Means of iterates

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We determine continuous bijections f, acting on a real interval into itself, whose k-fold iterate is the quasi-arithmetic mean of all its subsequent iterates from f^0 up to f^n (where $0 \leqslant k \leqslant n$). Namely, we prove that if at most one of the numbers k, n is odd, then such functions consist of at most three affine pieces.