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COMPARATIVE PATHOBIOLOGY

Meeting the behavioral needs of kenneled dogs

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Behavior is a key component of animal welfare that both impacts and indicates welfare status (Mellor et al., 2020). Meeting the behavioral needs of an animal decreases stress and fear-related behaviors (Coppola et al., 2006; Shiverdecker et al., 2013) and improves coping ability (Ninomiya, 2014). For this reason, it is important that animals have the opportunity to engage in natural and rewarding behaviors, even when their physiological needs are already addressed (Jensen & Toates, 1993).

For example, animals need to forage and can benefit from doing so even when adequate food can be simply delivered in a bowl. Other examples of behavioral needs include nesting in sows (Arey, 1992), dustbathing in fowl (Olsson & Keeling, 2005), and social interactions in cows (Cook & Nordlund, 2004). Similarly, behavioral needs in domestic dogs include social interactions with people and other dogs, physical exercise, play with objects, and exploration of their environments. Engagement in these behaviors is critical for supporting dogs' mental and physical health (Protopopova et al., 2016). Therefore, everyone who cares for dogs, including dog breeders and kennel managers, can help ensure canine welfare by understanding and attending to the behavioral needs of their dogs.

Behavioral needs of domestic dogs

Social interactions and social bonds are important and beneficial for kenneled dogs (Croney et al., 2016). Dogs are social animals that have co-existed with humans for thousands of years. During early domestication, dogs were likely territorial scavenger-hunters with stable social groups (Ha & Campion, 2018). Most of these behaviors remain in modern dogs regardless of their purpose, appearance, or size (Ha & Campion, 2018). Dogs readily bond and interact positively with humans and other dogs (Croney et al., 2016). They also actively seek out attention and physical contact, initiate and engage in positive social behaviors, such as play, and show separation distress when isolated from each other or familiar people (Sommerville et al., 2017).

In addition to their social needs, all dogs benefit from opportunities to exercise off-lead, explore familiar and unfamiliar places, and play with objects (Rooney et al., 2009). Based on selection pressures on specific breeds, many dogs may be strongly motivated to also engage in certain behaviors, such as digging (in the case of terriers), chasing and catching small prey animals (sight hounds, terriers and many other breeds), and swimming and retrieving (retrievers and other water hounds) (Coppinger & Coppinger, 1998). These behavioral needs can be met by the provision of social opportunities, access to novel outdoor spaces, and environmental enrichment.

Benefits: Why meeting the behavioral needs of dogs matters

Dogs are socially complex, physically active, and have sophisticated cognitive abilities. Thus, providing them with opportunities and resources that allow them to engage in behaviors that they are highly motivated to perform helps support their behavioral and mental health (Lefebvre et al., 2007; Schipper et al., 2008). For example, positive interactions with caretakers and other dogs create stable, fear-free relationships that help dogs cope with stress (Mertens & Unshelm, 1996). Also, daily off-lead exercise in compatible groups helps to maintain dogs' healthy body condition, allows them to interact with their environments, interact and play with people and other dogs, release stress, and reduce or prevent behavioral problems (Lefebvre et al., 2007; Rooney et al., 2009). Social and object play help dogs stay active and mentally stimulated and can facilitate learning of social cues and other important behaviors (Sommerville et al., 2017). Chewing can help promote dental health and improve coping skills (Rooney et al., 2009), and exploring and learning about their surroundings provides dogs with regular mental stimulation needed to prevent chronic stress and behavioral problems (Titulaer et al., 2013).

Limited positive social interactions, insufficient physical or mental exercise, and barren or unstimulating environments can lead to behavioral problems, frustration, chronic stress, and poor physical health due to unmet behavioral needs (Beerda et al., 1999; Stephen & Ledger, 2010; Protopopova, 2016). Frustration in kenneled dogs is a powerful emotional stressor that can result in abnormal behaviors (e.g., stereotypic or repetitive behaviors) due to dogs' inability to cope with their environment (Stephen & Ledger, 2010; Protopopova, 2016). In one shelter study, pair-housed dogs engaged in play and positive interactions and, when separated, showed physiological signs of acute stress, restlessness, higher frequency of repetitive behaviors, increased barking, and an absence of play (Walker et al., 2014). Stereotypic behaviors such as pacing, spinning, circling. or wall-bouncing are commonly observed in many dogs in kennels and reflect their difficulty in coping with the environment (Protopopova, 2016; Stephen & Ledger, 2010). Engaging repeatedly in these behaviors has been demonstrated to elicit a cascade of neuroendocrine responses that can impair health, physical integrity, and reproductive success at several levels (Mason & Rushen, 2006). As this is counterproductive for breeding kennels, it is particularly important for kennel managers and caretakers of dogs in breeding programs to make every effort to minimize distress and maximize their ability to meet their dogs' behavioral needs. Meeting the behavioral needs of kenneled dogs and puppies is crucial for good welfare (Croney et al., 2016; Garvey et al., 2016).

Application: Meeting the behavioral needs of dogs in kennels

Managing and designing kennel environments (exercise yards, home pens, and whelping pens) with welfare in mind can result in spaces that are more interesting, more comfortable, and less stressful for dogs.

To meet the social behavioral needs of dogs, kennels should be sized to accommodate pair or group housing and provide easy caretaker access that promotes positive social interactions. Housing dogs in compatible, well-managed groups can increase physical activity (running and playing) and exploration of surroundings while minimizing repetitive behaviors (Hubrecht et al., 1992; Mertens & Unshelm, 1996). Ensuring frequent, positive human-dog interactions (e.g., providing treats, gentle petting when walking by, handling, and playing) can enhance dog well-being by meeting their social needs (Rooney et al., 2009). Even 30 minutes of petting or play

with an unfamiliar person can reduce levels of stress and excessive barking in kenneled dogs (Shiverdecker et al., 2013).

Training using positive reinforcement (e.g., offering treats for desirable behaviors) is another form of social interaction that supports positive relationships with caretakers while also stimulating dogs mentally and physically (Rooney et al., 2009). Caretakers can also engage gently with fearful dogs and gradually create a positive association with human interactions (Rooney et al., 2009). Puppies, especially between 3 to12 weeks of age, can be given frequent, short opportunities for positive interactions with unfamiliar dogs and people. This type of socialization helps puppies learn what is safe and builds the confidence needed to interact with their caretakers, strangers, and other dogs (Titulaer et al., 2013). Indeed, well-socialized dogs interact confidently with their environments, other animals, and unfamiliar people (Pritchett et al., 2021). Croney et al. (2016) and Garvey et al. (2016) provide more detailed information on the basics of puppy socialization and social interactions for adult dogs.

Physical exercise is a behavioral need for dogs that can be met in the kennel environment through the incorporation of outdoor access to living spaces, external play yards, social housing, and ample enrichment through complex environments. Caretaker interactions of play, training, and walking can also engage dogs in physical exercise. Appropriate types and amounts of exercise needed by dogs will vary by age, breed, and individual. It is important that caretakers are mindful in providing and managing exercise in a safe way. Further information regarding the provision of exercise for kenneled dogs can be found in Hurt et al. (2015).

Environmental enrichment can also meet the behavioral needs of dogs by enabling engagement in a higher variety of behaviors, resulting in an increase in normal behavior patterns and a decrease in abnormal behaviors. For kenneled dogs, staying physically active is paramount to building up endurance, developing and maintaining a healthy body condition, and releasing stress. These are key aspects to supporting their mental and physical health, which is particularly important to set up breeding dogs for success during their breeding careers, including before conception, during pregnancy, and throughout lactation and whelping. Enrichment activities stimulate dogs to stay active, engage in behaviors that they find relaxing and rewarding (e.g., object play, exploring, interacting with their environments) (Schipper et al., 2008; Sommerville et al., 2017), and can reduce and prevent behavioral problems (Sonntag & Overall, 2014).

For example, offering feeding enrichment toys twice a day can decrease barking and repetitive behaviors in kenneled dogs (Schipper et al., 2008). Food puzzles also encourage physical exercise, food-seeking and oral behaviors, the development of problem-solving and coping skills, and the reduction of behavioral problems (Ha & Campion, 2018).

Beyond simply avoiding behavioral problems, enrichment can also add predictability, consistency, and sense of control over a dog's environment. Therefore, whenever it is feasible, enrichment should be incorporated into daily management practices through modifications of dogs' social, nutritional, occupational, sensory, and physical environments. Garvey et al. (2016) and Croney et al. (2021) offer detailed reviews of the applications of enrichment to kenneled dog welfare.

Conclusion

Meeting dogs' behavioral needs includes allowing them to engage in positive interactions with people and other dogs, exercise regularly and freely, and explore objects and their surroundings. Expressing these natural behaviors results in improved canine welfare through decreased stress and improved coping ability. Understanding and accommodating the behavioral needs of kenneled dogs is necessary for them to thrive physically and emotionally while avoiding threats to their welfare. Consequently, it is critical that caretakers utilize routine management practices, such as enrichment, that address the behavioral needs of all dogs in their care.

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