It is shown that a locally compact second countable group G has the Haagerup property if and only if there exists a sharply weak mixing 0-type measure preserving free G-action $T = (T_g)_{g\in G}$ on an infinite σ-finite standard measure space (X, μ) admitting a T-Følner sequence (i.e. a sequence $(A_n)_{n=1}^{\infty}$ of measured subsets of finite measure such that $A_1 \subset A_2 \subset \cdots$, $\bigcup_{n=1}^{\infty} A_n = X$ and

$$\lim_{n\to\infty} \sup_{g\in K} \frac{\mu(T_g A_n \triangle A_n)}{\mu(A_n)} = 0$$

for each compact $K \subset G$). A pair of groups $H \subset G$ has property (T) if and only if there is a μ-preserving G-action S on X admitting an S-Følner sequence and such that $S \restriction H$ is weakly mixing. These refine some recent results by Delabie-Jolissaint-Zumbrunnen and Jolissaint.