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**Qingkai Kong** and **Min Wang\*** (mwang@math.niu.edu), Department of Mathematical Sciences, Northern Illinois University, DeKalb, IL 60115. *Positive solutions of even order periodic boundary value problems.*

We study a class of periodic boundary value problems associated with even order differential equations. By applying the Krasnosel'skii fixed point theorem and the fixed point index theory, we establish a series of criteria for the problem to have one, two, arbitrary number, and even an infinite number of positive solutions. Criteria for the nonexistence of positive solutions are also derived. These criteria are given by explicit conditions which are easy to verify. Several examples are provided to show the applications. Our results extend, improve, and supplement many results in the literature, even for the second order case. (Received September 21, 2009)