








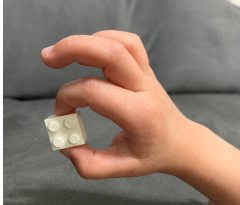
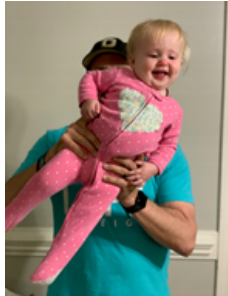
Typical Developmental Highlights & Atypical Motor Patterns in Autism



(Rahlin, 2016)(Skill builders – 2002 Fine motor 0-6)(Beery, 2010)(Teitelbaum, 1998, 2004)(Bhat, 2011)





Table 1 Typical Developmental Highlights & Atypical Motor Patterns in Autism






Age	Gross Motor	Fine Motor	Vision	Reflex Patterns	Atypical Motor Patterns Seen in Autism
Birth-2 mos.	<p>On belly: -Arms/ legs held close to trunk -Head able to lift and turn slightly against gravity. On back: -Arms/legs also held close to trunk -Head able to turn to midline briefly -Asymmetrical body posture -Can hold head up and begins to push up when lying on tummy (as shown in picture below)</p> 	<p>On back : -Arm bats or swipes at things to one side (not controlled) -Fisted hands then open/close hands</p>	<p>-Looking to the side (lateral vision) -Attends to high contrast (black/white) pictures. -Focus is 6" away from eyes -Responds to a smile with a smile -Begins to look at caregiver face/eyes</p>	<p>-Asymmetric Tonic Neck (ATNR) or Fencing Reflex (0-5 months then integrates): when head is rotated the arms on face side straightens and the other arm bends at elbow</p>	<p>-Moebius Mouth Pattern persists</p>
3-4 mos.	<p>On belly: -Forearm weight bearing -Head/neck/upper chest/able to lift off surface On back: -Head in midline (aligned with center of body) more -Alternates leg kicks</p>	<p>On back: -Arms and hands in midline more -Can reach for objects and hold them in midline but grasp is "reflexive" -Hand/s to mouth -Can hold a toy and shake it and swing at dangling toys (as shown in picture below)</p>	<p>-Vision in the midline. -Head and eyes move together -Watches caregiver's mouth when talking at near point</p>	<p>-ATNR is decreasing allowing for hands in midline -Reflexive "palmar" grasping (fingers close around item placed in hand)</p>	<p>-ATNR persists -on belly arm may be trapped -On back reach to toys with only one arm -Less vision at midline</p>



Age	Gross Motor	Fine Motor	Vision	Reflex Patterns	Atypical Motor Patterns Seen in Autism
	<p>-May be able to roll over from tummy to back (as shown in picture below)</p>  <p>4 Months - May be able to roll over from tummy to back</p> <p><small>cdc.gov/Milestones</small></p>	<p>4 Months - Can hold a toy and shake it and swing at dangling toys</p>  <p><small>cdc.gov/Milestones</small></p>			
5-6 mos.	<p>On belly:</p> <ul style="list-style-type: none"> -Weight bearing on hands with arms straight -Weight shifting when on forearms -Increasing trunk control and hip control, rocking on arms/legs -Increasing control of belly muscles -May roll over to back “accidentally” <p>On back:</p> <p>May roll to side with purpose</p> <p>Beginning unsupported sitting (as shown in picture below)</p> <p>Begins bearing weight on legs, bouncing</p>  <p>6 Months - Begins to sit without support</p> <p><small>cdc.gov/Milestones</small></p>	<p>On belly:</p> <ul style="list-style-type: none"> -Reaching with one arm while shifting weight to other <p>On back:</p> <ul style="list-style-type: none"> -Brings hand to foot and foot to mouth -Increasing voluntary control of reach and grasp` -Picking up small items (cereal) with a raking grasp (like a claw as shown in picture below) 	<ul style="list-style-type: none"> -Turns head to look toward dropped item -Can focus on small object 1'-2' away. -Looks from one object to another -Sees color -Opens mouth to anticipate spoon 		<ul style="list-style-type: none"> -Poor or delayed stable sitting -Fails to catch self when falling while in seated position
7 mos.	<p>On belly:</p> <ul style="list-style-type: none"> -Pivots around -Increased rolling control 	<ul style="list-style-type: none"> -Can sit without support with hands free 	<ul style="list-style-type: none"> -Eyes can track (follow moving object) side to side 	<ul style="list-style-type: none"> -Symmetric Tonic Neck Reflex (STNR) (integrates by 6-8) 	<ul style="list-style-type: none"> -Difficulty with bearing weight on straight arms,

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	<p>-Starting to get on hands/knees & rocking over shoulders and hip joints</p> <p>On back:</p> <p>-Rarely</p> <p>Sitting:</p> <p>-Rotates trunk</p>	<p>-Uses both hands & mouth to explore objects.</p> <p>-Moves smaller items from one hand to other</p> <p>-“separation of 2 sides of hand” begins as baby hold toys with thumb side while bear weight on small side of hand (as shown in picture below)</p> 		<p>months): when neck bends down, arms bend at elbow and hips straightens</p> <p>-If it persists it impacts sitting & getting on all fours/crawling</p>	<p>attempts to do so on forearms and then cannot propel forward</p>
<p>8-11 mos.</p>	<p>On belly:</p> <p>-Creeping (crawling) continues to develop with more control at shoulders, trunk and hips.</p> <p>Sitting:</p> <p>-Can move into and out of sitting and from all fours to sitting etc.</p> <p>-Pulling on other things to stand (as shown in picture below)</p> 	<p>-Increasing motor control of hands and fingers</p> <p>-Picking up small items between index finger and thumb (as shown in picture below)</p> <p>-Releasing items voluntarily</p> <p>-Pokes with an index or pointer finger</p> <p>-Separation of 2 sides of hand continues allowing for strength to come from small finger side of hand while precision fine motor control comes from thumb side</p> 	<p>-Watches adult scribble (few seconds)</p> <p>-Plays peek-a-boo</p> <p>-Looks at simple pictures when named</p>	<p>-Most reflexes should be integrated (overridden) by 8-9 months.</p> <p>-Neck/Body Righting (ability to keep head erect and body upright when tilted) should remain by 6-8 months (as shown in picture below)</p> 	<p>-Reflexes persist and are not integrated or overridden</p> <p>-Tilt Test: neck/body righting not seen.</p>

Age	Gross Motor	Fine Motor	Vision	Reflex Patterns	Atypical Motor Patterns Seen in Autism
12 mos.	<ul style="list-style-type: none"> -Gets into sitting without assistance -Beginning to walk -May stand alone (as shown in picture below) 	<ul style="list-style-type: none"> -Making marks with crayon -Stacking rings -Rolling a ball -Turns a page (cardboard book) 	<ul style="list-style-type: none"> -Watches own ball rolling -Enjoys looking at pictures in books 	<ul style="list-style-type: none"> -The reflexes of Protective Extension (ability to spontaneously catch oneself with arms if falling to front, side or back) should develop remain 	<ul style="list-style-type: none"> -Delayed walking -Gait may be in short steps. Gait pattern may appear more as a goose step drop on foot rather than heel to toe
1-2 yrs.	<ul style="list-style-type: none"> -More controlled walking, running 	<ul style="list-style-type: none"> -Hand preference beginning but not established. -Movement comes from shoulders -Beginning ability to move fingers independent of the others & explores items with fingers -Pointing with index finger only -Fisted grasp on crayon – scribbling -Drinks from cup/eats with spoon (as shown in picture below) 	<ul style="list-style-type: none"> -Places simple pegs in shaped holes (round/square) -Matches items from 3 choices 		<ul style="list-style-type: none"> -Arm flapping may persist -Asymmetry in arms or legs when moving may persist
2-3 yrs.	<ul style="list-style-type: none"> -Trunk is stable and balance is good allowing for posture control during reaching and climbing -Jumps (in place) 	<ul style="list-style-type: none"> -Movement less from shoulders and more at elbow with hand movement -One hand holds while other does work (opening a jar, holding paper while scribbling) 	<ul style="list-style-type: none"> -Watches others draw and then imitates -Points at familiar objects/people & some detail in books 		<ul style="list-style-type: none"> -Walking delayed and may begin around age 2 -Gait abnormalities (no heel strike,

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	<p>-Up/Down stairs with support (as shown in picture below)</p> <p>2 Years - Walks up and down stairs holding on</p>  <p>cdc.gov/Milestones</p>	<p>-Hand preference continues to develop</p> <p>-Drawing: Pronated Pencil Grasp used to draw horizontal & vertical lines (as shown in pictures below)</p>  <p>-Scissor use develops: 2 yr.-uses both hands to open/close, 3 yr.-snip paper at edge</p>	<p>-Matches simple shapes and colors</p> <p>-Assembles 3 piece puzzle</p> <p>-Can sort by small, medium, large shape</p>		<p>lacking normal arm swing pattern)</p> <p>-Stereotypies emerge, i.e., repetitive actions, atypical navigation of sensations</p>
<p>3-4 yrs.</p>	<p>-Jumps forward short distance</p> <p>-Sways to music</p> <p>-Balances on one foot for a few seconds</p> <p>-Walks with heel-toe gait pattern</p> <p>-Walks upstairs with alternating feet</p> <p>-Runs with greater control (as shown in picture below)</p> <p>3 Years - Runs easily</p>  <p>cdc.gov/Milestones</p>	<p>-Stronger hand preference seen, but will still switch</p> <p>-Immature Tripod Grasp (thumb, index, middle fingers) with arm moving as a unit to use coloring tool</p> <p>-Makes Circles</p> <p>-Scissors: Cuts in forward direction and follow simple straight and curved lines</p>	<p>-Copies from a model</p> <p>-Matches simple block/bead patterns</p> <p>-Identifies difference in size</p>		<p>-Poor postural control in sitting and standing</p> <p>-Stereotypies continue</p>  <p>-Elbow flexes as head turns-ATNR persists (as shown in picture above)</p>
<p>4-5 yrs.</p>	<p>-Runs around obstacles</p> <p>-Hops on one foot (as shown in picture below)</p>	<p>-Decreased movement from shoulder/elbow & more movement at wrist and hand/fingers</p> <p>-Increased hand dominance</p>	<p>Follows moving objects with ONLY eyes (no head).</p>		<p>-Poor postural control</p> <p>-Stereotypies continue</p>

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	<p>Skips with alternating feet several times</p> <p>4 Years - Hops and stands on one foot up to 2 seconds</p>  <p><small>U.S. Department of Health and Human Services Centers for Disease Control and Prevention cdc.gov/Milestones</small></p>	<p>-Mature Tripod grasp (three fingers arms is stable and fingers control the tool as shown in picture below)</p>  <p><small>Dynamic Tripod Grasp</small></p> <p><small>GROWING UP TOGETHER WITH KIDS</small></p> <p>-Drawing: Wrist and fingers move to control the writing tool. Staying in the lines when coloring</p> <p>-Copying cross, diagonal lines, squares</p> <p>-Scissors: Mature positioning (thumb up-perpendicular to floor-away from child's body as shown in picture below)</p>  <p><small>4 Years - Uses scissors</small></p> <p><small>U.S. Department of Health and Human Services Centers for Disease Control and Prevention cdc.gov/Milestones</small></p>			<p>-Difficulties with more complex motor tasks</p>  <p>-Low tone grasp (as shown in picture above)</p> <p>-Decreased postural control in sitting with head close to table (as shown in picture below)</p> 
5-6 yrs.	<p>-Moves to music rhythm.</p> <p>-Can do a few sit ups or simple pushups.</p>	<p>-Bilateral (2 handed) coordination is good (one hand holds while other completes refined tasks like cutting details as shown in picture below)</p> <p>-Hand dominance is established fully</p> <p>-Drawing: Can draw "x", triangles, diamonds</p>	<p>-Names upper case letters and some numbers.</p> <p>-Recognizes his/her own name in print (Uppercase & lower case)</p>		<p>-Poor postural control</p> <p>-Stereotypies continue</p> <p>-Difficulties with challenging/multi step motor tasks</p>

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	<p>-Swings and climbs well (as shown in picture below)</p>  <p>5 Years - Swings and climbs</p> <p><small>U.S. Department of Health and Human Services Centers for Disease Control and Prevention cdc.gov/Milestones</small></p>	<p>-Puts shapes together to form pictures</p> <p>-Scissors: Can cut details accurately</p>  <p>5 Years - Uses a fork and spoon and sometimes a table knife</p> <p><small>U.S. Department of Health and Human Services Centers for Disease Control and Prevention cdc.gov/Milestones</small></p>	<p>-Can play Memory type games</p> <p>-Recognizes partial drawing or completes simple unfinished words</p> <p>-Follows words with eyes (& finger) while adult reads</p> <p>-Draws simple picture of person</p>		<p>-Challenges with sequencing for tasks</p>