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Transcranial photo biomodulation and its effect on improving the impairments, activities and participation among people with autism spectrum disorders: A systematic review.

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ADMINISTRATIVE INFORMATION

Support - King Khalid University.**Review Stage at time of this submission** - Preliminary searches.**Conflicts of interest** - None declared.**INPLASY registration number:** INPLASY2025120100

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 30 December 2025 and was last updated on 30 December 2025.

INTRODUCTION

Review question / Objective Effect of transcranial photobiomodulation on improving the impairments, activities, and participation among people with autism spectrum disorders.

Rationale Current literature does not satisfyingly explain the details of photobiomodulation, its effects, methods of usage, treatment parameters, etc. Hence we need a systematic review to clarify these details especially among subjects with autism.

Condition being studied Autism and Autism spectrum disorders.

METHODS

Search strategy Search terms used will be photobiomodulation, low-level laser therapy, transcranial low-level laser therapy, red light stimulation, autism, autism spectrum disorders,

impairments, clinical features, activities of daily living, quality of life, participation. The electronic database used for the search strategy are PubMed, Cochrane Library, Embase, Scopus, Web of Science, PsycINFO, CINAHL, Google Scholar, ClinicalTrials.gov, LILACS, and Medline etc.

Participant or population People with Autism and Autism spectrum disorders.

Intervention Photobiomodulation, low-level laser therapy, transcranial low-level laser therapy, red light stimulation, Light Emitting Diode (LED) Therapy, Laser Biostimulation, Photon Therapy, Soft Laser Therapy, Low-Level Light Therapy, Infrared Light Therapy, Bio-light Therapy, and neuro-laser therapy.

Comparator Conventional physical therapy, conventional occupational therapy, conventional speech therapy, behavioural therapy, special education, and sensory integration, etc.

Study designs to be included Case studies, Observational studies, Experimental studies, Randomised controlled trials.

Eligibility criteria Subjects with autism or autism spectrum disorders, any age group, and any gender are included.

Information sources Literature is available in any format in electronic databases, contact with authors, trial registers, or grey literature will be included for the systematic review.

Main outcome(s) Impairments like social interaction, communication, motor problems, and repetitive behavior. Activities like activities of daily living and movement patterns. Participation in school, play, community and quality of life.

Additional outcome(s) Clinical features of autism and behaviours of autism.

Data management Data will be managed by the primary investigator and corresponding authors. Since it is not the original data from this study, the information will be shared on request.

Quality assessment / Risk of bias analysis NIH study quality assessments like Quality Assessment of Controlled Intervention Studies, Quality Assessment of Systematic Reviews and Meta-Analyses, Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies, Quality Assessment of Case-Control Studies, Quality Assessment Tool for Before-After (Pre-Post) Studies With No Control Group will be used. Quality Assessment Tool for Case Series Studies.

Strategy of data synthesis The included studies will be thoroughly analyzed by using a checklist by two authors, and any discrepancies in the obtained information will be sorted by experienced investigators. Tables and graphs will be plotted with obtained data.

Subgroup analysis In case more studies are obtained in each age group, like children, adolescents, and adults, then subgroup analysis will be done using this criteria.

Sensitivity analysis Based on the inclusion criteria, the data obtained in them, quality of the research, the level of evidence will be made by our systematic review.

Language restriction Studies published in english language only will be selected for this systematic review.

Country(ies) involved India and Saudi Arabia.

Other relevant information Nil.

Keywords photobiomodulation, low-level laser therapy, transcranial low-level laser therapy, red light stimulation, autism, autism spectrum disorders, impairments, clinical features, activities of.

Dissemination plans The study results will be published in a peer-reviewed journal.

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