Abstract. Let α be the supremum of all δ such that there is a sequence $\langle A_n\rangle_{n=1}^{\infty}$ of measurable subsets of $(0,1)$ with the property that each A_n has measure at least δ and for all $n,m\in\mathbb{N}$, $A_n\cap A_m\cap A_{n+m}=\emptyset$. For $k\in\mathbb{N}$, let α_k be the corresponding supremum for finite sequences $\langle A_n\rangle_{n=1}^{k}$. We show that $\alpha=\lim\limits_{k\to\infty}\alpha_k$ and find the exact value of α_k for $k\leq 41$. In the process of finding these exact values, we also determine exactly the number of maximal sum free subsets of $\{1,2,\ldots,k\}$ for $k\leq 41$. We also investigate the size of sets $\langle A_x\rangle_{x\in S}$ with $A_x\cap A_y\cap A_{x+y}=\emptyset$ where S is a subsemigroup of $\big((0,\infty),+\big)$.