

# Playful handling reduces stress associated with repeated intra-peritoneal injections in male rats

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To avoid adverse effects on animal welfare and experimental outcomes, it is desirable to perform routine veterinary procedures in a manner that minimizes negative perceptions by the animals. People can tickle laboratory rats in a manner that mimics rough-and-tumble play. Like social play, tickling can induce a positive motivational state in juvenile rats. We hypothesized that pairing of a stressful procedure, such as an intra peritoneal (i.p.) injection, with a positive experience, such as tickling, decreases stress associated with repeated exposure to the procedure. Rats received one of two early handling treatments from 25-46 days of age: standard (C) (weekly cage cleaning) or tickling for two minutes daily (T) and, at 85-95 days of age, one of three injection handling treatments for two minutes prior to and following an i.p. injection: tickling (T), passive hand (H), or no handling (C), for a total of five treatment groups (CC, CH, CT, TH, TT). Tickled rats (CT, TH, TT) tended to emit fewer audible (negative) vocalizations when injected (Mixed model ANOVA,  $F_{4, 54}=5.97$ ,  $P<0.05$ ), and more 50KHz (positive) vocalizations prior to ( $F_{4, 54}=11.24$ ,  $p<.05$ ) and following ( $F_{4, 54}=11.29$ ,  $P<0.05$ ) injection, and to require less time to inject ( $F_{4, 54}=2.57$   $p<0.05$ ) than rats that were never tickled (CC, CH). Our results indicate that positive handling (tickling) can reduce stress associated with repeated injections.