. There in the rocks they developed the skills, strength, agility and coordination to catch a mouse or a rabbit or a ruffed grouse. The pups we raise need a similar physically and mentally challenging play ground to develop their muscle and brain power.

In the sterile four walls, wire or wood or cement block rearing kennels we use with only mom and the siblings, pups have nothing to use except each other to crawl over and hide behind. They still learn the stalk and pounce and the social amenities. But they are doing it in an aggressive, unimaginative way and, an aggressive, unimaginative dog is not what I want for a hunting dog. Pups need the physically challenging environment where they can develop muscle coordination, agility and strength. At least equally, or even more so, they need the mentally challenging environment. They need to develop problem solving ability, mental agility and mental coordination. They are not going to get it unless the breeder provides the opportunity. The restricted brain and neuron development that results from limb restriction and from visual input deprivation will occur in other parts of the brain if the pup is not mentally stimulated. Totally deprived of stimulation, pups either cannot learn or are poor learners at best.



Trips to the field are most important where investigation of everything by all possible modalities makes pup a brilliant dog. (Photo by Larry Olson, Hebron, NE)

Specific areas of the brain are responsible for controlling specific aspects of behavior and physiology. For example, the area of the brain known as the visual cortex serves to integrate the mass of light signals that enter the eye. We know that lack of visual stimulation in a young animal will limit development of the nerve cells, neurons and transmission of impulses along the nerve fibers and so impair the function of the visual cortex and vision. Emotion is controlled by parts of the midbrain, primarily the limbic system. A pup never experiencing and coping with frustrating situations has limited chance to develop the checks and balances of emotion controlled by nerve cells in the septum and the amygdala, both parts of the limbic system. Impaired emotional control interferes with problem solving ability and with temperament.

True, genetics plays a role. The pup must inherit the potential for development of all areas of the brain just as it must inherit the potential for muscle mass, development, reaction speed and so on. Without the inherited potential all the physical and mental challenges in the world won't help. But conversely, with no physical and mental challenging, a pup's potential will not be realized, no matter how much it starts with. Inherited potential and learning in the form of physical and mental exercise are so interdigitated that saying where one starts and the other stops is just not possible. But we do know that the more that is learned, the more challenged the mental and physical capacities are within reasonable limits, the more that can be learned and the more that can be achieved physically and mentally. Mind challenging problems are exercise for the brain and will enhance its development, and similarly, physically challenging pups is exercise for the muscles and will promote their development.

How do you exercise the brain? Just give the pups problems to solve. You can treat the pups singly or as a group, but at least part of the time it should be singly to be sure each pup is acting as an individual and not just following his brother or sister.

As I pointed out in a previous article in Gun Dog, pups have developmental mile posts based on the kicking in of the various sensory modalities. Solving a problem based on visual or auditory perception or on mobility is unrealistic if the pups have not yet attained these perceptual modalities or have not yet gained sufficient mobility and manipulatory skills. So the problems we pose for a pup to improve his smarts will depend on where he is developmentally. The time when that particular modality or combination of modalities and mobility skill should be challenged for maximum benefit should begin just as the pups pass that particular developmental milestone.

The challenges should start easy and simple and become more difficult and complex. What challenging "think" situations you present to the pups will depend on what problems the dog will be expected to face during the rest of his life and on your own inventive genius. An example of a problem every dog must face, and hopefully solve, many times in his life is that the best route from point A to point B is not necessarily a straight line- say retrieving a bird that fell on the far side of a hog wire fence with 4 or 5 strands of barbed wire on top when there is a gate opening 50 yards to the left. The dog that was challenged with detour problems, also known as "um weg" problems (literally "around road" problems), as a pup will have the smarts to size up the situation and make the detour, and save a lot of money in vet bills by not needing to have the wire cuts stitched up.

If we want to challenge a pup physically to improve muscle coordination, we put up a barrier that he can see over but not through and can crawl over. To mentally challenge the pup in a detour problem, the barrier must be too high to crawl over or see over but one he can see through. The object the pup wants, such as food, a chew toy, another pup, is visible but attainable only if he goes around the barrier. Creating this situation requires only a wire barrier such as a refrigerator shelf or a shelf from your wife's new electric stove, you know the one you bought to offset the new shotgun you have on order. Set up the barrier so it reaches part way across a corridor or hallway. The goal can be made accessible by going around one end or both ends. If accessible around just one end, change the open end frequently. Gradually the barrier will be widened and angled so pup solves the problem of going away from the goal object in order to get to it instead of standing in front of the fence barking like a stupid idiot. You really want a dog whose actions speak louder than his words. I certainly do.

A few detour problems will enable the pup to later solve a variety of problems, even those only vaguely related to the original detour problems. He can solve other spatial problems that come up years later without need of a whole new learning regimen. He can also solve temporal problems like how long is 10 minutes. No, it doesn't teach him how to tell time, but he learns patience, waiting for something he wants is not much different from going away from something in order to get it, even going out of sight of it and approaching from a different angle. Mentally exercising a pup gives him the smarts to figure it out.

Self confidence in puppies can be increased by letting them learn how easy it is to go up a see through ramp and walk on an elevated see through bridge. It also improves perception of depth by challenging them with these visual cliffs. New experiences are most important. The more pups hear, smell, touch, chew on, investigate by all the means available, the better off they are for it. From 5 to 6 weeks onward, exposure to the world in the form of walks with mom and the littermates is easy experience to give them, weather conditions permitting. Every experience pups have will stimulate neural development and so brain development. As the brain develops, so does the learning ability, insight into problems and so problem solving ability, which in turn stimulates more neural development. The pup will then keep right on self-improving.

Therefore, besides the specifically related, distantly related, and even unrelated learning relationships, there is the overall general improvement in learning ability. A criterion of

intelligence is elevated learning ability. By exercising the brain with mental challenges we improve the total brain function, not just one area of it. The breeder has the power to improve nerve conductivity in both speed and accuracy, recovery time of the neural synapses is shortened as the chemical and electrical signals react faster, and the nerves can fire repeatedly quicker. The brain mass increases dramatically as nerve cell density increases. Overall brain efficiency markedly improves. Just as the effect of physically challenging the muscular system, the whole body benefits, not just one part, so the whole brain and nervous system with all its neural and neurosecretory functions benefits from the challenges of mental exercise.

Most dogs are born with more "brains" than we give them credit for. Whether the potential is realized, even beyond our fondest dreams, is in the hands of the breeder and in the environment he sets up for the pups. A sterile, coddling, do nothing environment produces sterile minded dogs. A challenging, stimulating environment that exercises both muscles and neurons produces pups that approach or even surpass their potential. The message to the breeders is to make the pups work for a living mentally and physically during the 10 or so weeks you have them and everyone will be amazed at your well balanced, super smart product. To the potential buyer, the message is to make sure the breeder that is producing your puppy works them up to their physical and mental capabilities.

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