


# **FINE MOTOR DYSFUNCTION**

## **Therapeutic Strategies in the Classroom**

by Kristin Johnson Levine, M.S.Ed., O.T.R.

Illustrations drawn under contract by Cathie Lowmiller


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# CONTENTS

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<b>Acknowledgments</b> .....	xvii
<b>Introduction</b> .....	1-11
Introduction .....	1-7
Purpose .....	3
Contents and Organization .....	3
Use of the Materials .....	4
Assessment .....	4
Philosophy .....	5
Approach .....	5
Assessment Checklist .....	9-11
Description and Use .....	9
Areas That Can Interfere with Fine Motor Performance .....	10-11
<b>Central Nervous System State</b> .....	15-43
Central Nervous System State .....	15-16
Definition .....	15
Causes .....	15
Preparation for Motor Activities .....	16
Compensatory Strategies .....	16
Caution .....	16
Classroom and Individual Practice .....	
Total Body Inhibition .....	17-18
Sensory Stimulation .....	19-20
Progressive and Differential Relaxation Techniques .....	21-22
Mental Imagery Relaxation Technique .....	23-24
Recognizing and Releasing Tension in the Arm and Hand .....	25-26
Relaxing the Arm and Hand—Weight Bearing and Shaking .....	27-28
Increasing Tactile Contact .....	29-30
Increasing Tactile Contact with Tools and Utensils .....	31-32
Reflective Approach to Fine Motor Activity .....	33-34
Classroom and Home Adaptations .....	
Creating a Stimulating Learning Environment .....	35-36
Creating a Calming Learning Environment .....	37-39
Focusing Attention .....	41-43

<b>Muscle Tone</b> .....	47-82
Muscle Tone .....	47-50
Definition .....	47
Abnormal Muscle Tone .....	47
Preparation for Motor Activities .....	49
Compensatory Strategies .....	49
Caution .....	50
Classroom and Individual Practice	
Relaxing the Trunk in Preparation for Activity .....	51-52
Relaxing the Arms in Preparation for Activity—	
Joint Approximation .....	53-54
Relaxing the Shoulders in Preparation for Activity—	
Joint Approximation .....	55
Relaxing Raised and Retracted Shoulders—	
Inhibiting Positions .....	57
Relaxing Protracted Shoulders—Inhibiting Positions .....	59-60
Relaxing the Elbows in Preparation for Activity .....	61
Relaxing Fisted Hands in Preparation for Activity .....	63-64
Stimulating Neck and Trunk Tone .....	65-66
Stimulating Shoulder and Arm Tone—Joint Compression .....	67-68
Compensatory Strategies	
Positioning and Materials for the Child with Low Tone .....	69-70
Positioning for the Child with Fluctuating Tone .....	71-73
Classroom Materials and Assistance for the Child with	
Fluctuating Tone .....	75-76
Positioning for the Child with High Tone .....	77-79
Classroom Materials and Assistance for the Child with	
High Tone .....	81-82
<b>Postural Control</b> .....	85-118
Postural Control .....	85-87
Definition .....	85
Development .....	85
Difficulty with Postural Control .....	86
Beneficial Activities .....	87
Compensatory Strategies .....	87
Classroom and Individual Practice	
Neck Cocontraction .....	89-90
Head Control .....	91-92
Neck Rotation .....	93-94
Trunk Cocontraction .....	95-96
Trunk Stability During Arm Movement .....	97-98
Trunk Rotation .....	99-100
Protective Extension .....	101-102
Lateral Weight Shift .....	103-104
Sitting Balance .....	105
Trunk Support for Fine Motor Activities in Sitting .....	107-108

Gym, Playground, and Extracurricular Practice	
Trunk Flexion .....	109-110
Trunk Extension .....	111-112
Balance .....	113-115
Compensatory Strategies	
Maintaining Upright Position .....	117-118
<b>Arm Strength .....</b>	<b>121-141</b>
Arm Strength .....	121-122
Development .....	121
Arm and Hand Weakness .....	121
Beneficial Activities .....	121
Compensatory Strategies .....	122
Classroom and Individual Practice	
Classroom Activities .....	123-124
Sitting Pushups .....	125
Preschool Classroom Activities .....	127-128
Clay, Dough, and Putty Activities .....	129-130
Therapy Materials .....	131-132
Gym, Playground, and Extracurricular Practice	
Gym and Playground Activities .....	133-135
Sports and Extracurricular Activities .....	137-138
Compensatory Strategies	
Classroom and Home Adaptations .....	139-141
<b>Grip and Pinch Strength .....</b>	<b>145-171</b>
Grip and Pinch Strength .....	145-147
Development .....	145
Grip and Pinch Weakness .....	145
Beneficial Activities .....	146
Compensatory Strategies .....	147
Grip Strength—Classroom and Individual Practice	
Classroom Activities .....	149-150
Crumpling Paper .....	151
Preschool Classroom Activities .....	153-155
Games .....	157
Pinch Strength—Classroom and Individual Practice	
Classroom Activities .....	159-161
Games .....	163
Clay, Dough, and Putty Activities .....	165-166
Compensatory Strategies	
Adaptations for Weak Grip and Pinch .....	167-169
Adaptations for Nonfunctional Grip and Pinch .....	171

<b>Shoulder Stability and Shoulder Control</b> .....	175-211
Shoulder Stability and Shoulder Control .....	175-176
Development .....	175
Shoulder Instability and Poorly Controlled Movement .....	175
Beneficial Activities .....	176
Compensatory Strategies .....	176
Shoulder Stability—Classroom and Individual Practice	
Separation of Shoulder Blade and Arm .....	177-178
Weight-Bearing Activities .....	179
Joint Compression .....	181
Reciprocal Push-Pull .....	183
Shoulder Stability—Gym, Playground, and Extracurricular Practice	
Scooterboard Activities .....	185-186
Games .....	187-188
Gym and Playground Equipment .....	189
Bolster and Physioball Activities .....	191-192
Shoulder Control—Classroom and Individual Practice	
Vertical Movement .....	193-194
Front-to-Back Movement .....	195-196
Horizontal Movement .....	197-198
Diagonal Movement .....	199-200
Rotary (Circular) Movement .....	201-202
Movement Combinations .....	203-204
Classroom Activities .....	205-206
Shoulder Control—Gym, Playground, and Extracurricular Practice	
Movement Combinations .....	207-208
Shoulder Control—Compensatory Strategies	
Classroom Positioning and Equipment .....	209-211
 <b>Forearm, Hand, and Finger Control</b> .....	 215-272
Forearm, Hand, and Finger Control .....	215-219
Development .....	215
Poor Control of Forearm, Wrist, Hand, or Finger Movements .....	217
Beneficial Activities .....	218
Compensatory Strategies .....	219
Classroom and Individual Practice	
Graded Flexion and Extension of Elbows .....	221-222
Stabilizing the Elbow for Fine Motor Activity .....	223-224
Forearm Supination and Pronation .....	225-227
Forearm Supination .....	229-231
Wrist Stability .....	233-234
Stabilizing and Mobilizing the Ulnarly Deviated Wrist .....	235-237
Wrist Extension .....	239-241
Grasp .....	243-245
Voluntary Release .....	247-248
Grasping a Writing Implement .....	249-250
Finger Awareness and Isolation .....	251-253
Fine Finger Control .....	255-257
Fine Finger Movement for Writing—Warm-Up Exercises .....	259-260
Object Rotation with Fingers—Pencil Practice .....	261-262



Finger Control for Writing Letters and Numbers .....	263-264
Activities to Develop Pre-Scissor Skills .....	265-266
Scissor Control—Opening and Closing the Blades .....	267-268
Compensatory Strategies	
Opening and Closing the Hand .....	269-270
Fine Finger Control .....	271-272
<b>Coordination of Arm, Wrist, and Finger Movements .....</b>	<b>275-299</b>
Coordination of Arm, Wrist, and Finger Movements .....	275-278
Development .....	275
Poorly Coordinated Arm, Wrist, and Finger Movement .....	276
Beneficial Activities .....	277
Compensatory Strategies .....	278
Writing Skills—Classroom and Individual Practice	
Vertical Movements .....	279-280
Diagonal Movements .....	281-282
Rotary (Circular) Movements .....	283-284
Complex Movement Combinations .....	285-286
Classroom Cues for Writing Activities .....	287-288
Scissor Skills—Classroom and Individual Practice	
Coordinating Hand Movement and Forward Arm Movement .....	289-290
Lateral (Sideways) Control of Scissors .....	291-292
Classroom Suggestions for Cutting Activities .....	293-294
Home and Recreational Activities	
Drawing, Coloring, and Cutting .....	295
Compensatory Strategies	
Writing .....	297
Cutting with Scissors .....	299
<b>Kinesthetic Awareness .....</b>	<b>303-329</b>
Kinesthetic Awareness .....	303-306
Definition .....	303
Development .....	303
Difficulty with Kinesthetic Awareness .....	304
Beneficial Activities .....	305
Compensatory Strategies .....	305
Classroom and Individual Practice	
Awareness Activities for Fingers and Hands .....	307-308
Recognizing and Reproducing Line Direction .....	309-310
Recognizing and Reproducing Line Length .....	311-312
Recognizing and Reproducing Size .....	313-314
Recognizing and Reproducing Shapes—Template Activities .....	315-316
Recognizing and Reproducing Shapes—Glue Drawing .....	317-318
Recognizing and Controlling Grip Position .....	319-320
Controlling Pressure .....	321-322
Controlling Direction of Pencil Movement—Dot-to-Dot Designs .....	323-324
Gym, Playground, and Extracurricular Activities	
Games and Sports for Body Awareness .....	325-326

Compensatory Strategies	
Classroom Modifications .....	327-328
Gym, Sports, and Extracurricular Activities .....	329
<b>Visual Perception .....</b>	<b>333-375</b>
Visual Perception .....	333-337
Definition .....	333
Development .....	333
Difficulty with Visual Perception .....	334
Beneficial Activities .....	335
Compensatory Strategies .....	337
Classroom and Individual Practice	
Pre-Writing Lines Activity .....	339-340
Make-a-Shape Activity .....	341-342
Line-'em-Up Puzzle Activity .....	343-344
Make-and-Match Puzzle Activity .....	345-346
Letter and Number Recognition—Pipe Cleaner Activities .....	347
Letter and Number Recognition—Clay Activities .....	349
Letter and Number Recognition—Plastic Letters Activity .....	351-352
Recognizing Errors within Letters and Numbers— Correction Game .....	353-354
Recognizing Details within Letters and Numbers— Self-Correction .....	355-356
Recognizing Errors within Letters and Numbers— Flash Cards .....	357-358
Spacing between Letters and Words—Discrimination Activity .....	359-360
Placement of Letters within Lines—Discrimination Activity .....	361-362
Letter or Number Size—Discrimination Activity .....	363-364
Margins—Discrimination Activity .....	365-366
Compensatory Strategies	
Figure-Ground Confusion .....	367-368
Visual Recognition and Visualization Skills .....	369-370
Form Constancy .....	371-372
Writing Paper Choice .....	373-374
Visual Spatial Confusion .....	375
<b>Visual-Motor Control .....</b>	<b>379-416</b>
Visual-Motor Control .....	379-381
Definition .....	379
Development .....	379
Difficulty with Visual-Motor Skills .....	380
Beneficial Activities .....	380
Compensatory Strategies .....	381
Classroom and Individual Practice	
Tracing Activities .....	383-384
Maze Activities .....	385-386
Coloring within Line Boundaries .....	387-388
Pre-Writing Activities—Line Copying .....	389-390
Letter Copying—Cage the Monster .....	391-392

Placement of Letters within Lines .....	393-394
Spacing between Letters and Words—Plastic Letters Activity .....	395-396
Spacing Between Letters and Words—Graph Paper Activity .....	397-398
Activities to Integrate “Feel” and “Look” of Movement .....	399-400
Scissor Activities—Cutting on Straight Lines .....	401-402
Scissor Activities—Cutting on Curved and Complex Lines .....	403-404
Scissor Activities—Spatial Direction .....	405-406
Classroom Activities, Games, and Toys .....	407-408
Gym, Playground, and Extracurricular Practice	
Recreational Activities .....	409-410
Compensatory Strategies	
School and Home Adaptations .....	411-413
Sports and Extracurricular Activities .....	415-416
<b>Motor Memory</b> .....	419-456
Motor Memory .....	419-421
Development .....	419
Difficulty with Motor Memory .....	420
Beneficial Activities .....	421
Compensatory Strategies .....	421
Classroom and Individual Practice	
Which Comes First?—Letter and Number Formation .....	423-424
Which Way Do They Go?—Letter and Number Formation .....	425-426
Acetate Tracings—Letter and Number Formation .....	427-428
Color Strokes—Letter and Number Formation .....	429-430
Stroke Sequence Puzzles—Letter and Number Formation .....	431-434
Right or Wrong?—Letter and Number Movement Pattern	
Recognition .....	435-436
Driver’s License Game—Letter and Number Movement	
Patterns .....	437-438
Large Movement Sequences from Written Symbols .....	439-440
Large Movement Sequences from Letter or Number Names .....	441-442
Bilateral Alphabet and Numbers .....	443-444
Finger Writing .....	445-446
Mental Rehearsal .....	447-448
Word Movement Sequences .....	449-450
Compensatory Strategies	
Classroom Considerations .....	451-453
Classroom Modifications and Adaptations .....	455-456
<b>Bilateral Arm and Hand Use</b> .....	459-501
Bilateral Arm and Hand Use .....	459-461
Definition .....	459
Development .....	459
Difficulty with Bilateral Hand Use .....	460
Beneficial Activities .....	460
Compensatory Strategies .....	461

Classroom and Individual Practice	
Symmetrical Use of Both Hands .....	463-465
Reciprocal and Alternating Movement .....	467-468
Differentiation of Function .....	469-470
Chalkboard Activities .....	471-472
Hand Dominance .....	473-475
Crossing Midline .....	477-478
Stabilizing of Paper for Writing .....	479-480
Scissor Skills .....	481-483
Games and Toys for Encouraging Use of Both Hands	
Children in Preschool, Kindergarten, and Early Elementary	
Grades .....	485-487
Children in Upper Elementary Grades .....	489-490
Gym, Sports, and Playground Activities	
Symmetrical Use of Arms .....	491-492
Encouraging Contrasting Movements .....	493-494
Home and Recreational Activities	
Encouraging Use of Both Hands .....	495-496
Compensatory Strategies	
School and Home Adaptations .....	497-499
Sports and Extracurricular Activities .....	501
<b>Spatial Analysis and Planning</b> .....	505-540
Spatial Analysis and Planning .....	505-508
Definition .....	505
Development .....	505
Difficulty with Spatial Skills .....	506
Beneficial Activities .....	507
Compensatory Strategies .....	508
Classroom and Individual Practice	
Spatial Concepts .....	509-510
Spatial Terms Applied to Self and Objects .....	511-512
Terms for Spatial Arrangement on Paper or Chalkboard .....	513-515
Left and Right Identification .....	517-519
Letter and Number Orientation .....	521-522
Letter Orientation—Practice Activity for P,p,b,d,g,q .....	523-524
Part-to-Whole Relationships .....	525-526
One-to-One Correspondence for Spatial Placement .....	527-528
Design-Copying Strategies .....	529-531
Independence of Figure from Surrounding Shape .....	533-534
Compensatory Strategies	
School and Home Adaptations .....	535-537
Gym, Sports, and Extracurricular Activities .....	539-540
<b>Left-Handedness</b> .....	543-564
Left-Handedness .....	543-546
Differences between Right- and Left-Handers .....	543
Accommodating the Left-Handed Child in the Classroom .....	545

Classroom and Individual Practice	
Arm, Hand, and Paper Position .....	547
Teaching Paper Positioning .....	549-550
Handwriting Grip and Arm Position .....	551-552
Coordinating Arm and Finger Movement—	
Pre-Cursive Practice .....	553-554
Coordinating Arm and Finger Movement for Cursive Writing .....	555-556
Cursive Writing Slant .....	557-558
Classroom Suggestions	
Maximizing Fine Motor Performance .....	559-561
Correcting Awkward Grip Patterns .....	563-564

### **Appendixes and Bibliography**

Appendix A: Resources for Additional Information and Activities .....	567-570
Appendix B: Sources for Materials and Equipment .....	571-580
Appendix C: Distributor Information .....	581-582
Bibliography .....	583-593

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# **Introduction**

# INTRODUCTION

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## **Purpose**

Every teacher has known the child who struggles with fine motor tasks—the second grader who erases until the paper tears because of inability to control the pencil to make legible letters; the kindergartner who cannot copy a square; the third grader who can't tie shoes; or the fifth grader who is unable to use a ruler or keep up with classroom handwriting demands. Recently, the mainstreaming movement has added to the classroom the third grader with a developmental disability who is unable to write her name and the second grader with cerebral palsy who is in art class with his friends but can't grasp a paintbrush. What do we do for these children?

Mainstreaming encourages the education of children with disabilities in “the least restrictive environment.” This usually means the environment in a “regular” classroom that provides educational and social experiences which previously were available only to nondisabled peers. Although new doors have been opened, the educational curricula and materials used in most classrooms were designed for children without disabilities. This problem raises new questions for teachers, parents, and therapists. How can programming and materials be adapted or modified to provide the optimal educational experience for each of these unique individuals?

The purpose of this manual is educational. It was created to assist therapists, special educators, teachers, and parents to understand and manage fine motor dysfunction in the classroom. The manual describes activities and compensatory strategies designed to improve the classroom performance of preschool and school-age children who have a variety of functional fine motor problems.

## **Contents and Organization**

The information in this manual is divided into 15 chapters. Each addresses an area of dysfunction that commonly results in referral to a school-based occupational therapist. For each component area, the following are provided

1. A brief discussion of the dysfunctional component: how it normally develops; how children function with deficiencies in that particular area; and the kinds of activities and adaptations which will help to improve performance.
2. Activities designed to improve performance:
  - In the classroom or resource room.
  - On the playground or during gym class.
  - At home.
  - Extracurricular activities.
3. Strategies for bypassing the weak area.



See pages 583-593 for a list of books and articles which were used generally in compiling this manual. These publications contain helpful ideas for management of fine motor dysfunction of preschool and school-age children; in-depth rationale for the use of some of the activities presented here; and more activity suggestions. See pages 571-580 for information about the adaptive equipment discussed in the manual.

### **Use of the Materials**

These materials are designed to be copied and given to those who work with the child throughout the day. Therapists can use the information sheets to help teachers and parents understand why a child is having difficulty. The activities and compensatory strategies are examples of ways to improve the child's performance. They are meant to be adapted to the needs of the individual child.

Motor skill development requires a great deal of repetition. Suggestions for activities in several settings are made so that the child will practice the target skills throughout the day. Therapists should encourage teachers and parents to incorporate the prescribed kinds of activities into the child's daily schedule; and assist them in devising specific activities which are appropriate, based upon the curriculum, educational program, availability of extracurricular activities, and the child's interests.

These suggestions are intended to supplement an occupational or physical therapy program, if one is needed. They address activities that can be incorporated safely in an educational program. They do not include activities which are carried out through direct therapy, such as those often required by children with more severe tone and movement disorders. They are not intended to replace the services of an occupational or physical therapist; nor are they to be used as a "cookbook for therapy."

Although many of the activities are beneficial for all developing children and can be incorporated into a regular classroom curriculum, the key to their successful use is in choosing the ones that will address an individual child's needs. This choice should be made by a qualified therapist, based on needs identified through the evaluation process. When appropriate, techniques should be demonstrated and their use should be monitored by the consulting therapist.

### **Assessment**

Children identified as having "weak fine motor skills" are too often provided with a generic set of classroom "fine motor activities" that fail to address the child's particular skill needs. Many children who are experiencing difficulty with handwriting spend hours diligently working on mazes and tracing letters. For children with weak eye-hand coordination, this results in improvement; but for many children for whom handwriting is difficult due to language, perceptual, or motor control dysfunction, the time is wasted. Spending time on activities that do not result in progress can be damaging to a child's self-esteem and can decrease the excitement about school and the learning process which is so

essential to success in later grades. The time could be spent more beneficially by performing activities that address specific dysfunctional skills or which address the content of the activity while bypassing the weak skills. However, the weak skills often are not identified.

Before teachers, parents, and children expend the time and energy required for the following activities, an evaluation should be performed by an occupational therapist to pinpoint the child's motor or perceptual-motor strengths and weaknesses. See pages 9-11 for a sample checklist of components that play a role in fine motor skill development.

## Philosophy

Think back to your school years. Was there something that you did badly? *Really* badly? Most of us are familiar with how this feels and what it does to our self-esteem even though we are most likely within the range of average performance. Under the circumstances, we avoid the source of our humiliation and public embarrassment, we do not practice, we do not improve, and we feel terrible about ourselves. Now picture the child who is clearly and indisputably (to himself and others) below the average range for certain kinds of perceptual and/or motor skills. Imagine how that feels in a school setting where motor skills are emphasized for expression of knowledge, social interaction, and play.

Without understanding and help in dealing with motor difficulties, the child's weak skill areas often get weaker as the child avoids any activities that involve those areas. The child is embarrassed when these skills are required for classroom performance, and self-esteem and feelings about school and the learning process suffer.

The philosophy for this book is that the top priority for dealing with motor difficulties in school is to enable the child to participate in school activities with as much success as possible so that the child's self-image is one of competence, confidence, and engagement rather than difference, failure, and avoidance.

To accomplish this, an educational program ideally addresses three areas:

- Compensatory strategies to enable the child to achieve the educational "ends" by different means.
- Activities that encourage practice of the weaker skills, adapted to the child's own level of ability so that secondary deficits don't develop and the child can see progress in this area.
- Focus on development of the child's strong areas of ability.

## Approach

The approach to management of fine motor dysfunction suggested here is task-specific. We ask ourselves, what task is the child having difficulty with, what part of the task is hard, and why? Although activities are arranged in sections according to skill areas that may be weak, these suggestions are not meant to focus the reader on deficits but on component skills which are necessary for

adequate performance of functional tasks. For many skill areas, practice of the component skill within the context of the functional task (or as close to it as possible) is most likely to result in improvement.

Many of the activities presented here do not attempt to remediate the overall "cause" of the problem, but instead improve performance in three ways:

- They provide opportunities for practice of the weak component so that the child's avoidance doesn't result in further weakness.
- They suggest ways to teach the functional skill which minimize the demand for the weak component and emphasize stronger modes of learning.
- They suggest ways to bypass the weak component altogether.

Imagine a child who has difficulty with the functional skill of visually recognizing correct or incorrect letter formations. The component of this skill that is interfering with the child's handwriting performance is the child's difficulty in using visual information for letter recognition. Suggestions—presented here in the section titled Visual Perception (in this case, the weak component skill)—include the following:

- Visual discrimination of spatial errors is practiced on the child's own written work, with the adult helping the child to develop strategies for noticing and recognizing crucial elements of the correct letter form.
- Letter recognition skills are taught to the child in a manner that emphasizes touch, movement, and verbal cues for recognition.
- A variety of types of paper with tactile and color cues are suggested to make writing easier, and a strip of paper with letters on it is placed on the child's desk to bypass the need for recalling fine details of how letters look.

Some component skills, such as strength of grip or pinch, often can be improved through activities focused specifically on the weak area, although not only within the context of the functional skill. In this case, suggestions include strengthening activities that can be incorporated throughout the day. These are practiced during activities other than the functional task that needs improvement, to increase the amount of repetition and likelihood of improving strength.

For example, a child is unable to open a milk carton (the functional task) due to weak pinch strength (the weak component). In this case, repeated practice of the component in the actual task context would be extremely boring and difficult (since this is a task which the child cannot do). Instead, a wide variety of pinch-strengthening activities are suggested for use at home and at school. These activities gradually build up strength to the degree necessary for successful performance of the functional task. Until strength increases so the child can open the carton, an adult can help by loosening it as it is handed to the child, so the child can open it successfully.

During any classroom fine motor activity, be sensitive to the possibility that the child may be self-conscious about performance. The child may rush through activities that are difficult, since they won't be done well no matter how much time is spent; or the child may act indifferent, although in fact caring a great deal. Focusing on the weak performance will make matters worse. During classroom writing activities, ignore messy work and disorganized arrangement of words or letters on the page. Focus instead on the content, legibility, and completion of written work. The activities presented here under Classroom and Individual Practice often can be taught in groups or incorporated into resource room or other individual work sessions, so that the target child is not singled out in front of the group.

Motor difficulties are not problems unless we treat them as such. The challenge for us is to help children to accept their unique patterns of strengths and weaknesses; to develop as fully as possible the motor skills which are useful for classroom activity; and to learn and demonstrate knowledge successfully despite relatively weak motor skills.

# **ASSESSMENT CHECKLIST**

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## **Description and Use**

The following checklist contains motor, perceptual-motor, and cognitive components which should be evaluated because of their role in the development of fine motor skills in the classroom. Ideally, a child's parents, teachers, and occupational therapist will be involved in the evaluation process to ensure a valid and consistent picture of which skill areas should be targeted for remedial work, which strong areas should be encouraged and supported, and which areas might require compensatory strategies.

This checklist is presented as an example only. Following an in-depth evaluation (which may include standardized instruments, achievement tests, classroom work samples, and observations), it can be used to record areas that need intervention. Instruction sheet choices then can be based on the results.

## Areas That Can Interfere with Fine Motor Performance

This checklist is designed to be completed by an occupational therapist, based on results of standardized testing, classroom work samples, and clinical observations.

Skill Component	Normal	Needs Intervention	Description
<b>Gross Motor</b>			
Muscle tone			
Upper extremity range of motion			
Posture			
Standing			
Sitting			
During paper-pencil tasks			
During scissor tasks			
During chalkboard work			
Trunk stability			
Standing			
Sitting			
Rotation			
Weight shifting			
Head and neck control			
Upright head positioning			
Neck rotation			
Balance/Equilibrium			
Protective responses			
Upper extremity strength			
Bilateral integration			
<b>Fine Motor</b>			
Upper extremity stability			
Cocontraction at shoulder			
Cocontraction at elbow			
Cocontraction at wrist			
Cocontraction of finger joints			
Shoulder control			
Forearm mobility			
Supination/Pronation of forearm			
Elbow control			
Wrist positioning and movement			
Wrist extension			
Isolated movement of individual fingers			
Separation of functions of the two sides of the hand			
Control of fine movements of finger joints			
Coordination of arm with fine finger movement			
During writing			
During cutting with scissors			
During manipulative activities			

Skill Component	Normal	Needs Intervention	Description
Prehension patterns			
During writing			
During free drawing			
During scissor use			
For prehension of objects			
Control of scissors			
Open/Close hand movement			
Lateral control			
Speed of movement			
For writing			
For nonwriting tasks			
Bilateral hand use			
Dominance/Laterality			
Grip and pinch strength			
<b>Perceptual (Integrative and Cognitive)</b>			
Kinesthetic awareness			
Of upper extremity movement			
Of fine finger movement			
Visual perception and analysis			
Motor memory			
Shapes			
Letters			
Numbers			
Visual-Motor control			
Praxis (motor planning)			
For handwriting			
For nonhandwriting tasks			
Automaticity of movement			
Handwriting movement			
Nonhandwriting movement			
Spatial analysis and planning			
<b>State and Behavioral</b>			
Relaxation/Agitation			
Activity level			
Attention span			
Ability to focus on relevant aspects of task/environment			
Reflective/Impulsive approach			
Cooperation			