A finite $p$-group $G$ is called powerful if either $p$ is odd and $[G, G] \subseteq G^p$ or $p = 2$ and $[G, G] \subseteq G^4$. We will discuss results that bound the nilpotency class of a powerful $p$-group in terms of the exponent of a quotient by a normal subgroup. This is a joint work with Ilir Snopche and Slobodan Tanushevski. (Received September 25, 2017)