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Motor imagery in children and adolescents with neurodevelopmental disorders: a systematic review

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ADMINISTRATIVE INFORMATION

Support - This research received no external financial support.

Review Stage at time of this submission - The review has not yet started.

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 28 December 2025 and was last updated on 28 December 2025.

INTRODUCTION

Review question / Objective P: children and adolescents with neurodevelopmental disorders. I: Motor imagery and motor imagery based interventions. C: No intervention, alternative interventions, or pre-post comparisons. O: motor imagery ability and motor performance. S: experimental and interventional study design.

Rationale Motor imagery is a key cognitive-motor process implicated in motor planning and learning. Given that neurodevelopmental disorders are associated with impairments in internal action representation, examining motor imagery in children and adolescents provides important insights into both developmental mechanisms and intervention potential. The inclusion of diverse interventional study designs is warranted duo to methodological and feasibility constraints inherent to this population.

Condition being studied Participants were children and adolescents diagnosed with neurodevelopmental disorders.

METHODS

Search strategy "autism spectrum disorder*" OR "autism" OR "ASD" OR "asperger*" OR
"pervasive developmental disorder not otherwise specified" OR
"attention-deficit/hyperactivity disorder*" OR "ADHD" OR "ADD" OR
"intellectual disabilit*" OR "down syndrome" OR "motor disorder*" OR
"developmental coordination disorder*" OR
"specific learning disorder*" OR "learning disabilit*" OR
"communication disorder*" OR
"neurodevelopmental disorder*" OR "developmental disorder*"
"child*" OR "adolescen*" OR "kindergarten" OR "teen*" OR "youth" OR
"young people" OR "young person" OR "student*"

"motor imagery" OR "imagery practice" OR "mental practice" OR
"mental imagery" OR "mental training".

Participant or population The population of interest included children and adolescents with neurodevelopmental disorders.

Intervention Motor imagery assessment or motor imagery-based intervention.

Comparator Participants in the comparison group received an alternative intervention.

Study designs to be included Experimental and interventional study design.

Eligibility criteria
Studies involving adults only
Studies focusing on conditions other than neurodevelopmental disorders
Purely observational or qualitative studies without intervention
Review articles, editorials, or conference abstracts
Studies not published in peer-reviewed journals.

Information sources Pudmed; Scopus.

Main outcome(s) Primary outcomes included measures of motor imagery ability and motor performance.

Additional outcome(s) Additional outcomes included cognitive measures related to motor imagery processes.

Data management Data were extracted using a standard data extraction form and stored in a password-protected database. Two reviewers independently verified the extracted data, and discrepancies were resolved through discussion.

Quality assessment / Risk of bias analysis The methodological quality and risk of bias of the included studies were independently assesses by two reviewers using appropriate tools based on study designs.

Strategy of data synthesis Due to heterogeneity in study designs, interventions, and outcome measures, a quantitative meta-analysis was not feasible. Therefore, a narrative synthesis was employed.

Subgroup analysis Subgroup analysis refers to the examination of outcomes within specific subsets of participants or studies to explore potential differences across groups.

Sensitivity analysis A formal sensitivity analysis was not performed due to the descriptive nature of the narrative synthesis.

Language restriction Only studies published in English were included in this review.

Country(ies) involved Taiwan only.

Other relevant information Other relevant information is extracted where available.

Keywords Motor imagery, neurodevelopmental disorders, imagery training, mental practice, motor representation.

Dissemination plans The results will be disseminated through peer-reviewed publications.

Contributions of each author
Author 1 - Hung-chen Lu - Conceptualization; Methodology; Investigation; Data curation; Formal analysis; Writing – Original Draft.
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Author 2 - Chueh Ting-Yu - Conceptualization; Methodology; Validation; Supervision; Writing – Review & Editing.
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