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Relationship between Postural Control and Vision in Children and Adolescents with Autism Spectrum Disorder. a Scoping Review

Background: Motor impairments are frequently observed in individuals with autism spectrum disorder (ASD). Among motor issues, postural control can be found impaired and may also be influenced by visual stimuli. To our knowledge, the results of the studies that assessed the influence of vision on postural control in children and adolescents with ASD were not systematically searched and summarized.

Objectives: We conducted a scoping review to provide a comprehensive picture of the relationship between vision and postural control.

Methods: The scoping review was performed using the Preferred Reporting Items for Systematic Reviews and Meta-analysis Protocol Extension for Scoping Reviews, and the review protocol was registered a priori on the Open Science Framework. The literature search was performed in PubMed, Scopus, Web of Sciences, Cinhal, Embase and Psycinfo databases, searching for publications that assessed the influence of vision on postural control in individuals with ASD from 0 to 18 years of age in any setting. Primary studies with any study design were included; no study design, language or time limitation restrictions were applied. Two reviewers independently read each search result's title and abstract to identify records that potentially met the inclusion criteria and then read the full text of the eligible studies to confirm their inclusion. Afterwards, two reviewers independently extracted the data from the included studies using previously standardised data extraction tables. When appropriate, data extraction was summarised numerically. We also conducted a descriptive analysis of relevant themes related to the research questions.

Results: The database searches identified 646 studies, and fourteen were included after the selection process (see Figure 1). All studies had a case-control study design and considered 482 participants. We found that the relationship between postural control and vision was assessed using several experimental methodologies, summarised as follows: 1) comparison between postural control test results in closed-eye vs open-eye conditions; 2) assessment of postural control in closed-eye condition; 3) effect of a visual stimulus on postural control. The findings reveal that studies on the relationship between vision and posture in ASD children and adolescents are scarce, and their results are contrasting (see Table 1). The sample characteristics and the methodology used to study the influence of vision on postural control were highly variable. The significant heterogeneity in the methods could explain the contrasting results.

Conclusions: Clear and generalizable conclusions about the relationship between vision and posture in children and adolescents with ASD are not possible. Further research might use rigorous study methods and objective outcome measures

tailored explicitly to the considered population.

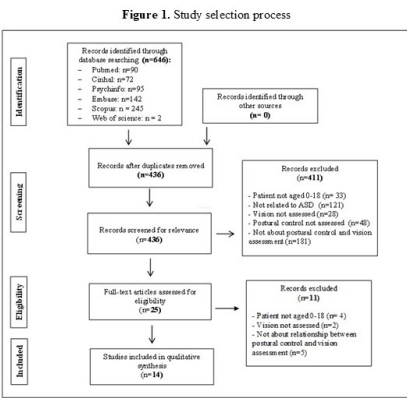


Table 1. Study results summary

Study	Effect of vision on postural control as:		
	Closed eyes	Closed vs Open eyes	Visual stimulus
Perin et al., 2020	↓	NA	NA
Lim et al., 2020	=	=	NA
Lim et al., 2019	NA	NA	=
Li et al., 2019	↓	NA	NA
Lim et al., 2018	=	=	=
Bucci et al., 2018	NA	NA	↓
Goulème et al., 2017	NA	NA	↓
Somogyi et al., 2016	NA	NA	↓
Stins et al., 2015	↓	NA	NA
Memari et al., 2014	NA	NA	↓
Greffou et al., 2012	=	NA	=
Molloy, 2003	↓	NA	NA
Gepner et al., 2002	=	=	=
Gepner et al., 1995	↓	NA	=

Legend: "↓": postural control deficit in individuals with ASD respect to the comparison group; "=": no performance difference between individuals with ASD respect to the comparison group; NA: not assessed in the study.

Title*
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Preferred Presentation Format*
Poster Only

If not accepted as a panel, are you willing to present an individual presentation?*

Funding Source*
This work was unfunded.

In studies with humans, does the study population include individuals with intellectual disabilities, who are minimally verbal, and/or are non-speaking?
Not Applicable

Second Preferred Category*
N/A

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