"Arcon Method" summary

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Abstract: Arcon Method is a training and intervention system for search and rescue dogs (earthquakes, avalanches, landslides, hurricanes, explosions...), narcotic detection dogs, explosive detection dogs, anti-personnel mines detection dogs and endangered animal species detection dogs.

Keywords: Arcon Method, Rescue Dogs, Rescue Dog Training, Rescue Dog Training Method, Dog Training Method, Detection Dogs, Jaime Parejo, Dog Behavior

1. Introduction

Arcon Method is an official and highly effective training and intervention system for search and rescue dog units. It is intended for the search of buried or missing people as a consequence of earthquakes, avalanches, landslides, hurricanes or explosions. And also for the detection of narcotics, explosives, anti-personnel mines and endangered animal species.

It was created by Jaime Parejo after twelve years of study and research. The method was deemed completed in October 1994, and he chose the name Arcon as a tribute to his pet and pioneering student "Arcon". Arcon Method proven success in rescue operations has led it to be granted numerous major official awards both nationally and internationally, such as the First Prize for Research, granted by the Spanish Royal Canine Society [1] and the Sasakawa Certificate of Distinction by the United Nations [2].

Ten years later, thanks to its proven and much greater effectiveness when compared to traditional systems, Arcon Method has been adopted by many different police corps (Ecuador, Colombia, Venezuela, etc.) to detect explosives, narcotics, anti-personnel mines and endangered animal species.

Arcon Method is mainly based on a set of seven innovative behavioral techniques which complement each other and have an effective impact on three fundamental, interrelated parameters regarding search operations: autonomy, motivation and concentration.

The shaping processes (reinforcement of successive approximations to the desired response) that characterize traditional canine search training methods and which are still currently used, are excessively limited to basic or primary learning processes (classical conditioning, operant conditioning, avoidance, extinction, generalization, discrimination, cognitive perspectives, etc.).

However, the same does not hold true with Arcon Method. After twelve years of persistent, intense and complex endeavor comprising observation, study, measurement and analysis of variables and responses, as well as the verification of multiple hypotheses and field experimentation, Jaime Parejo, a tireless, rigorous scholar and researcher of animal behavior and animal learning, was able to systematically develop a number of techniques that are meticulously interrelated. Such techniques positively optimize the potential levels of autonomy, motivation and concentration of the animals when performing operations involving the search of buried people. The results are noticeable both out-door and in-door, either with or without visibility and also with confining spaces of the minimum possible size.

Thanks to the aforementioned enhancement of motivation, working autonomy and concentration levels, the primary objective, e.i. speed increment and efficacy level at locating buried persons, was not only and repeatedly achieved but it was so by a substantial difference.

Back in 1996, Jaime Parejo officially set up the first canine rescue unit to apply this method to serve with Seville's firefighters in Spain. Since then, official keepers, instructors and rescue dogs have been trained and certified for important firefighting squads and police corps in a number of countries under a high risk of natural disasters (Colombia, El Salvador, Mexico, Ecuador, Chile...).

This revolutionary and transcendent scientific method has

especially enriched and widened the field of animal learning. During the last years it has also led to the rescue of buried people in several countries. Arcon Method has been approved and chosen by several governments as the official training and intervention system, and has therefore been officially adopted by the leading emergency squads and security forces and corps in these countries under a high risk of earthquakes.

The 250 hours in the official basic Arcon Training Course are aimed almost entirely to the introduction of the complex dynamics, implementation, interaction and performance of Arcon techniques, both during training sessions and in real life interventions.

Arcon Method is regarded as a major step forward for humanity, and it is currently the only rescue system officially recognized for its exceptional efficacy at searching for and locating buried people. Several examples follow:

Since 1999, many people buried alive in extremely difficult search conditions have been located by canine rescue units of firefighting corps, police forces, civil defense units, etc…

In 2005, Ecuador National Police Force Intervention and Rescue Group, which implements Arcon Method, took part in the International K-9 Competition in Indiana, United States and competed against police and military forces from the United States, Canada as well as from other South American countries. Ecuador National Police Force Intervention and Rescue Group was awarded the first prize, thus proving the extraordinary effectiveness of this system for the detection of explosives. Since 2006, the Mobile Customs Squads of Colombia National Police Force have detected a growing number of anti-personnel mines. The number of endangered animal specimens detected by the Environmental Protection Unit of Ecuador National Police Force has also risen. This has led to the reduction of illegal trafficking with these animals in the Galapagos National Park. The Canine Brigade of Caracas Police Corps has also increased the number of apprehensions involving narcotics and explosives, etc.

The basic instruments used when applying Arcon techniques include:

The dog's keeper body actions.

A methodological process of analysis and observation of the dog's behavior and the working environment.

Individualized and constant systematic dosage of behavioral resources.

Painstakingly-designed procedure of interaction between all the behavioral techniques.

The animals that have been trained using this method tend to more intensely employ its physical and psychological resources during the search process in a way that is particularly natural, voluntary and successful. Below there is a very basic, schematic assessment of the incidence of Arcon Method on the three main parameters: autonomy, motivation and concentration.
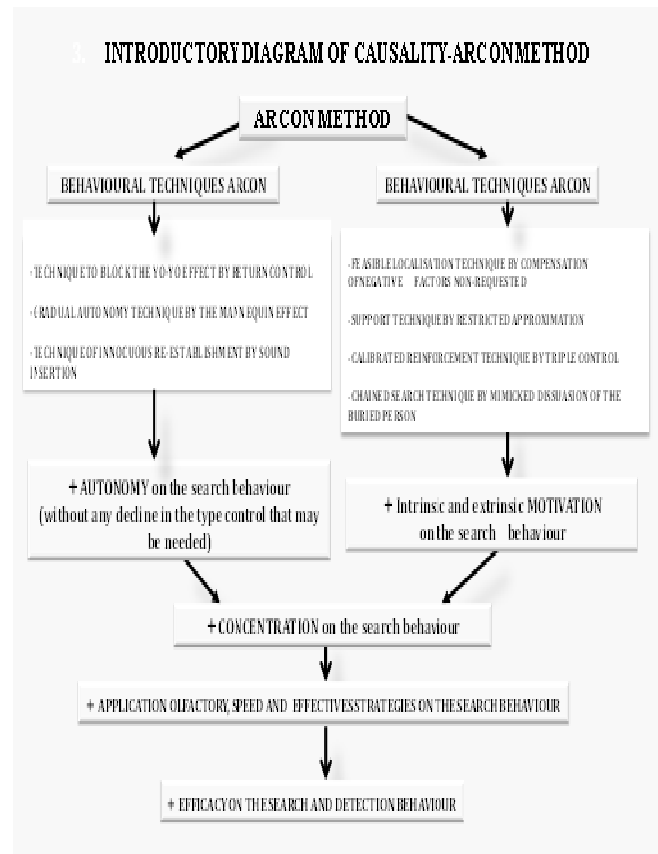
2. Autonomy

There is repeated evidence that when a dog experiences a higher degree of autonomous work, its degree of concentration on the job increases accordingly.

This level of autonomy allows the optimization of a solid focus on the search. Each animal unit dissociates from its keeper without any detrimental interruptions in its line of search, such as sporadic returns to its keeper or body actions to catch sight of him/her. We would like to highlight the fact that an excessive participation by the keeper either verbal or physical (a very common mistake), during the dog's work accounts as a negative expectation of support in the dog's memory. This only becomes more pronounced and interfering during the search as time goes by without the animal having succeeded to perceive the desired scent stimulus of a potential buried person. There are three main Arcon techniques which, when put together, enhance substantially the possibility of reaching the desired autonomy level of work:

Technique to block the yo-yo effect by return control (applied preventively).

Gradual autonomy technique by the action of the mannequin effect (applied in the phases of education, training and occasionally during real life intervention).

Technique of innocuous re-establishment by sound insertion (occasionally applied during the initial education phase).

2.1. Motivation

The implementation of this system generates in the animal a motivational drive that is especially powerful for this type of work. It increases dogs' level of intensity, perseverance and concentration during search operations. It also preserves them from any possible deviating stimuli. There are four Arcon techniques aimed at preserving or nurturing this level of specific motivation:

1-. Calibrated reinforcement technique by triple control (applied during the education and training phases).

2-. Feasible locating technique by compensation of negative factors. A technique that helps to keep the dog motivated in the search by eliminating some items in the field that may adversely affect its search, such as passing animals, food, etc. This technique is applied only during the educational phases, and occasionally during training.

3-. Chained search technique by mimicked dissuasion of the buried person. A technique used to dissuade dogs from stopping at the first buried person and to encourage them to go and find the next buried person. It is applied during the phases of education and training, and also during real life interventions.

4-. Non-requested support technique by restrained approximation. This is a technique based on providing moderate support to dogs to help them find the buried person. This support is only given when not requested by the dog and is applied occasionally only during the initial stages of education in order to keep a high motivation level.

It is important to bear in mind that any experience of failure during the education or learning phase, i.e. when dogs fails to achieve the goal, will lower the expectation produced by the training activity and its corresponding setting. This would seriously jeopardize the degree of motivation required to overcome the learning process and the future performance of any search. This negative factor can be avoided by applying the aforementioned techniques. These techniques will also contribute to the fact that the mere searching process and the rubble environment generate by themselves a powerful reinforcement effect on the animals. The search activity itself leads to an increment in the dog's excitement and this adds to the dog's motivation by the incentive.

2.2. Concentration

In this case, the animals degree of voluntary attention in the search will be primarily associated with the two previous parameters (autonomy and motivation), regardless of the application of any specific techniques.

Any dog that has been trained using this system shows a visible and consistent high degree of concentration during the search, and experiences a solid line of attention.

Concentration could be defined as the organization of the animals' attention in order to perform a given task. In the case at hand, this entails the olfactory process of sniffing with the goal of capturing human scent molecules in the air that would allow the animal to head towards the source; namely, the person buried among rubble, earth, snow, clay, etc. A higher level of concentration will enhance the implementation of the dogs' olfactory reception and elaboration systems. This reduces its awareness scope and enhances accordingly its capacity to capture the scent of the persons who may be buried.

3. Arcon Method Techniques

3.1. Technique to Block the Yo-Yo Effect by Return Control

3.1.1. Objective

To avoid generating any possible yo-yo effect in the dog by applying a number of specific preventive guidelines. The yo-yo effect is a behavioral phenomenon that I have found in some particular dogs. They regularly returned to their keeper after reaching a certain distance, thus following some kind of established mental inertia. This is a habit that is especially detrimental during rescue works, since it impairs the dog's autonomy and initiative during search operations.

3.1.2. Circumstances When Applied

Basically when the dog either returns somehow to the keeper, or when it moves too far away and needs to be called.

3.1.3. Basic Guidelines

– Keep the use of call orders to a minimum. I have noticed that an excessive use of call orders was the main cause for dogs acquiring this habit.

– When the dog returns, avoid any type of action that implies any form of reinforcement (saying affectionate words, petting, play-type behavior, etc.).

3.2. Gradual Autonomy Technique by the "Mannequin Effect"

3.2.1 Objective

By managing to get the dog to dissociate the keeper as a possible support element, we will gradually enhance:

– The dog's autonomy and concentration level during the search.

– A high degree of reinforcement based on the high contrast between the keeper's mannequin attitude and the subsequent active and euphoric reinforcement.

– Dogs' persistence to remain at the locating point while signaling.

3.2.2. Circumstances When Applied

When the dog returns to its keeper during a working session or remains next to him/her and tries to draw his/her attention in any way (barking, standing on its rear legs, etc.).

The use of the mannequin position should be administered in a rational and balanced way both during working sessions and at real life interventions.

3.2.3. Basic Guidelines

The keeper must keep at any time a solid attitude, firm and unchanged, without any body, face or verbal reaction. Just like that of a mannequin.

3.3. Technique of Innocuous Re-Establishment by Sound Insertion

3.3.1. Objective

To innocuously re-establish the dogs working behavior against possible deviating distractions.

The repetition of the search order, that is so generally used, affects negatively the dog's self initiative. Therefore, I opted for this peculiar procedure, which has proved to be highly efficient.

3.3.2. Circumstances When Applied

This resource can be applied under the relative quiet environment that normally characterizes the initial stages of learning. This would not be feasible in real life operations under adverse sound conditions. We should, however, bear in mind that dogs in that phase are not as susceptible as they are during the initial phases. Furthermore, their capacity to re-establish their search behavior has also been substantially developed.

3.3.3. Basic Guidelines

The dog's perception of a brief interfering noise provoked occasionally (something dragged on the ground, two objects hitting, etc.) causes some form of instantaneous rupture in their incipient deviation in its line of attention. It is after this brief pause that the desirable base conduct resumes spontaneously.

We should try to keep the dog from trying to identify the source of the sound.

The sound should be inserted as simultaneously as possible with the dog's noticeable distraction and with the sufficient but not excessive intensity level to serve its purpose in each case.

3.4. Feasible Locating Technique by Previous Compensation of Non-Requested Negative Factors

3.4.1. Objectives

−   To ensure that the dog is successful in its search without any undermining of the learning process intended with the exercise.

−   To preserve and enhance dogs motivation as the key to an adequate progression in the learning process.

−   To avoid detrimental situations, such as failure and frustration, during the initial training stages. This enhances and increases the positive stimulus that the rubble environment should cause on dogs.

3.4.2. Circumstances When Applied

During the learning phase and occasionally during training.

3.4.3. Basic Guidelines

An analysis and differentiation should be carried out on those factors or elements that might hypothetically affect the dog's search either positively or negatively (level of motivation, presence of major stimuli, weather conditions, etc.).

We should then define the basic lines of the exercise to be performed according to a theoretical state of balance or prior compensation that should enable the dog to succeed in the search without any support from its keeper.

We shall primarily intervene on basic factors that can be altered, such as the position of the release point or the location of the hideouts.

3.5. Support Technique by Restricted Approximation

3.5.1. Objective

−   To complete a successful search.

−   To increase the probability of the dog's signalling the buried person.

3.5.2. Circumstances When Applied

−   This technique is exclusively applied in those occasional cases when providing controlled support is considered less counterproductive than the dog's imminent failure. Nevertheless, the repeated use of this technique would negatively affect the dog's potential autonomy.

−   When a certain dose of insecurity negatively affects the signaling guidelines.

−   This is mainly used during the initial learning phase.

3.5.3. Basic Guidelines

−   The dog's keeper approaches the dog by soberly walking towards the target point (where the dog tends to be) without any type of unnecessary movement or verbal utterance. The keeper should stop when he/she estimates that the minimum necessary support has been conveyed to the dog.

In order to avoid any negative conditioning of the dog, this technique should not be applied if the dog has previously requested its keeper's support or has shown a return movement.

3.6. Calibrated Reinforcement Technique by Triple Control

3.6.1. Objectives

−   To enhance the positive effect of reinforcement

−   To reinforce the signaling pattern when needed

−   To control the dog's success in search tasks, thus preserving and increasing its motivation level with regards to this activity.

3.6.2. Circumstances When Applied

During the initial learning and training phase, especially when carrying out chained searches.

3.6.3. Basic Guidelines

The instructor places him/herself at a strategic point that allows him/her to observe with a minimum interference on the dog's behavior during the search to act accordingly.

He/she will control three fundamental variables by means of the transceiver:

– The stunt person to perform the reinforcement.
– The moment to start the reinforcement.
– The type of reinforcement (intensity, duration, etc.).
– The instructor must previously evaluate an entire set of essential factors:
– The exercise learning objectives.
– The signaling by the dog (fluency, perseverance, target, etc.).
– The energy or motivation shown by the dog.
– Any possible state of confusion or inhibition shown by the dog.

During the exercise, the instructor must pay attention and analyze any of the remarkable details shown by the dog during the search or signaling actions. This should allow him/her to truly and effectively control the three aforementioned variables.

3.7. Chained Search Technique by Mimicked Dissuasion of the Buried Person

3.7.1. Objective

– To keep up the required level of dog's autonomy, motivation and concentration when performing consecutive searches and their respective signaling actions.

3.7.2. Circumstances When Applied

– In search operations during learning and training phases or in real life interventions.

3.7.3. Basis Guidelines

When the keeper notices that the dog is signaling one of the hidden stunt persons, he/she must run to the dog to reward it with a discreet pet and a brief verbal congratulation (in a real intervention, the keeper should mark the rubble location with spray paint when the victim is not accessible). Then, he/she should attach the leash quickly to the dog and make a firm and determined turn of the body away from the signaled point, which should then remain at the back of the keeper. Then he/she should face towards the new area to be searched, and a new search should begin.

I have noticed that this physical avoidance action by the keeper at the signal point succeeds to provoke in the dog a special dissuasive effect. This conveniently frees dogs from the attraction exerted by the stunt man and reinforces their will to search for another buried person. Dogs are especially driven by the expectation of the chained search already created, in which the maximum reinforcement comes unpredictably.

The keeper should always try to make sure that the location point already signaled by the dog remains at his/her back.

On the other hand, any possible feeling of frustration due to a total lack of reinforcement is positively diminished by the keeper's reinforcing actions. These actions intend to bypass any possible inhibiting effect. We should take advantage of this incipient feeling of frustration, where a certain impulsive drive appears to contribute with its energy and motivation to the following search task.

4. Phases in the Arcon Training Process

4.1. Signalling (Exposed and Concealed Chest)

The goal of this phase is to condition dogs to bark at a non-visible person that has been placed underground. The dog must have previously become used to playing with strangers, and to bark at them fluently as a natural impulse generated by the excited desire to play and share a particular object.

I would like to point out that conditioning dogs to bark at any visible person as a request to play should be avoided, since they might learn to bark, by generalization, as a resource to achieve their goals in other situations. I am not in favor of conditioning the barking action to a particular command, since this would generate a detrimental expectation in dogs.

Dogs must have been deprived during the previous days of any play and exercise. By doing so, we increase the necessary drive to perform the first guidelines and enhance the positive effect of reinforcement.

The stuntman must be a person known to the dog (other than its keeper). This favors the initial degree of trust and stimulation needed. From the very beginning, dogs dissociate their keeper as a possible primary target.

Dogs must previously become familiar with the setting where the stuntman container is placed. We should use whatever motivator provides the highest level of incentive for the dog (ball, roller, doll, stick, etc.). This should only be used in the initial stages of the learning process. Otherwise, dogs might associate its unique and specific scent as the only stimuli to signaling. By doing so, dogs would not react with a signaling action whenever the buried person has been deprived from this stimulus.

We should avoid working under adverse weather conditions (high temperatures, heavy rain, etc.) that could spur negative reactions or distractions to the dog.

The observers should place themselves at least 15 meters from the working area and avoid movements, postures or sounds that might distract the animal. In this initial phase, the dog will be especially susceptible to any type of distraction, yet it is essential for it to perform successfully.

For this phase, I feel a special preference for the use of chests located on paved surfaces (asphalt, concrete, etc.) with no traffic. Obviously, when working on paved surfaces, we substantially minimize the potential presence of interfering olfactory stimulants, which nevertheless would be inherent in what we call the terrain. We should remove any object or material from the surface that hypothetically might erroneously draw the dog's attention (tools, clothing, excrement, etc.). For the first sessions, a hard wood or plastic lid should be used, as they are more manageable and durable (with a handle in the middle). The dog should first be released in a zone away from the working area for a few

minutes so that it may urinate, defecate and relax. This is a general rule for the entire learning phase.

4.1.1. Bare Chest: 1st Step

The keeper with the dog on a leash should head towards a place around 20 meters from the chest (variable according to the motivation level shown by the animal).

During the walk towards the leash release point, the keeper must emotionally activate the dog, mentally warming it up for the job. The keeper should not repress any of the possible and valuable impetus shown by the animal and should avoid, for example, using extensible leads or pulling backwards on the lead. The stuntman must be waiting for the keeper at a spot halfway between the chest and the release point. He/she should make movements to incite the dog, showing the dog the motivator and making voices that truly stimulate it until achieving a positive effect of attraction on the dog.

When the stuntman deems that the dog has been provoked to a sufficient degree of excitability and impetus, he/she will quickly move towards the chest and will get into the chest, in plain view of the dog, repeating the stimulation moves before fully immersing him/herself in the hole and covering him/herself with the lid. The instructor should carefully observe the dogs behavior outside and indicate to the hidden stuntman (by means of a transceiver) the right time to reinforce the emission of barking (even though the stuntman might hear the dog barking, he/she cannot tell whether the dog is barking, undesirably, at the keeper or at any other element, and therefore, he/she cannot tell when to stop the signaling) Therefore, technical guidance from the outside is necessary. The stuntman should not verbally praise the dog at the exact moment of being told to do so, as that instant might coincide with a silent pause. His/her praise should, to the any possible extent, be simultaneous with the next bark issued by the dog. This simultaneity would favor the required time contiguity that allows proper association and conditioning. Immediately afterwards, the lid is removed and the stuntman immediately praises the dog by petting it and encouraging it to draw closer in order to thus heighten its level of confidence in this strange new situation. It is at that moment when the keeper approaches the dog to also praise and pet it. The stuntman should come out of the chest in order to share the euphoria and play with the dog alongside the keeper.

The stuntman should always begin the verbal reinforcement from inside the hideout in order to minimize, as much as possible, the delay that there might be between the moment of the signaling bark of the dog and the moment of opening the chest. The reason why the keeper does not verbally reinforce nor comes closer to the dog until the stuntman has done so is to allow the dog to clearly identify the stuntman as the target, and thus to dissociate the keeper from this role and from any other means to obtain the reinforcement. This is the main reason why the Arcon method does not include the possibility of the keeper taking on the role of the stuntman.

By following these guidelines, we solidly avoid the risk of dogs wrongly abandoning the locating point and returning to the keeper.

Additionally, we preserve the dogs' invaluable potential for autonomy in the search process.

Thanks to its basic mechanism of associative learning, dogs learn to bark at persons hidden underground.

4.1.3. Exposed Chest: 2nd Step

The release point is the same, but in this case, the stuntman is already inside the chest and cannot be seen by the dog. The dog can only see the chest covered by a lid.

4.2.1. Concealed Chest: 1st Step

−   The lid is partially covered with rubble. The instructor should control how much of it should be covered or uncovered depending on the degree of inhibition shown by the dog when adding a new covering element. He should always aim at reaching the point at which the dog signals confidently and fluently at a lid that is totally covered in rubble.
−   When reinforcing the dog's behavior, both the stuntman and keeper should bear in mind that it is crucial to convey the necessary degree of emotion. Their movements, voice intonation and petting must be full with the required excitement that will manage to intensely stimulate the dog.

4.2.2. Concealed Chest: 2nd Step

The signaling phase will end when the dog satisfactorily performs this exercise with another chest that is totally concealed and in a different location. Thus we should check whether the element rubble has acquired enough strength as a predictive stimulus for the dog.

−   The rubble used with the second chest must be different from that used with the first one, although obviously they will share similar basic features that should enable the dog to generalize.
−   One key factor when preparing these exercises is to always bear in mind that the stuntman must be able to remove the lid covered with rubble by him/herself. Thus, the weight and position of the elements lying on top of the lid must be controlled and the necessary trials at opening the chest should be carried out before starting the exercise.
−   When working with a concealed chest, all the stuntmen must wear the appropriate protective helmet and any other safety gear as required.
−   The stuntman should partially move the lid to give the dog immediate reinforcement. .

During the signaling phase, the following techniques should be used whenever necessary:

−   Gradual autonomy technique by the "mannequin effect"
−   Technique of innocuous re-establishment by sound insertion
−   Feasible localization technique by previous compensation of non-requested negative factors.

4.2. Single Search (One Buried Person) (Introductory Rubble heap and Rubble heap Working Site)

4.2.1. Introductory Rubble Heap

An introductory heap of rubble is that which does not exceed an approximate surface area of 50m2 and has a moderate height. The emotional activation factor is essential and must be applied in all the search exercises as a prior stimulus during the walk (several meters) before releasing the dog. The distance from the release point to the rubble heap should not be more than 25 m. For the first cover of the hideout, a fragment of wall or something similar should be used, and rubble should be placed over it until achieving a totally hermetic closure that prevents the dog from catching any glimpse of the stuntman or from reaching him/her. In the burials, you should also try to avoid any possible distinctive feature that might allow the dog to visually discriminate future work areas and its consequent detrimental association. When the stuntman removes the closure it might be very harmful for the dog to get any sort of negative impact from any element in the rubble that may lead to the consequent negative conditioning of the animal.

This circumstance must be prevented and controlled by means of previous rehearsals, as above mentioned. Dogs must remain inside their corresponding transport cages, in a waiting area without any possibility of catching sight of the working area. During this introductory rubble heap phase and during the first search in the rubble heap working site phase the stuntmen must continue to be people who are familiar to the dog. Later on, the stuntmen will be total strangers.

Dogs should not be allowed to become familiar with the working site in order to encourage the ability to adapt to new environments. In principle, they should feel attracted by the mere sight of the rubble heap, which after the concealed chest phase should have become a powerful predictive stimulus.

We have noticed that in some occasions, when dogs perceive the human scent of the buried person, they urinate or even defecate after the unavoidable relaxation of the sphincters prompted by the consequent emotional reaction. In some dogs there is an impairment of their barking ability, which they cannot properly control and that harmfully hinders the fluency of the barking signal. The frustration or anxiety during the search may at times be shown with repeatedly chewing grass or other objects.

4.2.2. Rubble Heap Working Site

Dogs that succeed to properly locate and signal the stuntman buried in the introductory rubble heap will then go on to work in larger areas. These are called rubble heap working sites.

We should gradually push dogs to search a longer distance. Although we should begin with a moderate distance from the release point to the buried person.

In those cases where the motivator is an object whose scent might be detrimental to the dogs search ability, it should be replaced by a plain stick or any another innocuous item (with no scent). Nevertheless, the intensity of the reinforcement should not be affected, since it might lead to avoidance actions when signaling buried persons.

The source of human scent that comes out of the rubble now is already becoming a powerful predictive stimulus for the dogs. - Just like other species, dogs have the capacity to respond in the same way to different stimuli that bear certain similarities. For this reason, it is feasible for them to generalize when faced with any rubble heap or different human scents.

At the rubble heap working site, the distance from the release point to the location of the buried person should gradually be increased. It is the dog's own motivation that will drive it to carry out the olfactory search for human scent molecules that will guide it towards the scent source, the stuntman buried in the rubble.

The instructor should determine:
− Suitability of the rubble area
− Location of the hideout
− Position of each dog's release point

Dogs should get used to searching for buried people by sniffing the air. To achieve this, we should gradually try to reduce the possibility of it using existing traces on the terrain to head towards the target, and these traces should not be associated with key localization signals. Sniffing the air is the only reliable procedure to search for buried people after a building collapse. The people moving around the rubble area during the set-up when digging out the hiding place and hiding the stuntman must follow a pre-set path in and out of the working area. The release point should always be on the opposite side of this path. Another resource that we regard as valid is to purposely cover the terrain with multiple traces. On the other hand, I have also noticed that certain dogs even use the traces left by the previous dog on the site as a means to find their way to the buried person.

This inconvenience can easily be overcome by a methodical control of the dog's searching turns.

I also noticed that certain dogs showed symptoms of stress (lack of vigor, inability to concentrate, increment in salivation, etc.) during their search exercises without any apparent cause. I managed to determine that the origin of this behavior laid in the male capture of female pheromones. This could have taken place in some other place and time (in the air, in the urine, etc.). Male dogs were affected by this circumstance for up to several weeks. During that time dogs are to be withdrawn from any activity demanding mental effort.

The hideout cannot be used more than once by the same dog, nor can the rubble heap once the corresponding burials have been completed. Under no circumstances should the dog ever be scolded in the rubble area. In this way we avoid, among other consequences, the possibility that this area becomes an inhibiting stimulus and might even slightly diminish its motivation or concentration.

The following techniques are applicable during this single search phase:
− Gradual autonomy by the mannequin effect

- -Techniques of Innocuous re-establishment by sound insertion.
- Feasible localization technique by compensation of negative factors.
- Support without request by restricted approximation.

4.3. Chained Search (Two or More Buried Persons)

We should begin the chained search learning process with only two buried stuntmen.

The two hideouts should be located in the rubble heap working site at an average distance of 50 meters from each other.

Once one of the two stuntmen has been signaled by the dog, the chained search technique by mimicked dissuasion of the buried person should be applied. At that moment, the keeper, as described in the single search puts on the leash to take the dog up to a middle point towards the second buried person. As soon as the second stuntman has been located and signaled he/she will complete the dog's reinforcement. Then he/she releases the dog again. In this way, we intend to ensure the dog's success in the second search and the consequent implementation of this new working pattern in its memory and conduct lines.

Since it is impossible to predict which of the two buried persons the dog is going to find first, the instructor should watch carefully and indicate the corresponding stuntman to reinforce.

When it has been confirmed that the dog properly performs the chained search behavior with two buried people, a third hideout and stuntman should be added. Again, an approximate distance of 50 meters from the other two should be kept.

We should continue applying the same basic mechanism, mimicked dissuasion with the first two stuntmen signaled and an especially intense reinforcement in the case of the third and last stuntman signaled. Several different search operations with a variable numbers of buried persons (one, five, six, etc.) should be performed by following this pattern. The stuntman who gives the reinforcement should also vary, but we must always bear in mind that the chained search comes to an end with the appearance of the main reinforcement (from the keeper and the stuntman).

Dogs gradually include this new pattern of chained searches into their behavior repertoire, and develop new expectations on the continuity of the search after a variable number of signaling acts where the main reinforcement appears unpredictably. This type of scenario actually becomes an additional stimulus for dogs.

Dogs should gradually be released nearer to the signal point itself.

Before each search indication, the dog will always be placed on the leash. This should get dogs into the habit of restarting the search action but not before the keeper has issued the search indication.

The following techniques will be applied in this chained search phase:

- Gradual autonomy technique by the mannequin effect

- Feasible locating technique by previous compensation of non-requested negative factors
- Calibrated reinforcement technique by triple control
- Chained search technique by mimicked dissuasion of the buried person

When the chained search behavior is deemed to be consolidated in the dog, we should gradually put dogs through different types of discriminatory training (olfactory, visual, etc.). Dogs should carry out searches under adverse circumstances (confinement, noise, etc.).

A moderate process of individualized intensification should always be applied. Once the initial training process has been completed, the dog will show an especially solid and effective level of autonomy, motivation and concentration during searches.

From here on, the following techniques should be permanently applied:

- Gradual autonomy technique by the mannequin effect
- Calibrated reinforcement technique by triple control
- Chained search technique by mimicked dissuasion of the buried person.

Acknowledgments

Approved by Legal Resolution No. 1998/41/12727 on 5 May 1998 by the Ministry of Education and Culture of Spain, in compliance with Royal Decree (1/1996, 12 April), that Arcon Method, (including among other content, the set of innovative behavioral techniques, training phases and corresponding denominations), whose author is Jaime Parejo Garcia, is duly registered and legally protected as scientific copyright in the General Registry of Intellectual Property under No. 23474.

References

[1]   http://www.metodoarcon.org/attachments/article/20/reconocimiento
      002.jpg

[2]   http://www.metodoarcon.org/attachments/article/20/reconocimiento
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