

## CHAPTER 1

# What is TAAP?

From birth, children develop automatically. They grow to become independent learners. Children explore their interests and passions as they march toward all they can be to exceed life's potential achievements.

In the process of development, as it integrates through years of organized education, children with special needs display a gap in performance when compared to their typical peers.

TAAP (Treadmill for students with Autism and Apraxia Protocol) was designed, performed and researched with the only goal to decrease the performance gap. As a school therapist, my major concern with each student is how I can use the gross motor system to increase social learning opportunities. In *TAAP-2 Providing Opportunities to Learn*, clear descriptions of the development of the visual-gross motor system and case studies will document efforts to drastically narrow the performance gap. The understanding of the use of the gross motor system to affect the maturation of the visual processing system for early learning will provide a key to parents, therapists, teachers and physicians. Although there are many therapeutic and educational programs that also focus on the visual-motor systems, the long time that they take for students to benefit is a barrier. Using the treadmill to approximate the developmental gross motor milestones increases visual processing skills with automaticity, which is the typical developmental method. During TAAP performance, children also gain fitness, balance reactions, and visual guidance during sports activities to aggressively promote recess and PE play which is the most important method of social interaction in the young child's educational life.

Understanding the elements of TAAP is critical for all families and educators to effectively narrow the gap.

The first book explores visual-gross motor aspects of special needs children with autism and/or apraxia. Degrees of the visual-gross motor aspects can be related to nearly all children

## TAAP – Sequences & Patterns

### **SEQUENCE #1 - LiteGait and Jacket**

Forward Walk  
Downhill Walk  
Backward Walk

### **SEQUENCE #2 - LiteGait**

Forward Walk  
Downhill Walk  
Backward Walk

### **SEQUENCE #3**

Forward Walk  
Downhill Walk  
Pattern A: Climb the Mountain

### **SEQUENCE #4**

Pattern B: Walk-Run  
Pattern C: Walk-Turn  
Pattern D: Uphill Touch  
Pattern E: Walk Down-Catch

### **SEQUENCE #5**

Pattern F: Big Step, Right Foot/Left Foot  
Pattern G: Walk-Drop  
Pattern H: Quick Touch

### **SEQUENCE #6**

Independence



**TAAP equipment:** treadmill and suspension walker.



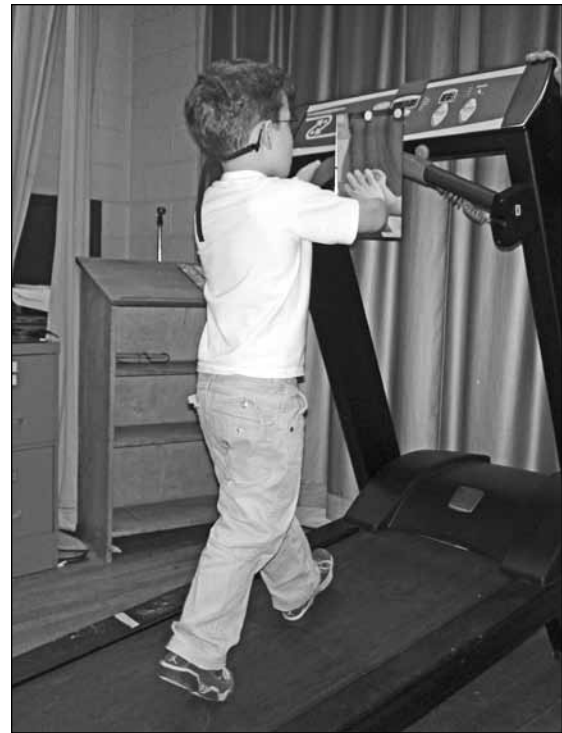
**TAAP Sequence 1:** Student integrating visual guidance with motor skill.

with learning difficulties from the child with more severe dysfunctions such as cerebral palsy or with less dysfunction such as attention deficit disorder or reading difficulties. Decreased postural alignment in sitting is related to the immaturity of the developmental planes of the visual processing system. Limited visual guidance during mobility is related to the fractured fusion of the ambient and focal visual systems. Limited visual attention and independent participation in the classroom is related to decreased integration of the visual processing and gross motor system. Many examples are detailed to depict key performance in the classroom that can be enhanced and/or corrected using TAAP.

The first book titled *Treadmill for Students with Autism and Apraxia Disorder* describes the barriers to providing traditional therapy applications to improve classroom learning behaviors. The barriers are explained as they block learning from the perspective of the child, the parent, the educator, the therapist, the administrator and the physician.

The protocol of TAAP is detailed in the first book as are sequences #1 through #6. Examples of application of TAAP blended with other therapies are expressed. Relevant information combining accepted learning theories with new brain discoveries are presented to highlight initial reasons why treadmill training is highly effective. A thirty-five minute DVD is included as a visual tutorial with several examples of performing students at each sequence of TAAP. In summary, when it was discovered how quickly specific treadmill work affected the achievement gap with a subset of children, TAAP, the book, was written. Simply, the barriers, classroom learning behaviors, the protocol, and therapy applications were the focus. The goal was to present TAAP as an effective therapy for children to learn with minimal time outside of the classroom.

In *TAAP 2 Providing Opportunities to Learn*, visual-gross motor development from birth through early school age is carefully dissected and depicted. Although development includes many specific areas, only visual-gross motor systems are spotlighted. The connection to the developmental nervous system as the controlling substrate is also defined. After important



**TAAP Sequence 4:** Student integrating visual-fine motor skills.

## TAAP 2: PROVIDING OPPORTUNITIES TO LEARN

typical visual-gross motor learning behaviors are completed, TAAP 2 continues to state seventeen key visual-gross motor skills in early learning. The key skills are extracted from the explanation of typical development, and then portrayed in various ways of dysfunction. The portrayal suggests alternate learning that may be created when the key skill cannot be developed. Often the alternate learning behaviors are not only alternate, but obstructive. The seventeen key skills are highlighted because TAAP performance

provides opportunities to shift the alternate/obstructive skill to a productive skill. In the beginning of TAAP performance, the child will learn effective gross motor patterns that target postural alignment, accurate motion and visual guidance of the movement. As performance continues, the student will increase visual processing skills fusing the ambient and focal visual systems. The students will continue using both eyes to focus as a basis for social experiences as well as reading and comprehension.

In the chapter on visual processing development in school, the suggested alternate learning behaviors from the seventeen key skills are explained in depth. The complex visual processing system is separated to understand the elements and mechanisms, and then reassembled to study the nervous system and ever-increasing brain development as children learn. Again, typical development is interwoven with examples of alternative learning styles.

Case studies are presented in each category of student, IEP (Individual Educational Plan-Special Education), 504 (Regular Education Student with Basic Life Need, Motor or Learning) and RtI (Response to Intervention-Regular Education). Physical and occupational therapy services are available to students through a variety of regulated formats. As therapists deliver service within classrooms, more students can benefit. The format of the case studies is presented in outline form with several descriptions of learning behaviors before, during and after TAAP programs.



**TAAP equipment:** placement of 45 degree double mirror on treadmill bar.



**TAAP Sequence 2:** Student looking into mirror for upright head control.

TAAP-2 continues to discuss specific reasons why TAAP works. The most important components of typical development that TAAP promotes are reviewed from a developmental perspective. TAAP performance is effective because it provides opportunities of visual-gross motor development in the structure of the treadmill. TAAP provides opportunities for intensive sensory-motor integration during the most integrative motor stage of walking. The development of visual processing allows further development to occur such as visual imitation. Access to the mirror neuron circuit for imitation is possible through TAAP performance. Children who do not visually attend cannot visually imitate which is the most powerful early learning skill. Children imitate other

children. This single idea is the basis for the educational inclusion where special needs children have the right to spend a large percentage of class time in their classroom with typical peers. TAAP promotes the ability for children to develop imitation skills through the visual-motor system. Recent research gives evidence that social intelligence is the highest order of intelligence because of its relative link to the immune system. As TAAP promotes visual attention, and motor skills, students are able to increase athletic experiences to interact with peers socially.

Chapter seven presents research summaries of studies that were conducted in a public school system. With the many regulated activities of students and necessary directives of therapists, conducting meaningful research projects can be difficult. Therapists can take advantage of

## TAAP 2: PROVIDING OPPORTUNITIES TO LEARN



Classroom postural and visual attention is critical for independent classroom function.



Work performance output increases with throughout the TAAP sequences.

data driven programs where daily data is documented in special and regular education initiatives. Paraprofessionals can be motivated and trained in coordination with therapist and teacher planned programs that target the key skills. Five studies are reviewed around the topics of toe walking, sitting postural work performance and behavior outbursts. The studies were constructed to have the outcome goal as an educational benefit to learning. They were also constructed so that data keeping would be the least restrictive to program deliverance and classroom function. Although only five summaries are presented, we have performed many more studies. The first was quite difficult to organize and integrate. However, with practice, we were able to conduct several mini-studies. Most of the results yielded more information than we initially sought and pointed us into directions that provided critical links to educational theories.

Please enjoy the information presented. Share it with all who may be able

to affect learning. Meaningful feedback is accepted and respected as we all attempt to decrease the learning gap and assist children to reach their potential throughout their educational experience. Contact us and tell us what you think.

My original goal with TAAP was to support sitting posture and walking patterns. The results I experienced with children on the autism spectrum far exceeded my expectations. As we expanded student diagnosis choice to: cerebral palsy, attention deficit disorder, reading dysfunctions, etc., more opportunities for visual learning exploded. TAAP has been a life-changing opportunity for our school children, my practice, and the therapy-education link. Providing increased opportunities to be a typical learner rewrites the potential that these children may access.

