Brain plasticity, defined as the capability of cerebral neurons to change in response to experience, is fundamental for behavioral adaptability, learning, memory, functional development, and neural repair. The visual cortex is a widely used model for studying neuroplasticity and the underlying mechanisms. Plasticity is maximal in early development, within the so-called critical period, while its levels abruptly decline in adulthood [1]. Recent studies, however, have revealed a significant residual plastic potential of the adult visual cortex by showing that, in adult humans, short-term monocular deprivation alters ocular dominance by homeostatically boosting responses to the deprived eye [2-4]. In animal models, a reopening of critical period plasticity in the adult primary visual cortex has been obtained by a variety of environmental manipulations, such as dark exposure, or environmental enrichment, together with its critical component of enhanced physical exercise [5-8]. Among these non-invasive procedures, physical exercise emerges as particularly interesting for its potential of application to clinics, though there has been a lack of experimental evidence available that physical exercise actually promotes visual plasticity in humans. Here we report that short-term homeostatic plasticity of the adult human visual cortex induced by transient monocular deprivation is potently boosted by moderate levels of voluntary physical activity. These findings could have a bearing in orienting future research in the field of physical activity application to clinical research.