

INPLASY

A Scoping Review of Exercise Oncology in Primary Brain Tumor Patient-Caregiver Dyad

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ADMINISTRATIVE INFORMATION

Support - NA.

Review Stage at time of this submission - vohu@ohsu.edu.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 3 February 2026 and was last updated on 3 February 2026.

INTRODUCTION

Review question / Objective To evaluate the existing literature on exercise interventions on primary brain tumor patient-caregiver dyads.

Background Primary malignant brain tumors (PBT) impose substantial burdens on patients and caregivers. Caregivers are essential in the delivery of outpatient care for patients with PBT but experience high levels of fatigue, distress, and health decline. While exercise is known to improve outcomes in cancer patients, interventions tailored specifically to the PBT patient-caregiver dyad remain limited. Dyadic intervention as well as exercise oncology are emerging areas of active research in neuro-oncology. This scoping review incorporates both principles to evaluate the existing literature on exercise interventions on primary brain tumor patient-caregiver dyads.

Rationale Dyadic intervention as well as exercise oncology are emerging areas of active research in

neuro-oncology. This scoping review incorporates both principles to evaluate the existing literature on exercise interventions on primary brain tumor patient-caregiver dyads.

METHODS

Strategy of data synthesis We conducted a comprehensive search of MEDLINE (PubMed), Embase, CINAHL (EBSCO), Rehabilitation & Sports Medicine (EBSCO), and Cochrane Central (Ovid) in December 2025 for studies involving exercise interventions that included adult PBT patients and caregivers. Risk of bias was assessed using the GRADE (Grading of Recommendations Assessment, Development, and Evaluation) framework.

Eligibility criteria We conducted comprehensive searches of MEDLINE (PubMed), Embase, CINAHL (EBSCO), Rehabilitation & Sports Medicine (EBSCO), and Cochrane Central (Ovid) on December 17th 2025 including all articles available up to that date (figure 1). ClinicalTrials.gov and the

WHO International Clinical Trials Registry Platform (ICTRP) were searched for completed and ongoing trial records. We searched broadly across three main concepts: “primary brain tumor,” “caregiver,” and “exercise.” To capture all relevant articles, multiple synonyms and term variations were developed for each concept. Both index terms and keywords were incorporated into the search strategy. No publication date or language limits were applied. The full search strategies, are included in supplemental file 1. Gray literature was explored by manually reviewing reference lists of included studies and examining conference abstracts. References were managed using Zotero.

Source of evidence screening and selection All titles and abstracts identified in the initial database search were independently screened. Studies were included if they met the following criteria: (1) focused on adult primary brain tumors, (2) employed a dyadic intervention or involved the caregiver, and (3) incorporated an exercise oncology component such as a physical activity program. Articles and abstracts were excluded if they were systematic reviews or case studies.

Data management Data was managed using Zotero.

Reporting results / Analysis of the evidence Early evidence indicates dyadic exercise interventions can improve quality of life in PBT dyads. Larger randomized trials with objective endpoints are needed to define efficacy and guide evidence-based protocols. Of note, the identified studies focused on patients with a component of dyadic intervention, while caregivers were included mainly as participants rather than being the focus of dyadic interventions designed to strengthen the patient-caregiver relationship. Future trials looking at programs focused on the dyadic component of exercise to enhance communication, foster teamwork, as well as improve physical and mental wellbeing within the PBT patient-caregiver dyad are warranted.

Presentation of the results Plan to publish as a manuscript with 2 tables summarizing the data.

Language restriction English only.

Country(ies) involved United States.

Keywords primary brain tumor; CNS tumor; caregiver; dyad; exercise; physical activity.

Dissemination plans Plan to publish.

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