We construct a discrete version of the Conley index over a base defined by Mrozek, Reineck and Srzednicki for flows. We state and prove its properties. The index generalizes the homotopy Conley index defined by Szymczak.

We also construct the Conley index over a phase space for flows. We compare it to other Conley-type indices and prove its continuation property.

We define an additional operation of the external multiplication on the cohomological Mrozek index. The construction is based on the notion of the Conley index over a phase space. We show how to apply the external multiplication to solve the problem of continuation of two isolated invariant sets.