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The Influence of Activity Space on the Behavior of Giant Pandas (*Ailuropoda melanoleuca*) in Captivity

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Abstract: We studied the impact of activity space on the estrous behaviors of 11 healthy adult female and 3 adult male giant pandas with natural mating ability from the Beijing, Lanzhou, and Chengdu Zoos, and the Chengdu Giant Panda Breeding Center during their non-mating and mating seasons from November of 1999 to May of 2003. We compared the frequencies of estrous behavior and activities of giant pandas that were kept in activity spaces of various sizes during their estrous period. We found that the frequency of estrous behavior and other activities of the female and male giant pandas kept in a large activity space were significantly higher than those of the pandas kept in small pens ($P < 0.05$). When the giant pandas were kept in small pens ($< 12 \text{ m}^2$), estrous behavior occurred less frequently. Once the captive giant pandas were released into a larger playground ($> 200 \text{ m}^2$), their estrous behaviors were expressed at higher frequencies. If the giant pandas were again confined in small pens, the frequency of their estrous behaviors would decrease. This reversibility of estrous behavior of the giant pandas proved that a small activity space suppressed the estrous behavior of giant pandas in captivity and that the elasticity of their estrous behavior was great. Therefore, providing larger activity spaces to giant pandas in captivity will enable them to fully express their behaviors, especially estrous behavior.

Key Words: Giant panda (*Ailuropoda melanoleuca*), activity space, behavioral elasticity, behavioral rigidity, estrous behavior

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