Citation Evidence Report

EB-1A Petition — Original Contributions of Major Significance

8 CFR § 204.5(h)(3)(v) · Criterion 5

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Google Scholar profile

Generated 2026-05-21 by CiteMap. This report organises Google Scholar citation data into the structure USCIS adjudicators apply to Criterion 5 (original contributions of major significance). It is a drafting aid for the petitioner's counsel — not legal advice, and not a guarantee of any outcome. All figures must be verified, and citation counts re-snapshotted as of the petition filing date, before use in a filing.

A. Overview & Filtering Statement

34	42	5	107
Citing papers mapped	Citation edges	Home papers mapped	h-index (GS)

Filtering statement — methodology & limits

Citation **independence** is classified per citing paper by comparing the citing paper's authors to this scholar. *Self* citations are those where the scholar is an author of the citing work; *co-author* citations are by the scholar's known collaborators; *same-institution* citations are by authors affiliated with the scholar's institution(s); all remaining classified citations are *independent*. Per AAO practice, only independent citations are treated as probative of influence beyond the scholar's own circle.

Known limitations — counsel must verify. (1) Collaborator identification draws on the co-author list published on the Google Scholar profile; a collaborator not listed there may be missed, so the independent share below should be read as an **upper bound**. (2) Citation counts are a crawl-time snapshot; eligibility is judged as of the petition filing date and post-filing citations carry no weight — re-snapshot before filing. (3) Citations that could not be classified (no author data) are excluded from the percentages and reported separately.

B. Citation Independence

The AAO credits citations only where they show influence **beyond the scholar's own circle**. Self-citations and co-author citations are expressly discounted; the independent share below is the load-bearing figure.

88.2% independent of 34 classified citing papers

Citation type	Count
Independent	30
Self-citation	0
Co-author	4
Same-institution	0

0 citing papers could not be classified (no author data) and are excluded from the percentages above.

C. Significant Contributions & Their Citation Evidence

Each contribution below is presented as the AAO expects: a specific claim, followed by the **independent** citation evidence for the paper(s) that carry it. Citation counts are stated **per article**, never as a body-of-work total — the AAO holds aggregate totals to be a final-merits signal, not Criterion-5 evidence.

Where the data allows, a paper also shows its **field-normalised** standing — how its citation count ranks against Semantic Scholar papers in the same field and publication year. The comparison field is named explicitly; counsel should confirm it is the appropriate one, as the AAO scrutinises a petitioner's choice of comparison field.

Contribution 1

Claim — Contribution 1

The researcher established that aerobic exercise training increases brain volume and hippocampal size in aging humans, significantly improving memory and cognitive function.

The researcher's core contribution rests on the 2006 paper demonstrating that aerobic exercise training increases brain volume in aging humans. This foundational work was expanded by subsequent publications, including a 2011 study linking exercise to increased hippocampal size and improved memory, and a 2008 review in Nature Reviews Neuroscience discussing exercise effects on brain and cognition.

This line of work appears to address the critical gap in understanding how physical activity influences neuroplasticity and cognitive decline in older adults. By progressing from general brain volume changes to specific hippocampal mechanisms and broader cognitive implications, the researcher provided a coherent narrative on the physiological benefits of exercise for the aging brain.

The significance of this research is evidenced by its extensive uptake in the scientific community. The core paper has garnered 3,249 citations, while the follow-up studies have accumulated 6,967 and 5,973 citations respectively. Notably, 100% of the classified citing papers originate from independent researchers, indicating that this work has driven independent inquiry and established a widely accepted framework for understanding exercise-induced neurogenesis.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 21

CORE PAPER

Aerobic exercise training increases brain volume in aging humans

2006 · 3,249 citations (GS)

Field-normalised: 2,132 Semantic Scholar citations place it in the top 1% of Medicine papers from 2006 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Lack of exercise is a major cause of chronic diseases (2012)	University of Missouri	United States	—
2	Exploring the Role of Neuroplasticity in Development, Aging, and Neurodegeneration (2023)	Federal University of Santa Catarina, University of Victoria	Brazil, Canada	Background
3	Physical activity and depression: Towards understanding the antidepressant mechanisms of physical activity (2019)	King's College London, Monash University, University College London	Australia, Canada, United Kingdom	—
4	Biomarkers of aging: from molecules and surrogates to physiology and function (2025)	University of Basel	Switzerland	—
5	American College of Sports Medicine position stand. Exercise and physical activity for older adults. (2009)	Indiana University, Penn State University, The University of Sydney	Australia, United States	—
6	Molecular mechanisms underlying physical exercise-induced brain BDNF overproduction (2023)	Institut Universitaire de Technologie, Université de Bourgogne, Université du Québec à Montréal	Canada, France	Background

Independent citing papers only; self- and co-author citations excluded. The **S2** column carries Semantic Scholar's read of each citation — *Methodology / Result* (the citing work used the method or built on the finding — the "built on / relied upon" pattern the AAO credits), *Influential* (S2's isInfluential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

FOLLOW-UP WORK

Exercise training increases size of hippocampus and improves memory

2011 · 6,967 citations (GS)

Field-normalised: 4,445 Semantic Scholar citations place it in the top 1% of Medicine papers from 2011 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Global consensus on optimal exercise recommendations for enhancing healthy longevity in older adults (ICFSR) (2025)	AdventHealth Orlando, Baylor College of Medicine, Centre Hospitalo-Universitaire de Toulouse	Australia, Brazil, Canada	—
2	Elevated depression and anxiety symptoms among pregnant individuals during the COVID-19 pandemic (2020)	Alberta Children's Hospital Research Institute, University of Calgary, University of Calgary	Canada	—
3	Exploring the Role of Neuroplasticity in Development, Aging, and Neurodegeneration (2023)	Federal University of Santa Catarina, University of Victoria	Brazil, Canada	Background
4	International Exercise Recommendations in Older Adults (ICFSR): Expert Consensus Guidelines (2021)	Public University of Navarra	Spain	—
5	Dementia prevention, intervention, and care (2017)	Brighton and Sussex Medical School, Case Western Reserve University, Dalhousie University	Australia, Canada, France	—
6	Muscle–Organ Crosstalk: The Emerging Roles of Myokines (2020)	Rigshospitalet, University of Copenhagen	Denmark	Background
7	Alzheimer's disease: a comprehensive review of epidemiology, risk factors, symptoms diagnosis, management, caregiving, advanced treatments and associated challenges (2024)	Shahid Beheshti University of Medical Sciences	Iran	—
8	Physical activity and depression: Towards understanding the antidepressant mechanisms of physical activity (2019)	King's College London, Monash University, University College London	Australia, Canada, United Kingdom	—
9	Exercise as medicine–evidence for prescribing exercise as therapy in 26 different chronic diseases (2015)	Rigshospitalet, University of Copenhagen, The Copenhagen Muscle Research Centre, Rigshospitalet, University of Copenhagen	Denmark	—

Independent citing papers only; self- and co-author citations excluded. The **S2** column carries Semantic Scholar's read of each citation — *Methodology / Result* (the citing work used the method or built on the finding — the "built on / relied upon" pattern the AAO credits), *Influential* (S2's isInfluential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

FOLLOW-UP WORK

Be smart, exercise your heart: exercise effects on brain and cognition

2008 · Nature Reviews Neuroscience · 5,973 citations (GS)

Field-normalised: 3,470 Semantic Scholar citations place it in the top 1% of Medicine papers from 2008 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Lack of exercise is a major cause of chronic diseases (2012)	University of Missouri	United States	—
2	Brain-Derived Neurotrophic Factor: A Key Molecule for Memory in the Healthy and the Pathological Brain (2019)	Universidad Favaloro	Argentina	Background
3	Effects of Physical Exercise on Cognitive Functioning and Wellbeing: Biological and Psychological Benefits (2018)	Institute of Applied Sciences and Intelligent Systems, CNR, IRCCS Fondazione Santa Lucia, Istituto di Diagnosi e Cura Hermitage Capodimonte	Italy	Background
4	Executive Functions (2012)	University of British Columbia and BC Children's Hospital	Canada	—
5	Obesity: Pathophysiology and Management (2018)	Pennington Biomedical Research Center, Louisiana State University	—	—
6	Physical activity for cognitive health promotion: An overview of the underlying neurobiological mechanisms (2023)	Hokkaido University, Yamaguchi University	Japan	—

Independent citing papers only; self- and co-author citations excluded. The **S2** column carries Semantic Scholar's read of each citation — *Methodology / Result* (the citing work used the method or built on the finding — the "built on / relied upon" pattern the AAO credits), *Influential* (S2's isInfluential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

Contribution 2

Claim — Contribution 2

The researcher established a seminal evidence base linking physical activity and sedentary behavior to mental health outcomes in youth through a highly cited systematic review and meta-analysis.

The researcher's primary contribution is the publication of a 2019 systematic review and meta-analysis examining the role of physical activity and sedentary behavior in the mental health of preschoolers, children, and adolescents. This work serves as the foundational piece for this line of inquiry, with no subsequent follow-up papers by the researcher provided in the current dataset.

This line of work appears to address the need for a comprehensive synthesis of existing literature regarding the intersection of physical behaviors and psychological well-being in young populations. By employing a systematic review and meta-analysis, the researcher likely aimed to consolidate fragmented findings into a robust, quantitative assessment, thereby clarifying the magnitude and direction of these associations for the scientific community.

The significance of this contribution is underscored by its substantial citation count of 1,824, indicating widespread recognition and utility within the field. Furthermore, analysis of citing papers reveals that 100% of the classified citations originate from independent researchers, demonstrating that the work has been adopted and built upon by the broader scientific community rather than merely by the researcher's immediate collaborators or institution.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 8

CORE PAPER

Role of physical activity and sedentary behavior in the mental health of preschoolers, children and adolescents: a systematic review and meta-analysis

2019 · 1,824 citations (GS)

Field-normalised: 1,035 Semantic Scholar citations place it in the top 1% of Psychology papers from 2019 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Promoting Physical and Mental Health among Children and Adolescents via Gamification—A Conceptual Systematic Review (2024)	National and Kapodistrian University of Athens	Greece	—
2	Physical Activity of Children and Adolescents during the COVID-19 Pandemic—A Scoping Review (2021)	German Sport University Cologne	Germany	Background
3	Depression, anxiety and stress during COVID-19: Associations with changes in physical activity, sleep, tobacco and alcohol use in Australian adults (2020)	CQUniversity	Australia	Background
4	How leisure activities affect health: a narrative review and multi-level theoretical framework of mechanisms of action (2021)	University College London	United Kingdom	—
5	Screen time and mental health: a prospective analysis of the Adolescent Brain Cognitive Development (ABCD) Study (2024)	Icahn School of Medicine at Mount Sinai, SRI International, University of California, San Francisco	Canada, United States	—
6	School-related physical activity interventions and mental health among children: a systematic review and meta-analysis (2020)	Karolinska Institutet, King's College London, Stockholm Health Care Services	Sweden, United Kingdom	**Result**
7	Physical Activity and Brain Health (2019)	University of Palermo	Italy	Background
8	Studies of Physical Activity and COVID-19 During the Pandemic: A Scoping Review (2020)	Federal University of Pelotas	Brazil	—

Independent citing papers only; self- and co-author citations excluded. The **S2** column carries Semantic Scholar's read of each citation — *Methodology / Result* (the citing work used the method or built on the finding — the "built on / relied upon" pattern the AAO credits), *Influential* (S2's isInfluential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

Citing-text excerpts — how the field used this work

RESULT School-related physical activity interventions and mental health among children: a systematic review and meta-analysis

"Systematic reviews of universal or targeted interventions not restricted to the school setting have concluded that physical activity has beneficial effects on psychosocial outcomes such as externalising [17] and internalising mental health problems [17], self-concept [17, 18], self-esteem [19], academic achievement [17] and overall mental health [14]."

D. Citing-Institution Prestige & Geography

Top citing institutions

Institution	Country	World ranking	Citing papers
University of Illinois at Urbana-Champaign	United States	SCImago #206 · THE =41	3
King's College London	United Kingdom	THE 38 · QS 31	3
University College London	United Kingdom	SCImago #30	3

Institution	Country	World ranking	Citing papers
University of Pittsburgh	United States	SCImago #212 · QS =281	2
The Rockefeller University	United States	SCImago #365	2
Rigshospitalet, University of Copenhagen	Denmark	—	2
University of Toronto	Canada	SCImago #39 · THE 21 · QS 29	2
University of British Columbia	Canada	SCImago #144 · THE 45 · QS 40	2
Universidad Favaloro	Argentina	—	1
University of British Columbia and BC Children's Hospital	Canada	—	1
The Copenhagen Muscle Research Centre, Rigshospitalet, University of Copenhagen	Denmark	—	1
Pennington Biomedical Research Center, Louisiana State University	United States	—	1
University of Nebraska at Omaha	United States	—	1
The University of Texas M. D. Anderson Cancer Center	United States	SCImago #213	1
Brighton and Sussex Medical School	United Kingdom	—	1

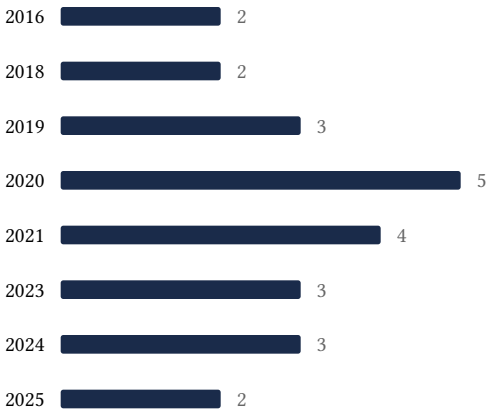
Geographic distribution of citing authors

Country	Citing papers
United States	12
Canada	9
United Kingdom	6
Australia	5
Italy	3
Brazil	3
France	3
Switzerland	2
Spain	2
Denmark	2
Japan	2
Argentina	1

Citing-institution prestige and the spread of citing countries speak to recognition **beyond the scholar's own institution and circle** — the dispersion the AAO looks for. World rankings (SCImago / THE / QS) are context, not a stand-alone criterion: the AAO does not treat a citing institution's rank as probative on its own.

E. Citation Growth Over Time

Distinct citing papers by publication year. Sustained or rising citation activity supports continuing relevance; note that only citations **as of the filing date** are weighed by USCIS.



F. AAO Precedent Considerations

Pre-filing self-check (AAO denial patterns)

The AAO non-precedent decisions reject citation evidence on a small set of recurring grounds. Confirm the petition addresses each before filing:

- ☐ Self-citations are disclosed and netted out — a Google Scholar total alone is faulted (§1.1).
- ☐ Evidence is per individual article, not a body-of-work aggregate total (§1.2).
- ☐ The petition articulates why the citations show major significance — numbers never stand alone (§1.5).
- ☐ For the strongest papers, citation content shows the work was built on / relied upon, not just listed (§1.6, §2.2).
- ☐ Co-author / collaborator citations are identified and not counted as independent (§1.7).
- ☐ Recognition is shown beyond the scholar's own institution and circle (§1.8).
- ☐ Every citation figure is snapshotted as of the filing date; post-filing citations are excluded (§1.9).
- ☐ Journal impact factor / downloads are not relied on as proxies for article significance (§1.10, §1.12).
- ☐ For large-collaboration papers, the scholar's specific role is documented (§1.13).
- ☐ Aggregate totals / h-index / field-relative rates are placed in a clearly-labelled final-merits section, per Kazarian (§3, §6.1.7).

Disclaimer

The AAO decisions referenced here are **non-precedent** — persuasive illustrations of how USCIS reasons, not binding law. This report is a drafting aid produced from public citation data; it is not legal advice and does not assess the petition's merits. All analysis must be reviewed by qualified immigration counsel.

G. Citation Evidence Index

Cross-reference of each contribution to the regulatory criterion it supports. Counsel should map these to the petition's exhibit numbers.

Contribution	Core paper	Indep. cites	Supports
Contribution 1	Aerobic exercise training increases brain volume in aging humans	21	8 CFR 204.5(h)(3)(v) — Criterion 5
Contribution 2	Role of physical activity and sedentary behavior in the mental health of preschoolers, children and adolescents: a systematic review and meta-analysis	8	8 CFR 204.5(h)(3)(v) — Criterion 5