Summary: We study the behavior of $\Upsilon_K(t)$ under the cabling operation, where $\Upsilon_K(t)$ is the knot concordance invariant defined by Ozsváth, Stipsicz, and Szabó, associated to a knot $K \subset S^3$. The main result is an inequality relating $\Upsilon_K(t)$ and $\Upsilon_{K_{p,q}}(t)$, where $K_{p,q}$ denotes the $(p,q)$-cable of $K$. This result generalizes the inequalities of Hedden and Van Cott on the Ozsváth-Szabó $\tau$-invariant. As applications, we give a computation of $\Upsilon(T_2, -3)_{2,2n+1}(t)$ for $n \geq 8$, and we show that the set of iterated $(p,1)$-cables of $\text{Wh}^+(T_2,3)$ for any $p \geq 2$ span an infinite-rank summand of topologically slice knots.

MSC:

57K18 Homology theories in knot theory (Khovanov, Heegaard-Floer, etc.)
57R58 Floer homology

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Upsilon invariant; knot concordance; cable; knot Floer homology

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