

Supplementary Table S1. Complete database-specific search strategies used in the systematic review

Database	PubMed (MEDLINE)
Search date	18 July 2026
Coverage period	2020/1/1 - 2026/5/31
Search fields	MeSH + Title/Abstract
Filters applied	English, Exclude preprints
Complete search strategy	("Exosomes"[Mesh] OR exosome*[Title/Abstract] OR "Extracellular Vesicles"[Mesh] OR "extracellular vesicle*" [Title/Abstract]) AND ("Exercise"[Mesh] OR exercise*[Title/Abstract] OR "physical activity"[Title/Abstract] OR training[Title/Abstract] OR aerobic[Title/Abstract]) AND ("Nervous System Diseases"[Mesh] OR "Brain Injuries"[Mesh] OR stroke[Title/Abstract] OR "traumatic brain injury"[Title/Abstract] OR "brain injury"[Title/Abstract] OR Alzheimer*[Title/Abstract] OR Parkinson*[Title/Abstract] OR "multiple sclerosis"[Title/Abstract] OR "spinal cord injury"[Title/Abstract] OR "cerebral palsy"[Title/Abstract])
Database	Scopus
Search date	18 July 2026
Coverage period	2020-2026
Search fields	TITLE-ABS-KEY
Filters applied	Article Language: English;
Complete search strategy	TITLE-ABS-KEY ((exosome* OR "extracellular vesicle*" OR "small extracellular vesicle*") AND (exercise* OR "physical activity" OR training OR "aerobic exercise") AND ("nervous system disease*" OR "neurological disorder*" OR stroke OR "brain injury" OR "traumatic brain injury" OR Alzheimer* OR Parkinson* OR "multiple sclerosis" OR "spinal cord injury" OR "cerebral palsy")) AND LANGUAGE (English) AND (LIMIT-TO (LANGUAGE , "English"))
Database	Web of Science Core Collection
Search date	18 July 2026
Coverage period	2020-2026
Search fields	-
Filters applied	Language: English;
Complete search strategy	(exosome* OR "extracellular vesicle*" OR "small extracellular vesicle*") AND (exercise* OR "physical activity" OR training OR "aerobic exercise") AND ("nervous system disease*" OR "neurological disorder*" OR stroke OR "brain injury" OR "traumatic brain injury" OR Alzheimer* OR Parkinson* OR "multiple sclerosis" OR "spinal cord injury" OR "cerebral palsy")

Supplementary Table S2: Quality assessment of the included studies (SYRCLE risk of bias).

Study	Sequence generation (Selection bias)	Baseline characteristics (Selection bias)	Allocation concealment (Selection bias)	Random housing (Performance bias)	Blinding caregivers/investigators (Performance bias)	Random outcome assessment (Detection bias)	Blinding outcome assessment (Detection bias)	Incomplete outcome data (Attrition bias)	Selective outcome reporting (Reporting bias)	Other bias	Overall
Chen et al. (2026)	Low	Low	Unclear	Unclear	Unclear	Unclear	Unclear	Unclear	Low	Low	Not Applicable
Citron et al. (2026)	Low	Unclear	Unclear	Unclear	Unclear	Unclear	Unclear	Low	Low	Low	Not Applicable
Gao et al. (2026)	Low	Low	Unclear	Low	Low	Unclear	Low	Low	Low	Low	Not Applicable
Lin et al. (2026)	Low	Low	Unclear	Unclear	Unclear	Low	Low	Low	Low	Low	Not Applicable
Miyauchi et al. (2026)	Low	Low	Unclear	Unclear	Unclear	Low	Low	Low	Low	Low	Not Applicable
Takeda et al. (2026)	Low	Low	Unclear	Unclear	Unclear	Unclear	Low	Low	Low	Low	Not Applicable
Ying et al. (2026)	Low	Low	Unclear	Unclear	Unclear	Unclear	Low	Low	Low	Low	Not Applicable
Citron et al. (2025)	Low	Low	Unclear	Unclear	Unclear	Unclear	Unclear	Low	Low	Low	Not Applicable
Fuller et al. (2025)	Low	Low	Unclear	Unclear	Unclear	Unclear	Low	Low	Low	Low	Not Applicable
Song et al. (2025)	Low	Low	Unclear	Low	Unclear	Unclear	Unclear	Low	Low	Low	Not Applicable
Huang et al. (2024)	Unclear	Unclear	Unclear	Unclear	Unclear	Unclear	Unclear	Unclear	Low	Unclear	Not Applicable
Liang et al. (2023)	Unclear	Low	Unclear	Unclear	Unclear	Unclear	Unclear	Unclear	Low	Low	Not Applicable
Li et al. (2022)	Low	Low	Unclear	Unclear	Unclear	Unclear	Unclear	Low	Low	Unclear	Not Applicable
Huang et al. (2021)	Low	Low	Unclear	Unclear	Unclear	Unclear	Low	Low	Low	Low	Not Applicable
Li et al. (2021)	Low	Low	Unclear	Unclear	Unclear	Unclear	Unclear	Low	Low	Low	Not Applicable
Wang et al. (2020)	Low	Low	Unclear	Unclear	Unclear	Unclear	Low	Low	Low	Low	Not Applicable

