

## ABSTRACT

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The Effects of Physical Activity and Exercise Therapy on Pediatric Brain Tumor Survivors: A systematic review.

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Pediatric brain tumors are commonly established with late effects such as poor Gross Motor ability, cerebellar motor dysfunction and cognitive deficits that can significantly affect the children's physical and mental ability as well as their quality of life. The aim of the present systematic review is to investigate the effects of exercise therapy on the complications and late effects arising from the nature of brain tumor and its different treatments in survivors from pediatric brain tumors. Six databases, of Embase, Med line, Cochrane Central Database, PubMed, CINAHL and Elsevier from 2000 up to October 2020 were searched for the studies focusing on the effects of exercise therapy in pediatric brain tumor following different treatment procedures. After applying the inclusion and exclusion criteria, nine out of 224 articles were included for the present systematic review. The articles were rated based on PEDro scales for methodological assessment. The study revealed that the children who survived from brain tumors commonly suffer from damage to hippocampus, cortex and the white matter. The results of systematic analysis also showed that physical exercises would likely help the formation of normal sensorimotor experiences, justifying children's better performance in cognitive tests and eventually promoting their quality of life. The literature also indicated that improvements in motor proficiency and physical fitness after exercise therapy were consistent with such MRI results as increase in the right somatosensory cortical thickness, increased FA in corpus callosum, in the right corticospinal pathway as well as in cingulum. Research voids and recommendations for further investigations were finally presented.

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