# The Effect of Retained Primitive Reflexes on Children with Learning Disabilities

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**Evidence Table Topic:** What is the evidence for primitive reflex interventions designed to measure or improve occupational performance and/or quality of life for children with learning disabilities?

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<tr>
<th>Author/ Year</th>
<th>Study Objectives</th>
<th>Level/Design/ Participants</th>
<th>Intervention and Outcome Measures</th>
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<tbody>
<tr>
<td>Brown, C. G. (2010).</td>
<td>To determine the effects of the Primary Movement Programme on fine motor skills.</td>
<td>Level I Randomized control study N= 65 children Control group n=33 Primary Movement Programme (Experimental group) n= 32</td>
<td>Control group performed interventions based on Brain Gym Movements. Experimental group performed the Primary Movement Programme, specifically the early years movement. Outcome Measures: • British Ability Scales II (BAS II)- copying subtest section</td>
<td>After performing the Primary Movement programme for 15 minutes each day in the classroom, the post-intervention results showed that approximately 75% of the experimental group improved their fine motor skills to performing above the mean of 50, while only approximately 25% of the control group improved their fine motor skills using the Brain Gyms movements (p&lt; .001).</td>
<td>Study had a small sample size. The BASII was administered to the children 2 times within a 5 month period. Due to this being an international study, the results, while valid to the specific study, might not have the same applicability in the United States.</td>
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<tr>
<td>Freides, D., Barbati, J., Van Kampen-Horowitz, Lynn J., Sprehn, G., Iverson, C., Silver, J., &amp; Woodward, R. (1980).</td>
<td>To determine the relationship between body reflexes and motor skills in children with learning disabilities.</td>
<td>Level II n= 24 boys Control group n= 12 boys succeeding in normal classrooms Experimental group n=12 boys from special education classrooms</td>
<td>The control group and experimental group were analyzed in gross motor movements. No interventions were given. Outcome Measures: • Authors developed a 97 task assessment based on studied research from Ayres, Bobath, Fiorentino, Kephert, McGraw and Pieper.</td>
<td>The authors determined that every one of the learning disabled subjects had a motor deficiency, while every one of the control subjects did not. The results showed that the learning disabled subjects scored significantly lower than the non-disabled subjects (p&lt;0.01).</td>
<td>There was a camera error during an examination which caused the authors to discard that subject’s results. This study had a small sample size.</td>
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Nonrandomized controlled trail  
n=60 fifth graders  
Control group n=20 identified as not having a reading disability.  
Experimental group n=32 identified as having a reading disability.  
Children ranged from 10 to 13 years of age. | This study did not present any interventions.  
Outcome Measures:  
- Developmental Eye Movement Test (DEM)  
- Electro-oculographic technique (EOG)  
- Primitive reflex assessments | There is a positive correlation between primitive reflexes, specifically the STNR due to the interrelationship, and saccadic eye movement in children who have reading difficulties. Their findings show that all parameters for horizontal and vertical saccadic movement, except for the DEM completion time in children presenting with reading impairments, were abnormal and significantly different (p<0.01). | The sample size was relatively small. |
Randomized, Double-blind control study  
N= 60 children  
Experimental group n= 20  
Placebo-control group n=20 | Experimental group were given specific movement pattern to complete every evening at home and pattern changed every 2 months.  
The placebo-control group were given movement | The experimental group had significant interactions (p< 0.001) in all areas tested. They found a decrease in ATNR persistence, a substantial increase in reading | This was an international study, the results, while valid to the specific study, might not have the same applicability in the United States. |
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<td>Rider, B. A. (1972).</td>
<td>To determine the relationship between postural reflexes and learning disabilities.</td>
<td>Level I Randomized control trial N= 58 children Group 1 from a second grade classroom n=38 children Group 2 from perceptual-motor program n=20 Children ranged between 6-13 years of age</td>
<td>patterns not based on reflex movements to complete every night and changed every 2 months. The control group continued with normal daily routines. Outcome Measures: • Wechsler Objective Reading Dimensions (WORD)- 2 subtests spelling and reading • Schilder Test • Non-Reading Intelligence Tests (NRIT) • Phonological Assessment Battery • Timed writing test • Authors developed eye tracking test</td>
<td>abilities, a decrease in saccadic eye movements and significant improvement in writing speed. The placebo-controlled and control groups did not show decreased.</td>
<td>This study had a small size.</td>
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 n=38 children  
 Control group consisted of “normal children”, n=23  
 Experimental group consisted of children with learning disabilities, n=23  
 Children ranged from 6-8 years of age. | No interventions were done during this study. Each subject was assessed for 20 minutes in body-righting sequences and the frequency of midline crossing for each child.  
 **Outcome Measures:**  
 - Southern California Sensory Integration Test- used the Space Visualization test portion  
 - Author developed body-righting assessment | Children in the learning disabled group scored significantly lower than the control group with a score of p<.001. The administrator then scored the SVCU and found that the children in the learning disabled group scored significantly lower than the control group with p<.05. The author found no correlation between body-righting and midline cross. | This study had a small sample size.  
 The students selected to participate in the study were identified by school administrators. It is possible that some unintended bias existed in the selection process as they were not random selections. |
 n=109 boys  
 Control group n= 55 non-diagnosed children  
 - Subgroup 1 from control group n= 34 boys with coordination, learning. | Due to the purpose of this study being correlational, no interventions were completed with the groups.  
 **Outcome Measures:**  
 - Long Form of the Conners’ Parent Rating Scale-Revised (CPRS-Long Form)  
 - The STNR retention levels relate to all the Conners’ Indices, while the TLR retention positively correlated to impulsive and problematic behaviors. The only significant effect for ATNR is lower academic achievement in | No girls were tested to generalize the findings.  
 The INPP reflex assessments were recorded, but due to difficulties with the camcorder 14 of 109 were not recorded. |
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<td>emotional and behavioral issues</td>
<td>Subgroup 2 from control group n=21 boys with no difficulties</td>
<td>R)</td>
<td>regards to mathematics. The Moro had no direct effects on AD/HD. This study suggests/confirmed that the longer one of the four retained reflexes is present, the greater the likelihood that normal brain development had been hindered or malformed.</td>
<td>This study was an international study.</td>
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<td>Experimental group n=54 boys diagnosed with ADHD</td>
<td></td>
<td>Wide Range Achievement Test-Third Edition (WRAT-3)</td>
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<td>INPP Reflex assessments- tests the Moro, STNR, ATNR and TLR.</td>
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