



## The Symmetric Tonic Neck Reflex (STNR)

*The following is a nice explanation of the Symmetric Tonic Neck Reflex (STNR) and educational guidelines that will help the children*

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The symmetric tonic neck reflex (STNR) operates in response to the position of the head in relation to the body: when the head is tilted back, tension is increased in the muscles that strengthen the elbows and those which bend the hips and knees. When the head is bent forward, the tension is increased in the muscles that bend the elbows and those which straighten the hips and knees. Essentially, the three body units- neck, arms, legs- are “tied together” by the reflex, so that movement in one area automatically produces a change in the muscular tension in the other two areas.

In normal development, the STNR reaches its peak strength during the sixth to eighth month of the infant's life and should be approximately diminished in strength by the time the child is two or three years of age. Retention of the STNR activity beyond the age of two or three at a level, which modifies voluntary movement, is considered to be immature and abnormal reflex development. It is felt that the educational implications of retained abnormal activity of the STNR can be quite complex and far-reaching. Its presence in the immature state controls the pattern of muscular tension in the child's arms and legs in relation to the head movements; movement of any one of the three involved body parts elicits the reflex response in the other two parts. These involuntary movements interfere with the child's gaining coordinated control of the body- that is, the individual motor actions of the body still control the child. All motoric actions that the child makes must be performed within the constricting influence of the immature STNR. With the waist as the dividing line, whatever the top half of the body does, the bottom half does the opposite.

The immature STNR generally hampers the production of rhythmic, coordinated movement and specifically interferes with the postures generally required for reading and writing. An immature STNR makes it very difficult for a child to sit at a desk in the “correct” sitting position, with elbows and hips bent at the same time. Under the influence of the reflex, the neck and elbows tend to bend together in opposition to the straightening of the legs, and vice versa. Consequently, when an STNR child bends the arms to write or hold a book for reading, the legs want to straighten. Therefore, many children will get up and down from their chairs when they write or will just try to stand up while they are writing. STNR children who are tall enough will also often assume the “slouched” position, with legs stretched out in front. Children in this position are considered by many teachers to be “lazy” or “disrespectful”, or “unable to do work sitting that”. What many teachers do not realize is that these positions are actually comfortable to the STNR child because the child's arms and head are not fighting with the position of the legs.

Many children with an immature STNR give evidence of hyperactivity, or what is taken as hyperactivity, because of the difficulty in sitting still for long periods of time in the “proper” sitting position. They may get up and down from their chairs constantly in order to relieve the muscular tension caused by the immature reflex. These children usually have very poor penmanship: laboriously produced, with poor letter formation, and with the pencil held in a rigid and awkward manner. Every shift in the arm movement while writing also elicits a change in the muscular tension of the neck and legs. Consequently, these children usually write in a constricted, restricted, and cramped style and position to avoid muscular changes. Copying from the board to a paper on the desk is an especially difficult task, as the children must content with the positional changes in the neck and arms and the reflex effects of these changes. Sometimes, STNR children can produce well-written papers, but this is usually at the expense of extreme effort- at least 10 times more effort and energy than it takes for someone without an immature STNR.

At least 75% of the children who are classified as having learning disabilities are estimated to have an immature STNR as a contributory factor to their learning problems. This means that for many children who are failing spelling, for example, the basic problem may be more the difficulty with writing than actually with spelling. Many of these children can pass a spelling test if they are allowed to do so orally, rather than having to write the words. Some children who are having trouble in arithmetic frequently experience more trouble and expenditure of energy in copying the problems from a book or from the chalkboard than actual trouble with the mathematical concepts and computation. These children will often do the first part of the assignments correctly, but then will either not finish the assignment or will just put any answer on paper in order to hand in a “finished” product. As these children get older and have more and more failure experiences, they tend to avoid much, if not all, written work and appear lazy and totally uninterested in their schoolwork.

Obviously, not all academic problems are caused by an immature STNR; however, many academic problems are caused and/or compounded by this reflex interference. Exercises have been developed which are very effective in helping to mature the STNR. These are intervention techniques which, if don't properly, will actually eliminate these particular coordination problems. This exercise program usually requires participation of six to eight months to produce the desired coordination. During this time, it can be considerably beneficial to the child's academic progress and, consequently, to the child's emotional health, if the classroom teacher can attempt to circumvent, or work around, these specific coordination problems. We are including a list of suggestions that have been successfully implemented by numerous teachers in an effort to modify an essentially frustrating academic situation into a potentially successful one.

Book: Stopping ADHD published by the Avery imprint of Penguin/Putnam, and a video and DVD, produced by A.V.A Productions are available. The video and DVD contain a more detailed explanation of the devastating effects of an immature STNR on academics, athletics, socialization, and mental health. The video/DVD also contain numerous testimonials from families who have successfully completed the exercise program designed to mature the STNR and show how the exercises should look. The book included many practical suggestions and recommendations for the classroom teacher and parents for ways to work around this invisible handicapping condition, as well as a listing of the most commonly prescribed drugs and their side effects, a question and answer section, and the results of a study done with elementary school children.

## **Educational Guidelines: University of Indianapolis, Nancy O'Dell, Ph.D**

In working with STNR children, the most important thing to remember is that they are not willfully being overactive, leaving work unfinished, and trying your patience- they CANNOT help it. It is necessary for teachers to try to help children circumvent the problem until the time when the intervention techniques can help eliminate the problem. Children should not be penalized for something over which they have no control.

These are intended as temporary measures. We do not ask that responsibility be lessened, as that is not in the best interest of the child. We request that the child be permitted to express ideas in alternate manners. In this way, we have a better expression of what the child really knows, without inhibiting the child's demonstration of knowledge by the chore of writing.

1. Reduce all written work to the barest minimum
  - a. If an assignment is mainly concerned with a one-word answer, let the child write or circle the one word, rather than having to copy the entire sentence.
  - b. Give the child a clear, well-reproduced mimeo sheet of math problems or let another student copy the problems from the book or board, rather than having the child do all that writing before ever getting around to working the problems.
  - c. Do not assign the writing of missed spelling words more than two times each, and do not require such writing in sentences. Allow the child to do such assignments while standing at a desk, table, chalkboard, etc.
  - d. Allow the child's parents to do the written homework. The child is to do the thinking and can dictate the answers for the parent to write.
  - e. To be really fair to STNR children, they should be required to personally write no more than one-tenth of what is assigned to the other children.
2. Arrange work to be done orally rather than written whenever possible.
  - a. Spelling can be done orally to the teacher, to another student, or to a tape recorder
  - b. Many other kinds of tests can be answered orally. If the child has a reading problem, the test could be read to the child, and the child's answers given orally.
3. Grade on content rather than neatness or penmanship
  - a. Writing is so difficult for these children that any effort on their parts should be encouraged. If neatness/penmanship is an issue, give separate grades.
4. Allow as much flexibility in seating as possible.
  - a. As long as the child does not disrupt the rest of the class, allowing the child to have freedom of posture (as long as it is safe) and occasional movement around the room can help release the tension from sitting and writing
  - b. Standing at the desk, lying on the floor, sitting on the legs are all more comfortable positions than the usually considered "appropriate" positions of sitting at a desk. Usually, more and better work is accomplished if more comfortable positions are allowed.
5. Provide several shorter assignments rather than one long assignment
  - a. Even when all of the above suggestions have been implemented, occasionally a child who has a history of being a failure will still be reluctant to attempt an assignment, which seems to be very long in that child's

perception. Frequently, the teacher can successfully encourage completion of what seems to be an overwhelming task by breaking it up into several shorter assignments, sometimes literally cutting the page into fourths and giving the child only a fourth of a page at a time.

6. Provide ample spacing and clear reproductions of worksheets.
  - a. Although most children can do better work if the worksheet is clearly legible and there is ample space for writing their answers, these criteria are essential for children with an immature STNR. Though this may seem a minor point, it can sometimes make the difference between a child's willingness or unwillingness to attempt a task that will be difficult at best.
7. Allow the child to use a computer whenever possible.
  - a. Even the hunt-and-peck method would be easier and more inefficient for these children to perform than writing and will almost certainly be more legible. Have the child take typing lessons and as an adult, with no grade. Word processors can significantly reduce the frustration experienced from writing.