Ji Young Choi* (jychoi@ship.edu). Minimum $P_k$-total weights of graphs. Preliminary report. For a positive integer $k$, the $P_k$-total weight for a $\pm 1$-edge assigned graph $G$ is the absolute value of the sum of the weights for every possible non-cyclic path of length $k$. The minimum $P_k$-total weight of a graph $G$ is defined as the minimum of the $P_k$-total weight of $G$, considering every possible $\pm 1$-edge assignment. This talk presents the minimum $P_k$-total weights for several simple connected graphs to find its bounds and the sufficient conditions for 0 minimum $P_k$-total weight. (Received September 22, 2010)