

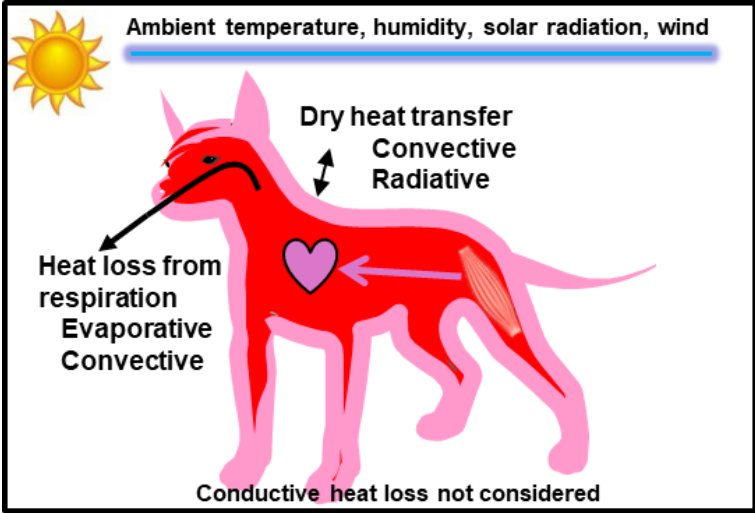


# A Canine Thermal Model for mitigation of heat strain in working dogs



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The Canine Thermal Model (CTM) simulates core temperature ( $T_c$ ) of a dog during exercise and recovery. It was validated against  $T_c$  of military working dogs (MWDs) during detection and patrol training.



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O'Brien, C., A.J. Karis, W.J. Tharion, H.M. Sullivan, R.W. Hoyt. Core Temperature responses of military working dogs during training activities and exercise walks. *AMEDD J* Oct-Dec: 71-78, 2017

Berglund, L.G., Yokota, M., Santee, W.R., Endrusick, T.L., Potter, A.W., Goldman, S.J., Hoyt, R.W. Predicted thermal responses of military working dog (MWD) to chemical, biological radiological, nuclear (CBRN) protective kennel enclosure. U.S. Army Research Institute of Environmental Medicine Technical Report T11-03, Natick, MA, 2011.

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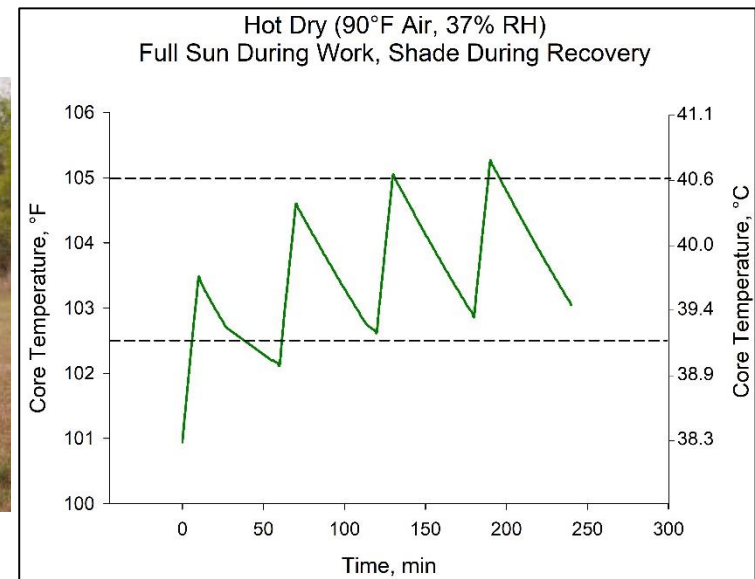
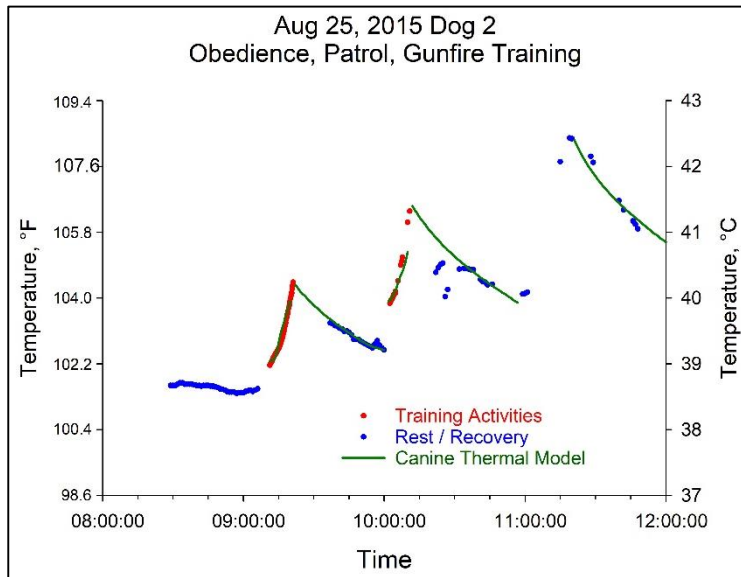


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The CTM can be used to develop work / rest cycles, allowing training to be accomplished while avoiding excessive heat strain.



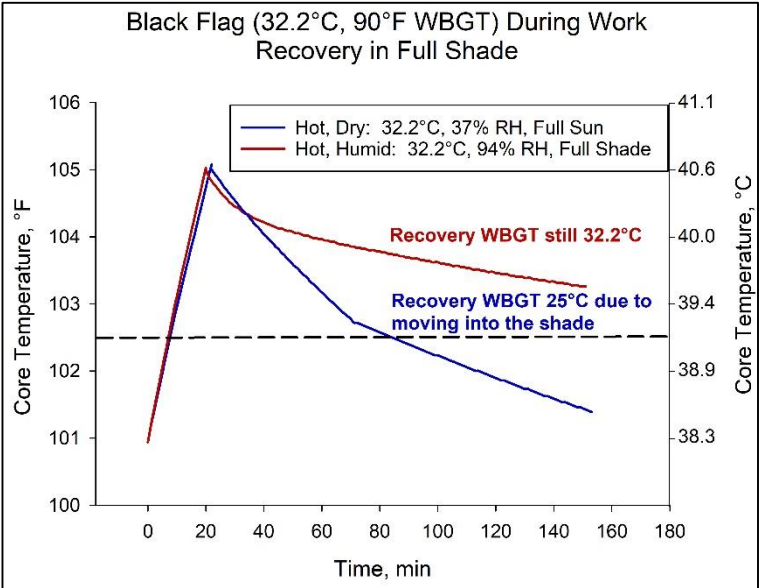


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The CTM can demonstrate the impact of environmental conditions, such as hot, dry vs hot, humid, and the importance of providing shade for recovery.





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The CTM is not intended to be a substitute for direct measurement of  $T_c$ , but can improve planning for effective completion of missions.



Potential research applications of the CTM include predicting  $T_c$  associated with performance degradation, or screening dogs for heat tolerance.

