Hamdullah Şevli* (hsevli@yahoo.com), Department of Mathematics, Faculty of Arts, and Sciences, Yüzüncü Yıl University, 65080 Van, Merkez, Turkey. Absolute summability methods.

A lower triangular infinite matrix is called a triangle if there are no zeros on the principal diagonal. Denote by $A_k$ the sequence space defined by

$$A_k = \left\{ \{s_n\} : \sum_{n=1}^{\infty} n^{k-1} |a_n|^k < \infty, \ a_n = s_n - s_{n-1} \right\} \text{ for } k \geq 1.$$

A matrix $T$ is said to be a bounded linear operator on $A_k$, written $T \in B(A_k)$, if $T : A_k \to A_k$. In [G. Das, A tauberian theorem for absolute summability, Proc. Cambridge Philos. Soc. 67 (1970), 321-326], Das defined such a matrix to be absolutely $k$-th power conservative for $k \geq 1$. In a recent paper [E. Savaş, H. Şevli and B.E. Rhoades, Triangles which are bounded operators on $A_k$, to appear in Acta Math. Hungar.], the author jointly with Savaş and Rhoades obtained a minimal set of sufficient conditions for a triangle $T \in B(A_k)$. In this paper we extend this result to double infinite matrices. As special summability methods $T$ we consider weighted mean and double Cesàro, $(C,1,1)$, methods. (Received August 02, 2007)