

## **Testosterone Treatment Does Not Facilitate Prefrontal Cortex Mediated Cognition in Male Marmosets (*callithrix jacchus*)**

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Aging in men is associated with decreases in serum testosterone (T) and a decline in cognitive abilities. We sought to clarify the relationship between T, aging and cognition using the common marmoset (*callithrix jacchus*), which has been shown to be a useful model of human aging. Ten castrated male marmosets (ages 3-8) were given weekly injections of either T cypionate dissolved in cottonseed oil (T, n = 5) or cottonseed oil alone (controls, n = 5). Cognitive function was assessed with two tasks, the object reversals (OR) and the delayed response (DR). Marmoset behavior was recorded twice daily using a modified frequency scoring system, measuring 20 target behaviors in 15-s intervals over 5-min. For the OR task, no effect of group ( $F(1,8) = .51, p = .50$ ), reversal ( $F(3,24) = .527, p = .67$ ), or group x reversal interactions ( $F(3,24) = .640, p = .60$ ) was found in the number of correct trials. There was a significant effect of outcome on response latency, with all monkeys having longer latencies on incorrect trials ( $F(1,2451) = 45.36, p < .001$ ). Although there was a main effect of delay ( $F(4,32) = 8.779, p < .001$ ) on the DR task, there was no effect of treatment ( $F(1,8) = .65, p = .81$ ) or an interaction treatment x delay ( $F(4,32) = .445, p = .76$ ). No significant difference between the groups was found on any of the behaviors measured, however, the T-treated marmosets tended to spend more time eating than the controls ( $t(8) = 2.239, p = .056$ ). Overall, the lack of effect for T treatment on these cognitive tasks is consistent with previous studies in macaques and men and suggest that T does not facilitate prefrontal cortex-mediated cognition in male marmosets.