Let $A \subseteq FG$ and $B \subseteq FH$ be two block algebras of finite groups $G$ and $H$ over an algebraically closed field $F$ of characteristic $p > 0$. A $p$-permutation equivalence between $A$ and $B$ is an element in the representation group of $(A, B)$-bimodules that are direct summands of permutation bimodules and have twisted diagonal vertices. These equivalences, although only elements in a representation group, preserve all relevant invariants of blocks. We recall definitions and properties of $p$-permutation equivalences and report on new work on the finite group of auto-equivalences of blocks with a complete result for cyclic defect groups. This is joint work with Philipp Perepelitsky. (Received September 15, 2019)