

## 2. An explanation of the relevance and value of Mental Rehearsal to therapy

### 2. Mental Rehearsal: Outsmarting the disability!

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Many disabled children find themselves in a catch 22 position. They need therapy to help them overcome their disabilities but are unable, and may become unwilling, to do what is required. Some techniques may be uncomfortable, over-stimulating and exhausting. How can a therapy program begin to resolve the underlying neurological basis for his or her motor, sensory or language issues, if the child is too disabled to participate?

Given non-participation, the “solution” is often to compensate for limited motor function, and/or sensory vulnerabilities, and/or language deficits with various devices and other supports. Viewed from the perspective of customary rehabilitative therapy approaches, used by physiotherapists and occupational therapists, solutions may be the only answer. But from an educational paradigm based on neurodevelopment and how we learn, other possibilities offer themselves. So let’s look at some examples to demonstrate how anyone learns.

Kelly’s mom peppers her speech with “actually...” and soon Kelly does too. Ray’s dad leans on his left hand while brushing his teeth; when Ray begins to brush his teeth independently, guess what — he leans on his left hand. Tracy sees her parents’ slouch, and her shoulders begin to curve forward.

None of these children consciously imitate. They learn all the behaviors simply by regular, repeated observation. The body incorporates what it “sees.” A more formal conceptualization of this natural and essentially automatic event is called mental rehearsal. That is, the mind “rehearses” the functions before adopting them.

A therapy approach that uses movement-based activities to “reach” the neurological source of integrated control can employ this powerful learning tool. We have found this to be particularly effective for children who have cerebral palsy, autism, and other sensory or motor disorders that many people think of as preventing active involvement.

The term mental rehearsal refers to the ability of the human mind to experience within the body’s sensory-motor system the effects of movement that are seen (or imagined) but not executed. We know athletes and ballet dancers employ the technique to perfect their skills. Their bodies practice movement in the brain while they watch videos or live performances by other athletes or dancers.

The visual image is relayed to the parts of the brain that govern behavior, along the same pathways that would have been used if they had performed the activity themselves. This means that the sensory receptors and the muscles are getting the message — even if you can’t see the result — and this amounts to practicing the activity. The same can apply when caregivers model therapeutic activities while the disabled child watches.

Parents of autistic children should not assume that they don’t “watch” the performance. Peripheral vision

often serves autistic children, who also listen equally well, even though they're not looking in the direction of the performance.

For those athletes and dancers, mental rehearsal results in the particular movement being carried out more efficiently than would have been the case without prior observation of similar movement. For children with disabilities, repeated and consistent mental rehearsal strengthens functions such as balance, muscle tone, coordinated movements and even tolerance for touch. After a while the person is able to perform the movement or receive sensory input. This technique is particularly useful with children who resist participating in therapy.

Let's look at some examples:

Amy, adopted as an infant with fetal alcohol syndrome, had become accustomed to failure. She expected it at every turn. Her hypersensitivity to touch repelled the mere idea of a unique massage that could improve that tactility problem, so she refused to let Mom massage her.

By watching Dad give Mom the particular massage, daily, Amy's body began to reap the benefits. Although this sounds like remote control, the fact is that her brain's registering of the sensory information began to allow Amy's arms, back and legs to anticipate such touch as okay. Now she tolerates the massage herself.

The two hemispheres of the brain are normally connected by a mass of nerve fibers called the corpus callosum. Jason was born without it, a condition known as agenesis of the corpus callosum. (Agenesis means not created.) The saying, "not knowing his right side from his left" was quite literal for Jason. He could not use either side of his body in coordination with the other. Everything was affected: language, feeding and dressing himself, walking, and so on.

He had received therapy for several years and was making many gains, including using both hands together, but he had trouble using them alternately. When the therapist demonstrated bouncing a beach ball first with the right hand, then with the left, dribbling it in front of him that way, he watched, giggling at the new activity. He began to bounce with both hands at the same time. Dad took the ball, to demonstrate the alternate-hand dribbling. Jason ran over to him and watched him intently. The child's hands started to move like his dad's, and before long his hands reached for the ball and he did it!

When Moira was five a freak accident paralyzed her right arm and leg, stole language, and limited her field of vision. After her fractured skull began to heal and her hair grew back, she still had a long road of rehabilitation ahead of her. Some of the therapeutic activities designed to re-establish interhemispheric integration – communication between her intact right hemisphere and the damaged left – challenged and frustrated her.

The resulting stress led to her rejecting any participation in the exercise program. But she didn't mind watching her older brother and sister (who volunteered) do her exercises for her! Of course she thought she was getting away with something, but mental rehearsal gradually improved her use of her right arm and leg, her ability to communicate, and even her eye focus.

Just because a disability prevents full participation in a therapy program, does not mean that a child is stuck there. Nor does a stubbornly uncooperative child lose out. Mental rehearsal, employed in our respective practices, has proved a reliable and effective door past the barriers of disability, to the neurological causes, for curative results.

Mental rehearsal fills in the gaps, allows practice without actual movement, and overrides the limitations the disability would otherwise impose. This technique affords a means by which caring family and therapists can “outsmart” the diagnosis.