Research Article

Motor Function and Visual Perceptual Skills in Children With Autism Spectrum Disorder: A Narrative Review

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Abstract

Background: Motor difficulties are common in autism spectrum disorder (ASD), while visual-perceptual findings are heterogeneous and depend strongly on the construct and task used. Literature often uses visual perception, visual-motor integration (VMI), oculomotor control, visual attention, and visually guided action interchangeably, although these are not equivalent.

Aim: To critically synthesize evidence on motor skills and visual-perceptual abilities in children with ASD, and to distinguish direct motor–perception associations from VMI, visually guided motor control, visual attention/oculomotor findings, and indirect evidence from other developmental populations.

Evidence synthesis: Faber et al. (2022) examined motor performance, motor-free visual perception and visual-motor integration in the same children. Despite clear motor difficulties in the ASD group, correlations between motor-free visual perception and motor scores were not statistically significant. This is direct evidence about the association between the two constructs, although it is limited to the measures and participants studied. Other ASD studies describe visual-motor integration, eye movements, self-care or visually guided movement. These studies add important context but do not directly test whether motor-free visual perception is associated with standardized motor proficiency. Findings from developmental coordination disorder and typically developing children are informative but cannot be assumed to apply to ASD.

Conclusion: Motor difficulties are common in ASD, but the available evidence does not show a consistent relationship between standardized motor proficiency and motor-free visual perception. The distinction between perception, visual-motor integration and visually guided action is essential when interpreting studies and planning future research.

Keywords: autism spectrum disorder; motor skills; visual perception; visual-motor integration; visuomotor control; pediatric physiotherapy; motor development; rehabilitation.

Introduction

Autism spectrum disorder (ASD) is a neurodevelopmental condition characterized by persistent differences in social communication and interaction together with restricted or repetitive patterns of behavior, interests, or activities. Motor difficulties are not part of the core diagnostic criteria, but they are frequent and clinically meaningful. A 2022 meta-analysis of 114 studies (6,423 autistic and 2,941 neurotypical participants) reported a large overall gross-motor difference (Hedges' g = −1.04), with particularly prominent differences in object-control skills [1]. In a commonly cited clinical study using the Movement Assessment Battery for Children–2 (MABC-2), 80% of children with ASD were classified in the red or amber zones, although the sample spanned 3–16 years and therefore should not be treated as an age-specific prevalence estimate for 5–15-year-olds [2].

Visual processing in ASD is more heterogeneous. Standardized motor-free visual-perception tests, psychophysical paradigms, eye-movement measures, and VMI tasks capture different processes. DiCriscio et al. demonstrated meaningful individual variability across Test of Visual Perceptual Skills (TVPS) domains and a specific relationship between ASD traits and figure-ground performance rather than a uniform visual-perceptual deficit [3]. More recent work has likewise shown that group differences can depend on age, domain, and the distinction between static perception and visually guided action [4,5].

A central problem in this literature is constructing conflation. Motor-free visual perception refers to interpretation of visual information with minimal motor demand; VMI requires conversion of visual information into a coordinated motor response; visual attention concerns selection and allocation of attention; visual tracking and saccades are oculomotor functions; and visuospatial cognition includes spatial representation, orientation, and transformation.

Basic visual functions such as acuity or ocular alignment are still different. A low score on a copying task therefore cannot, by itself, establish impaired motor-free visual perception.

This review examines what is currently known about motor skills and visual-perceptual abilities in children with ASD, with a particular focus on ages 5–15 years. Its central question is whether studies directly demonstrate an association between these two abilities. Evidence from visual-motor integration, visually guided actions and daily living skills is considered separately because these outcomes do not answer the same question.

Literature search approach

This narrative review draws on the research papers and reference list assembled for the original manuscript, with supplementary examination of relevant cited studies and accessible bibliographic records. The available search documentation does not include complete database-specific strategies, original search dates or screening totals. Consequently, this paper does not claim to be a systematic or exhaustive review. The search description should be updated with the authors' actual search records before submission.

The evidence was considered according to study population, age, assessment methods and research question. Studies that assessed both motor proficiency and motor-free visual perception in the same autistic participants and tested their statistical relationship were treated as direct evidence. Studies of visual-motor integration, eye movements, self-care and motor interventions were examined as related but distinct evidence. Studies involving developmental coordination disorder or typically developing children were used only to provide context.

Priority was given to peer-reviewed studies involving children with ASD and measures of motor skill, motor-free visual perception, VMI, visually guided motor control, visual attention, tracking, or visuospatial processing. Studies outside the primary 5–15-year age range and studies in DCD, cerebral palsy, or typically developing children were retained only when they clarified constructs, mechanisms, assessment, or intervention plausibility.

Motor skills in children with ASD

Motor difficulties in ASD span manual dexterity, balance, postural control, locomotor skills, object control, praxis, imitation, and movement planning. Quantitative literature is strongest for gross-motor impairment. Wang et al. found a large, pooled gross-motor difference and reported that object-control skills were among the most affected domains [1]. Liu and Breslin similarly found lower MABC-2 performance in manual dexterity, ball skills, and static/dynamic balance in ASD than in age-matched peers [2].

Faber et al. studied 67 children and youth with ASD and 67 age- and gender-matched participants without ASD aged approximately 9.8–15.1 years. Seventy-five percent of the ASD group fell in the MABC-2 red or orange zones for the total score, compared with 49.3% of the comparison group; group differences were significant for total motor performance, aiming/catching, and balance, but not manual dexterity [6]. Importantly, the comparison group also showed unexpectedly high rates of low manual-dexterity scores, limiting interpretation of that component.

Motor impairment is heterogeneous rather than universal. Intellectual ability, attention, language, sensory processing, opportunities for practice, assessment comprehension, and task structure can influence performance. Visual support can also alter measured motor performance: picture task cards have produced higher TGMD-2 scores than traditional instructions in children with ASD, demonstrating that assessment format can confound apparent motor ability [7]. Consequently, motor testing in ASD should include standardized procedures while documenting reasonable supports and behavioral factors that may affect validity.

Visual – perceptual skills in children with ASD

The evidence does not support a single global profile of impaired visual perception in ASD. DiCriscio et al. used the TVPS-3 to examine multiple motor-free visual-perceptual domains and emphasized individual variability; ASD features were related particularly to figure-ground performance and response variability [3]. This is consistent with a broader literature in which local-detail processing may be relatively strong in some contexts, whereas global integration, dynamic processing, or performance under higher attentional demands may be less efficient.

Faber et al. found no significant ASD-versus-comparison difference on the Beery VMI-6 visual-perception supplemental test [6]. By contrast, a 2025 preschool study of 60 children with ASD and 50 typically developing children reported lower VMI and visual-perception performance overall, with age-specific patterns: differences were more evident among five-year-olds than four-year-olds [4]. Because this preschool sample lies partly below the

primary age range of the present review, it is best interpreted as developmental context rather than direct evidence for school-aged children.

A 2026 study of 54 children with ASD and 37 typically developing children found longer developmental eye-movement test times and lower Motor-Free Visual Perception Test–4 scores in the ASD group; eye-movement variables explained less variance in visual-perception scores in ASD than in the comparison group [5]. This study is useful because it separates oculomotor performance from motor-free visual perception, but it does not test limb motor proficiency and therefore cannot establish a motor–visual-perception association.

Visual perception should therefore be reported by domain and instrument. Visual discrimination, visual memory, sequential memory, spatial relations, figure-ground, form constancy, and visual closure are related but non-identical. Results from motor-free tests should not be merged with copying, handwriting, reaching, or tracking outcomes.

Direct evidence of the relationship between motor skills and visual perception

To answer whether motor skills and visual perception are related in ASD, both abilities must be assessed independently in the same children, and their relationship must be analyzed statistically. For example, a study might compare a motor battery such as the MABC-2 with a motor-free visual-perception test. The finding that children have difficulties in both areas does not, on their own, show that the two are correlated. Similarly, a visual-motor copying task combines perceptual, and movement demands and cannot isolate motor-free perception. These distinctions are important because different study designs answer different questions.

The clearest direct study identified in the present evidence base was conducted by Faber et al. [6]. The researchers assessed 67 children and young people with ASD and 67 age- and gender-matched participants without ASD, aged approximately 9.8–15.1 years. Motor performance was measured using the MABC-2, while visual perception and visual-motor integration were assessed with the Beery VMI-6 and its visual-perception component. The ASD group performed less well on overall motor performance, aiming and catching, and balance. However, within the ASD group, motor-free visual-perception scores were not significantly correlated with MABC-2 total scores ($r = 0.005$; $p = 0.971$), manual dexterity ($r = 0.028$; $p = 0.822$), aiming and catching ($r = 0.109$; $p = 0.381$), or balance ($r = −0.139$; $p = 0.271$). Visual-motor integration was also not significantly related to the MABC-2 outcomes in this group. These results are important because they show that poorer motor performance can occur without a corresponding reduction in performance on this particular static visual-perception measure.

The absence of statistically significant correlations should be interpreted carefully. It does not establish that vision has no role in movement, nor does it rule out relationships with other visual-perceptual domains, dynamic visual information or different motor tasks. The Beery visual-perception component captures a narrower range of abilities than a broader battery such as the TVPS. The sample also does not represent every autistic child, particularly those with different cognitive or communication support needs. The findings therefore challenge a simple, general association rather than disproving all possible links between perception and movement [6].

Other ASD studies are relevant but provide a different kind of evidence. Chi and Lin [8] and Lin et al. [9] reported relationships involving visual-perceptual abilities, visual-motor integration and self-care in younger autistic children. These findings help explain everyday function, but self-care is not the same outcome as a standardized measure of gross or fine motor proficiency. Green et al. [10] and Carey et al. [24] examined visual-motor assessment, while Miller et al. [11] and Dowd et al. [12] investigated aspects of motor coordination and visually guided action. Such work may clarify how children use visual information while moving, but it should not be cited as direct proof of a correlation between motor-free visual perception and motor proficiency. Overall, direct evidence in the target age range remains limited, and the available findings do not support a single, consistent motor–visual-perception relationship in ASD.

Visual- motor integration and visually guided motor performance

VMI is related to, but distinct from, motor-free visual perception. Green et al. reported lower Beery VMI performance in an ASD sample than in typically developing participants, but the group difference was no longer significant after accounting for full-scale IQ, and only a subset of autistic participants showed marked VMI weakness [10]. This cautions against treating VMI impairment as universal or autism-specific.

Miller et al. examined dyspraxia, motor function, eye movements, and VMI in school-aged children with autism and found broad but heterogeneous impairments, with motor timing helping to distinguish subgroups [11]. Dowd et al., in younger children aged 3–7 years, reported altered movement preparation and reduced modulation by a visual

distractor during point-to-point upper-limb movements, consistent with atypical use of visual information during motor planning [12]. These studies address dynamic visuomotor control rather than motor-free visual perception.
Lidstone and Mostofsky synthesized computational and behavioural evidence suggesting that visually guided action and motor imitation may be affected by atypical formation or use of internal sensorimotor representations [13]. This is a mechanistic framework, not proof that a single VMI deficit causes the broader ASD phenotype. A 2025 dynamic grip-force tracking study further reported speed-dependent visual-motor tracking differences in children with ASD, reinforcing the need to distinguish static copying from dynamic tracking [14].
Across studies, it is important to distinguish three related abilities: recognising and interpreting visual information without requiring a motor response, coordinating visual information with movement during tasks such as copying a shape, and using changing visual information to guide movements in real time. Although these abilities work together during everyday activities, they represent distinct processes and should not be considered interchangeable.Findings from Green et al., Miller et al. and dynamic movement studies [10–14], alongside visual-motor assessment work [24], suggest that the answer can differ according to the task and the child's developmental and cognitive profile.

Physical activity and motor-based intervention with visual-perceptual outcomes

Intervention evidence must be interpreted according to the outcome measured. Arabi et al. assigned 60 children with ASD aged 6–12 years to visuomotor, motor, computer-based visual, or control groups (n = 15 each) for 30 sessions. The visuomotor group improved gross-motor scores and repetitive behaviour at post-test and follow-up; the motor-training group showed post-test motor improvement that was not maintained at follow-up, while the visual-training and control groups did not show significant changes in the study variables [15]. However, the study did not demonstrate improvement in a motor-free visual-perception outcome, so it supports visuomotor training for motor performance rather than transfer to visual perception.
Evidence for physical activity changing motor-free visual perception comes mainly from non-ASD populations. Hashemi et al. randomized 50 boys with DCD to eight weeks of Wii Fit training or usual school activity and reported improvements in TVPS-R total and subscale scores [16]. The very large reported ANCOVA effect sizes and some internally unusual F/p combinations warrant cautious interpretation and independent replication. Zhao et al. pooled 12 randomized trials (1,761 children under 12 years) across heterogeneous populations and perception outcomes; they reported an overall benefit of physical activity on perception-related outcomes, but subgroup estimates for visual perception/executive function were highly heterogeneous and were not ASD-specific [17].
Two more studies provide developmental but indirect evidence. Dibek's 10-week visual-motor ability enhancement programme in 33 typically developing five-year-olds improved Beery visual perception, motor coordination, and VMI relative to controls [18]. Tepeli reported strong cross-sectional associations between Frostig visual-perception scores and TGMD-2 gross-motor scores in 322 preschool children aged 54–59 months [19]. These findings cannot be generalized to ASD because of differences in diagnosis, age, instruments, and design.
The intervention literature therefore supports a plausible bidirectional perception–action relationship but does not yet establish that motor or physical-activity training improves motor-free visual perception in school-aged ASD. ASD-specific trials should include separate motor, motor-free visual-perception, VMI, eye-tracking, and participation outcomes.

Indirect evidence from developmental coordination disorder and other populations

DCD studies are useful because they explicitly test whether motor-free perception and motor performance covary, but DCD is not a substitute for ASD. Van Waelvelde et al. studied 36 children with DCD and 36 controls aged 9–10 years. Motor-free visual discrimination did not correlate significantly with motor tasks; a visual timing task correlated with ball catching, and a copying task correlated with MABC performance in the DCD group [20]. The authors concluded that associations were task-specific.
Tsai and Wu studied 60 children with DCD and 60 matched controls at approximately 10 years of age using the TVPS-R and motor-control tasks. Children with DCD showed both visual-perceptual and motor deficits, but significant relationships were most evident for time-limited motor responses; when visual information was removed, visual-perception and motor-control measures were not significantly associated [21].

Bonifacci examined 144 typically developing children aged 6–10 years grouped by gross-motor ability. Low-motor children had lower VMI but not lower motor-free perceptual skills, supporting partial independence between perception and visual-motor integration [22]. Wilson and McKenzie's earlier DCD meta-analysis found the largest information-processing deficit in visual-spatial processing but also emphasized a generalized pattern of small-to-moderate deficits [23]. Collectively, this indirect literature reinforces a task-specific model and warns against inferring causation from co-occurring deficits.

Potential mechanism and influencing factors

Several mechanisms may explain why dynamic visuomotor tasks reveal differences even when static motor-free perception does not. First, movement requires rapid transformation of visual information into motor commands, prediction of sensory consequences, and continuous integration of visual, proprioceptive, and vestibular information. A child may identify a static form accurately yet have difficulty using changing visual information quickly enough for catching or interceptive actions.

Second, feedforward and feedback control may be weighted differently. Kinematic and computational work in ASD has been interpreted as showing atypical internal-model formation or altered reliance on proprioceptive versus visual feedback [11–13]. These interpretations remain mechanistic hypotheses and should not be presented as established causes.

Third, attention, executive function, processing speed, IQ, language comprehension, and task motivation can influence both perceptual and motor tests. Green et al. demonstrated the importance of intellectual ability for Beery VMI group differences [10], while DiCriscio et al. highlighted substantial individual variability in visual-perceptual performance [3]. Fourth, developmental stage matters: the 2025 preschool data suggest age-dependent differences in VMI and perception [4].

Finally, measurement itself is a major source of inconsistency. The Beery visual-perception supplemental test emphasizes static form matching, whereas the TVPS samples multiple perceptual domains; eye-movement tests assess oculomotor efficiency; and dynamic tracking or reaching tasks place high demands on prediction and timing. These outcomes should not be pooled conceptually without justification.

Implication for physiotherapy and rehabilitation

For paediatric physiotherapy, the main implication is assessment specificity. A child with poor ball skills should not automatically be labelled as having a visual-perception deficit, and a low VMI score should not be assumed to reflect impaired motor-free visual perception. Motor proficiency, static motor-free perception, VMI, dynamic visually guided control, oculomotor function, and participation should be considered separately when clinically relevant.

Task-oriented motor practice remains justified for documented motor limitations. For children who struggle particularly with visually guided actions, therapists can manipulate target speed, predictability, visual clutter, cueing, and practice structure while monitoring whether gains transfer to untrained tasks. Visual supports may improve comprehension and the validity of motor assessment [7]. However, strategies such as visual occlusion or deliberately reducing visual feedback should not be prescribed as a general ASD treatment on the basis of the current evidence; such methods require task-specific rationale and safety.

Interdisciplinary referral may be appropriate when visual-perceptual or oculomotor difficulties interfere with function. Physiotherapists, occupational therapists, developmental clinicians, and eye-care professionals contribute different expertise. Functional goals should prioritize participation in play, school, self-care, mobility, and sport rather than improvement in isolated test scores alone.

Research gaps and Future scope

- The most important gap is the limited number of ASD studies that independently assess motor proficiency and motor-free visual perception and then report their association. Future studies should test specific visual-perceptual domains alongside MABC-2, BOT-2 or TGMD measures, report correlation estimates and confidence intervals, and account for age and relevant cognitive factors.
- Static and dynamic visual processing should be separated. Future studies should combine motor-free static tests with motion perception, eye tracking, and dynamic visuomotor tasks.

- Age-stratified longitudinal designs are needed to determine whether perception–action relationships change from early childhood through adolescence.
- Studies should include autistic children with a wider range of intellectual, language, and support needs rather than disproportionately sampling verbally fluent children with average intelligence.
- Confounders including non-verbal IQ, attention, executive function, sensory processing, visual acuity, oculomotor status, and assessment comprehension should be measured and reported.
- ASD-specific intervention trials should test whether motor or physical-activity interventions transfer to motor-free visual perception, and whether perceptual or visuomotor training transfers to functional motor performance.
- Eye tracking synchronized with 3D kinematics could clarify where visual search, fixation, prediction, and movement correction diverge during catching, reaching, balance, and locomotor tasks.
- Clinically meaningful outcomes and participation should accompany impairment-level measures, with pre-specified primary outcomes and adequate follow-up.

Limitation of the study

This is a narrative review rather than a systematic review. The original search history was incompletely documented, and exact database dates, full search strings, and screening counts were unavailable. The present update examined all uploaded papers and used backward citation searching plus targeted bibliographic verification, but subscription-only Scopus and Web of Science interfaces were not independently searched. Publication and language bias are therefore possible.

The evidence base is heterogeneous in age, ASD characterization, cognitive ability, motor instruments, visual-perception constructs, and statistical methods. Several relevant studies include preschool children or participants older than 15 years, and their findings were used only as contextual evidence. DCD and typically developing studies were explicitly treated as indirect evidence. Finally, some intervention studies have small samples, unclear allocation procedures, or statistical reporting that merits cautious interpretation.

Table 1. Summary of studies relevant to motor skills and visual perception

Study	Design / population	Age / N	Motor variables & tools	Visual variables & tools	Key findings	Main limitations / relevance
Faber et al., 2022 [6]	Cross-sectional ASD vs matched comparison	9.83–15.13 y; 67 ASD + 67 non-ASD	MABC-2 total, manual dexterity, aiming/catching, balance	Beery VMI-6 visual perception and VMI	ASD had poorer total motor, aiming/catching and balance. In ASD, VP–motor correlations were non-significant (r −0.139 to 0.109); VMI–motor correlations also non-significant.	Strongest direct ASD evidence; average-IQ sample; static VP measure; unexpectedly poor manual dexterity in comparison group.
DiCriscio et al., 2021 [3]	Cross-sectional perceptual profiling	Children/adolescents with and without ASD	No standardized motor battery	TVPS-3 domains	Marked individual variability; ASD traits related particularly to figure-ground performance/variability.	Does not test motor–VP association.

Ghoshal et al., 2026 [5]	Cross-sectional ASD vs TD	91 total; 54 ASD + 37 TD	No limb motor battery	DEM eye movements; MVPT-4	ASD had slower eye-movement test performance and lower MVPT-4; oculomotor variables explained less VP variance in ASD.	Oculomotor–VP study, not motor-proficiency study.
Green et al., 2016 [10]	Cross-sectional ASD vs TD	56 ASD (3–23 y) + 36 TD (4–26 y)	No comprehensive motor battery	Beery VMI	Lower raw group VMI in ASD; difference attenuated after controlling FSIQ; 21% ASD markedly low.	Broad age range; VMI is motor-dependent; IQ confounding.
Miller et al., 2014 [11]	Case-control neurobehavioral	School-age ASD vs matched TD	Praxis, motor timing/coordination	VMI and saccadic eye movements	ASD showed heterogeneous praxis, motor, eye-movement and VMI differences; motor timing distinguished subgroups.	Multiple constructs; not motor-free VP.
Dowd et al., 2012 [12]	Kinematic case-control	3–7 y; ASD n=11 + TD	Point-to-point upper-limb kinematics	Visual distractor / visual integration during movement	ASD showed altered movement preparation and reduced modulation by visual distractor.	Below primary age range; small sample; dynamic visuomotor task.
Arabi et al., 2019 [15]	Four-group training study	6–12 y; 60 ASD	TGMD-2	Visuomotor/ visual training as intervention condition, not motor-free VP outcome	Visuomotor group improved gross motor scores and repetitive behaviour; visual-only group did not significantly change study variables.	Does not establish improvement in motor-free VP; small groups.
Chi & Lin, 2021 [8]; Lin et al., 2022 [9]	Cross-sectional functional association	48–83 mo; 66 ASD (+ TD comparison in 2021 study)	AMPS self-care motor/process performance; PEDI-C	TVPS-3; DTVP-3 VMI/VP	Self-care related to several VP domains; sequential memory and spatial relations were important predictors; sequential memory	Self-care ≠ standardized motor proficiency; younger than primary target.

					mediated VMI–self-care relationship.	
Van Waelvelde et al., 2004 [20]	Case-control DCD	9–10 y; 36 DCD + 36 control	MABC, ball catching, jumping	Beery copying/visual discrimination; visual timing	Motor-free visual discrimination did not correlate with motor tasks; timing related to catching; copying related to MABC.	Indirect DCD evidence; supports task specificity.
Tsai & Wu, 2008 [21]	Case-control DCD	~10 y; 60 DCD + 60 control	MABC dexterity, balance, reaction time	TVPS-R	Significant associations concentrated in timed/speeded motor responses; relationships disappeared for selected tasks when visual information removed.	Indirect DCD evidence.
Bonifacci, 2004 [22]	Cross-sectional general population	6–10 y; 144	TGMD	DTVP motor-free perception and VMI	Low-motor group had lower VMI but unaffected motor-free perceptual skills.	Indirect evidence; motor groups rather than clinical diagnosis.
Hashemi et al., 2022 [16]	RCT, DCD boys	Mean 9.55 y; 50	Wii Fit movement training	TVPS-R; executive function	Reported improved total VP and all TVPS-R subscales after 8 weeks.	Indirect DCD evidence; boys only; unusually large effects/statistical reporting warrants replication.
Dibek, 2012 [18]	Controlled preschool intervention	5 y; 33	Beery motor coordination	Beery VP and VMI	10-week programme improved VP, motor coordination and VMI vs control.	Typically developing preschool sample; indirect.
Tepeli, 2013 [19]	Cross-sectional preschool	54–59 mo; 322	TGMD-2	Frostig DTVP	Strong correlations and regression associations between VP and gross-motor scores.	Preschool, non-ASD; older perceptual instrument; correlation not causation.
Zhao et al., 2024 [17]	Systematic review/meta-analysis	12 RCTs; 1,761 children <12 y	Physical activity interventions	Mixed perception outcomes including	Overall benefits reported, but subgroup heterogeneity	Broad construct of 'perception'; heterogeneous

				VP/executive function	high and ASD-specific evidence absent.	populations/outcomes.

Conclusion

Motor difficulties are common in children with ASD, but the evidence reviewed here does not establish that they are generally explained by poorer motor-free visual perception. In the clearest direct study, Faber et al. [6] found meaningful motor difficulties without statistically significant correlations between Beery visual-perception scores and MABC-2 outcomes. This result is informative, although it cannot rule out relationships involving other perceptual domains, dynamic visual information or different groups of children.

Research on visual-motor integration, self-care, eye movements and visually guided motor control adds to our understanding of functional difficulties in ASD [8–14,24]. However, these studies should not be presented as direct evidence of an association between independently measured motor skills and motor-free visual perception. Findings from DCD and typically developing populations are also relevant for developing hypotheses, but they remain indirect evidence for ASD [20–23].

Future research should measure motor skills, motor-free visual perception and visual-motor integration separately, examine their relationships within autistic samples, and consider whether these relationships change with age or task demands. For physiotherapy, the practical message is to assess the child's specific difficulty rather than assuming that a motor problem necessarily reflects a visual-perceptual deficit.

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