

MASSAGE AND HYDROTHERAPY FOR CHILDREN WITH DISABILITIES

6

I cringed at the thought that another qualified professional would be touching me. Since my infancy, an army of doctors, therapists, and nurses had poked, probed, and punctured me in the name of therapy. Professional hands, in large part, had produced pressure, pain, and protest. To be touched meant I was sick, different, vulnerable. I remember cold, impersonal hands in hospitals and doctors' offices. They always lacked the warm reassurance of my mother's touch. Their touching was more torment than treatment. After hearing my chronic complaints of leg cramps and neck pain, a friend recommended massage. My fears immediately surfaced when the massage therapist arrived at my door. I steeled myself for her touch. As she delicately rested her hands on my back, tears filled my eyes. Her touches were tender, calm, and sensitive. Each stroke was punctuated with acceptance and understanding. My body had never felt such a sense of reverence and spiritual harmony. It was as if this were an anatomic apology for my decades of physical struggle. My body was no longer alone and abandoned. It had found a refuge of nurturing and renewal. And in those hands, I discovered the healing art of touch.¹

—Steve Mikita, Assistant Attorney General,
State of Utah, who has muscular dystrophy

KEY POINTS

After reading this chapter, the student will be able to:

1. Explain the general value of massage for children with disabilities.
2. Distinguish between a birth defect and an acquired disability.
3. Describe common problems facing disabled children.
4. Discuss the origin and background of each disability discussed in this chapter.
5. Describe how the specific effects of massage may be tailored to meet the needs of children with each disability.
6. Explain when hydrotherapy may be appropriate.
7. Discuss the effects of massage on different body systems for various disabilities.

Between 9% and 15% of all children in the United States have some type of disability.² Before we continue, the definition of disability may be helpful. Disability is defined as *a physical or mental impairment that substantially limits one or more of an individual's major life activities*. By this definition, orthopedic, speech, visual, and hearing impairments; mental retardation; cerebral palsy; muscular dystrophy; learning disabilities; injury-caused impairments, such as spinal cord injuries; and chronic illnesses, such as HIV/AIDS, are

all disabilities. A disability can be present at birth or acquired later (see Point of Interest Box 6–1). A number of disabilities are brought together in this chapter, not necessarily because they are similar conditions, but because they impose similar limitations and challenges on the individual child. To function with the least restriction, many disabled children require assistance with special needs. For example, a child with attention deficit disorder may need extra help with academics; a child who walks with difficulty as a result of chronic



POINT OF INTEREST BOX 6-1

Disabilities Present at Birth (Birth Defects) Versus Acquired Disabilities

Birth defects are body imperfections, malformations, and dysfunctions or an absence of something normally present at birth. Approximately 5% of all children are born with birth defects, and one-half of those are congenital malformations such as cleft palate.¹ Subtle alterations in the brain's structure and mild developmental delays may be detectable during infancy or they may only become evident when the child begins school. During pregnancy, birth defects can be caused by environmental factors, such as radiation; malnutrition; certain prescription medications; certain infections, such as German measles (rubella); maternal substance abuse; chronic illness, such as diabetes; or the mother's exposure to toxic chemicals, such as certain solvents, pesticides, and heavy metals such as lead or mercury.^{2,3} Birth defects may also be caused by genetic factors. In more than one-half of the cases of a child with a birth defect, the cause is unknown.

Acquired disabilities are not present at birth, but are caused later by injury or exposure to an infectious agent, such as amputations, burns, brain damage from a head injury, juvenile rheumatoid arthritis, and polio. Certain disabilities may have both a genetic and an environmental basis. Attention deficit disorder is inherited in many cases; however, it can also be caused by exposure to high levels of lead or head trauma. Depression tends to run in families, but the amount of stress experienced during childhood will influence whether or not the child becomes chronically depressed.

References

1. Batshaw M: *Children with Disabilities*. Baltimore, MD: Paul Brooks Pub., 1997, p 11
2. Batshaw M: *Children with Disabilities*. Baltimore, MD: Paul Brooks Pub., 1997
3. Steingraber S: *Having Faith: An Ecologist's Journey to Motherhood*. Cambridge, MA: Perseus Publishing, 2001

pain may need elevators and pain medication; and a child who has Down syndrome may need help with vision and hearing problems. Massage cannot replace these essential forms of assistance. Although massage helps meet physical therapy needs—while children are benefiting from increased range of motion or a higher level of stimulation—it can, at the same time, help them be nurtured and comforted. Massage can make a significant and unique difference in improving a child's quality of life.

COMMON PROBLEMS FOR CHILDREN WITH DISABILITIES

Many problems discussed are common to all children who are disabled; however, the disabilities covered in this chapter are so different from each other that not all problems will apply to all children. A brief discussion of the applicability of massage for each problem is included.

UNDERSTIMULATION

Understimulation is common with many disabilities. For example, if children's hearing impairments are identified early in life and treated appropriately, through hearing aids, speech-language therapy, sign language training, and special education services, they may develop normally. If they don't receive the treatment they need, children may be slower to develop because they not only lack the stimulation of sound, but also that of social interaction. Massage can benefit children who are deaf by providing another mode of sensory stimulation and by helping them develop greater body awareness, giving them more of a connection with a body they cannot hear. A pilot program funded by the New York State Education Department found that 17 children who were both blind and deaf had a 69% increase in language skills after 3 months of receiving massage (Guyer E, personal communication, January 1990).

Lack of visual stimulation may also affect a child's development. For example, children with severely impaired vision may be slow to develop physically because they have no visual enticement to reach, crawl, or walk. They need additional stimulation, especially that of touch and sound, to reach the same level of development as fully sighted children.¹ Several studies of children who are blind have shown that tactile stimulation encourages them to explore visually (in the case of partial blindness) and tactilely (Guyer E, personal communication, January 1990).

Children who experience limited mobility, such as those with muscle weakness, chronic pain, cerebral palsy or paralysis, may also be deprived of stimulation to their skin, nerves, joints, muscles, and proprioceptors, resulting in decreased body awareness. Lack of movement usually results in poor circulation, especially to the legs. Without exercise, certain muscles atrophy and certain other muscles may be overused. When joints do not regularly move through normal range of motion, **contractures** may develop. Over time, bones that are not bearing weight may become decalcified. In addition, constipation may result from hypotonic abdominal muscles. Children may become stiffer and more limited in their



FIGURE 6-1 ■ Massaging a Child With Cerebral Palsy. Reprinted with permission from Wind J: *Massage Therapist Soothes Disabled*. *Corvallis Gazette-Times*, Corvallis, OR, July 9, 1991.

ability to move freely. Massage can give the tissue of children with limited movement the extra stimulation they need. During massage, children can benefit from being in positions that they may have forgotten were possible, and stretch or stimulate tissue that has not been challenged for a long time. Muscles, joints, blood vessels, nerves, and other tissue will receive extra information and greater activity.

Finally, because many individuals do not understand disability and fear touching them, many children will be

deprived of tactile stimulation. Children with limited movement have fewer opportunities to be exposed to different types of touch sensations, and so they need more tactile stimulation than the average child.

SOCIAL ISOLATION

Some people do not realize that hearing-impaired children have difficulty hearing and they treat these children as if they were mentally slow. Children who

are hearing impaired may be slow learning to relate to others, have difficulty in social situations and school, and feel lonely or forgotten. Hearing impairment can be a lonely and difficult disability, causing long-term stress.² Babies who are visually impaired and left alone tend to tune out and ignore the people and sounds around them. If children have difficulty playing and interacting with others, their social development may be also be delayed. Often, after a period in the hospital, a visually impaired child will seem unhappy about being held and will resist cuddling. If the child is permitted to remain in this isolation, development can be affected and the child will remain at that level.³ Children with chronic physical disabilities may have similar problems, such as social isolation and difficulty with peers.⁴

According to the authors of *Can't the Child See?: A Guide for Parents and Professionals About Young Children Who Are Visually Impaired*, parents can show love to their visually impaired offspring with lots of holding, cuddling, patting, stroking, rocking, and just plain enjoying. "The child's name should be used a lot so that he or she learns it. The parents should hold the child upright and talk against a cheek so he or she can feel the puffs of breath. . . . Parents should not worry about spoiling the baby with too much loving. Whenever the baby is awake, the parents should carry it from room to room as they go about the daily household routine and talk to and touch the child with little pats, hugs, and kisses, so he or she knows they are there." After blind children are hospitalized, it is vitally important for the parents to cuddle them.³

Massage is a positive and pleasurable way of giving social contact and caring personal attention to the child with a disability. Massage therapist and educator Meir Schneider was born with cataracts and was severely visually impaired from birth. As a child, his grandmother frequently massaged him, and he remembers that massage gave him a sense of being truly supported and a strong sense of self-esteem (Schneider M, personal communication, May 1989).

SOCIAL DISCRIMINATION

People's attitude toward someone in a wheelchair can be very annoying and upsetting. Shopping on a Saturday can become a nightmare. People stand and stare at me or they give me funny looks. People never talk to you, they talk to whoever is pushing you. People think that just because you can't walk you can't talk either. I don't know why they think like this but they do and it is very annoying. I would like to be treated normally, like everyone else, and one of my ambitions is to be able to go from one end of the street to the other without one person turning around to look at me.⁵

—Heather Jones, age 13

Many disabled children constantly face discomfort and the uncertainty of dealing with persons who fear their disability. The mere presence of a disabled person forces many individuals to realize that they too might be vulnerable to disability, unsightliness, or even death. They find this frightening and threatening. Also, many nondisabled people are uncertain what type of behavior is appropriate. There are strong societal norms to be especially kind and careful with a disabled person; however, there are equally strong norms that disabled persons should be treated like everyone else to avoid condescension. Even when unintentional, children who are disabled are often treated differently, in a way that makes them uncomfortable. The quotation above shows how children in wheelchairs are deeply affected by the awkwardness, discomfort, and tension many nondisabled people show. Experiments conducted at Stanford University found that if a disabled person acknowledges his disability when he first meets a nondisabled person, the nondisabled person feels more comfortable and less awkward. If a child in a wheelchair simply uses the word "wheelchair" early in a conversation, he or she is likely to reduce the nondisabled person's tension and discomfort and make them more likely to treat the child in a normal way.⁶ Unfortunately, in this situation it is up to the child who is disabled to cope with this awkwardness.

LOSS OF A POSITIVE BODY IMAGE

Another hazard of many illnesses and disabilities is the loss of a healthy and normal body image. Extensive bandages, painful and invasive medical procedures, restraints, or casts may decrease the tactile, kinesthetic, and visual perceptions that children use to define body boundaries. Without nursing interventions designed to provide them with adequate perceptual feedback, they may lose a sense of their bodies being whole and strong.⁷ Evy McDonald, RN, came to hate her body after a childhood bout with polio that left her with one spindly, ill-shaped leg, and she came to have a "relentless obsession" with her weight. As an adult, McDonald decided to correct her "habitual and ingrained negativity" toward her body, but it required many months of concentrated daily effort to single out acceptable aspects of her body, repeating them to herself many times before she came to accept her body as it was.⁸

Regular massage therapy can help meet the need for caring and appropriate touch. It also supplies much-needed sensory stimulation, which informs the brain about the position of the body in space, its muscle tension, its movements, and its relationship to other people and objects in the environment. This

additional information helps develop a healthy body image. People with disabilities often say they feel better about their bodies after massage therapy. Helen Rowe, an infant massage instructor who has worked with a variety of disabled children, found massage can help form a more positive body image. She worked with a girl who had spina bifida and tended to negate the entire lower part of her body; massage encouraged her to have a sense of body wholeness.⁹ For another example, see the drawing of the boy whose body image improved after receiving acupuncture (Chapter 1).

PHYSICAL OR SEXUAL ABUSE

Children with disabilities are two to three times more likely to be physically or sexually abused than nondisabled children because: (1) disabled children with communication problems may be unable to understand or verbalize episodes of abuse; (2) extra stress is placed on the parents and caregivers of disabled children, who need significantly more care than the average child and may act out with tantrums, aggressiveness, and noncompliance that exhaust the children and caregivers; and (3) children at special schools and residential care facilities are significantly more likely to be victims of sexual abuse than mainstreamed children because these settings, where children lack the protection of their natural home environment, often attract pedophiles. Perpetrators may include teachers, dormitory counselors, clergy, classroom aides, babysitters, custodians, and others.¹⁰⁻¹³

DEPRESSION

Chronic stress in children challenged by some or all of the problems discussed above can lead to depression. Additional stressors may include discomfort or pain, special diets, unpleasant medical procedures, and medications, all of which may make the child feel different at a time when, for most children, belonging is a driving force in their lives. For more information on depression, see Chapter 5, page 125.

CHRONIC DEHYDRATION

Children with some disabilities may be at an even greater risk of dehydration than nondisabled children. They may not be able to ask for water or get it themselves; they may not want to drink because of difficulty with swallowing or urinating; they may not cognitively identify thirst messages; or they may need more fluid due to constipation or medications. Diuretics, bulk-forming laxatives, methylphenidate hydrochloride (Ritalin), and some medications that affect peristalsis or treat seizures can lead to dehydration.

Chronically dehydrated children may be chronically tired and irritable. Many health problems worsen with dehydration. Signs of dehydration that you might observe when massaging a chronically dehydrated child include irritability, lethargy, and crying without shedding any tears. Two simple actions you can take in this case are to alert parents to the importance of their child being sufficiently hydrated and to offer children water before, during, and after the massage sessions. If parents suspect their children are not getting enough fluid, they should consult their pediatrician.¹⁴

CONTRACTURES

About 50% of physically disabled children develop **contractures**, especially children who are paralyzed, have severe joint pain, have been in bed for a long time, or have severe spasticity.¹⁵ When an arm or leg is bent for a long time, some soft tissue around a joint becomes shorter and the limb cannot fully straighten. This persistent flexion of the joint is a “contracture.” If a limb has been straight for too long and will not bend, this persistent extension of the joint is also referred to as a contracture. Any limb or joint that does not regularly move through its full range of motion can develop a contracture. Chronically tight muscle fibers eventually atrophy, to be replaced by thick, tough connective tissue.

GENERAL PRINCIPLES OF MASSAGE FOR CHILDREN WITH DISABILITIES

General principles for massaging children with disabilities include:

1. Learn the causes, symptoms, and contraindications of massage for each condition presented in this chapter. Remember that you are treating young people, not pathologies. Children are not defined by their disabilities and the specific challenges they represent; this is only part of who they are. Seeing each child as an individual is part of being fully present and caring; the mind-body connection in every child is more readily accessed when you do.
2. Although massage therapy may not affect the primary condition, the therapist can often help with secondary effects. For example, cerebral palsy is a problem deep in the brain. Although massage may impact the brain—particularly massage in the first 2 years of life when brain growth is occurring at a phenomenal pace—the massage techniques in this book do not address

brain dysfunction. This does not mean that massage is not of value. A child with cerebral palsy, for example, may develop **contractures**, scoliosis, limitations in movement, and a lack of stimulation from being in a wheelchair. Addressing these problems makes a significant improvement in the child's quality of life. Working with the child during the formative years, when body image, habits of relating to others, and ways of dealing with stress are being learned, ensures that the effects of massage are not just temporary. Some lessons that massage teaches children will be beneficial throughout their lives. The following is an example of massage treating a secondary symptom and not the primary condition: Eric Dalrymple was born 3 1/2 months premature. He weighed only 1 pound, 12 ounces and was only 12 1/2 inches long. In the hospital, he had pulmonary and gastric problems. His long-term disabilities, included **hydrocephalus**, **quadriplegic spastic cerebral palsy**, and visual impairment. Eric was age 15 when he began receiving massage therapy. His mother, Denise, feels that massage therapy had a profound effect on her son's life. "Because of his medical problems, most of Eric's early years were spent in the hospital with a ventilator in his mouth. Because the ventilator tube entered his mouth from the left, his head was always turned that way. With the ventilator removed and able to breathe on his own, Eric still held his head turned all the way to the left. This position increased his breathing difficulties. Through massage therapy, Eric learned to relax his neck. At first, it meant that I could position his head straight or to the right. With time and continued massage therapy, he began to turn his head on his own. Eric's breathing became easier. His frequent trips to the emergency department for breathing difficulties became a thing of the past. With improved breathing, Eric learned to speak. He now makes his wants and needs known. Talking allows him to interact with family, teachers, and fellow students at school. His personality has blossomed. If his head had remained locked to the left, I do not know that this would have ever happened."¹

3. Contact the child's primary care physician or physical therapist before beginning massage with a child who is disabled. Both are excellent resources for understanding the child's specific needs, as well as any contraindications to massage. Work with the child's physical therapist, if possible, and consider both as part of the child's health care team. For example, the effec-

tiveness of any kind of massage will be diminished if the child is heavily medicated, but medication should never be stopped unless approved by the child's physician.

4. If a condition is not discussed in this book, be sure to consult with the patient's physician prior to massage. Due to space limitations, certain common pediatric disabilities that respond positively to massage were not included.
5. Never force massage on a child, especially a child who has already experienced many medical procedures over which he or she has no control. Begin with a little massage, use relaxation techniques whenever possible, and give lots of positive reinforcement. Some children may need to simply play in the therapy room at first or even watch a parent receive massage before they are comfortable. See the section on tactile defensiveness for additional suggestions. More than anything else, you should be prepared to meet children at their developmental level and let their responses guide the therapy. It may take some time but, gradually, children learn to respond to and to appreciate massage. Frequent short sessions may be better than fewer long ones.
6. The basic Swedish massage techniques covered in Chapter 3 work well with children with disabilities, and other successful therapies will be noted in each section. With any hands-on therapy, however, use caution and avoid causing pain by excessive pressure or movements that are too vigorous. Be especially gentle over sensitive areas, such as bony areas or where there has been surgery, pain, or trauma. If children have prescribed exercises, such as range of motion, they may be incorporated into the massage time. Range of motion is often substantially increased after massage.
7. Most children will benefit when their parents are taught how to massage them (see Appendix A). The Swedish massage techniques presented in Chapter 3 may be used, with the aid of hand-outs; however, individual practitioners may wish to teach other bodywork modalities, as well. Others who participate in a child's care, including siblings and caregivers, can also learn massage techniques. Parents also benefit tremendously from massage therapy, not only to relieve their own considerable stress, but also to help them understand how massage benefits their children.
8. Psychological factors may be paramount in understanding a child's condition and response to your treatment. Stress of any type (including physical pain, separation from parents or fami-

ly, neglect, or abuse) may damage a child's physical or emotional health. High levels of stress exacerbate or even initiate many conditions. A child's response to stress-reduction therapies, such as **medical hypnosis**, relaxation training, and biofeedback, indicates that the mind-body connection is more influential than often recognized. Examples of these therapies are included in Chapter 6. Massage may offer significantly more help in the mind-body realm than physical therapies that involve electrical devices or mechanical repetition. Through touch, a massage therapist helps children, not only by treating symptoms, but also by treating the whole person.

9. Treat each child as an individual. Even different children suffering from the same condition may have significantly different concerns. For example, three children with spinal cord injuries may need therapy for sensory stimulation; however, one may also have a major issue with constipation, one needs help in preventing pressure ulcers, and one experiences significant pain or restriction. It is important to listen carefully to the parents and child.
10. It is generally better to treat children with two short massages each week rather than one long massage. It is important not to tire the child's nervous system.
11. Any therapist working with children who are very ill should be aware that it can be emotionally demanding. It is important to network with other health professionals and to monitor and treat your own stress.
12. Nonmedicinal treatments that are helpful to children have been included under the "Complementary Treatments." Because all children are individuals, these treatments may not be effective for all children with a specific condition.

PHYSICAL AND SEXUAL ABUSE

My siblings and I were beaten for various transgressions: refusing to eat the lima beans in our soup, failing to clean our rooms, scrub our hands, or maintain silence at church. My mother's preferred instrument, a wooden paddle, inflicted a broad flash of pain that soon subsided. My father used his belt, a thinner, more flexible instrument capable of inflicting welts and bruises that lasted for weeks. Neither parent ever touched me in any other way. I have no memories of being kissed, hugged, rocked in my mother's arms, or even patted on the head. Still, throughout my childhood, I thought it was normal, that all kids were raised this way.

It wasn't until I studied domestic violence in a college sociology class that I realized what I'd endured fit the definition of child abuse. Suddenly a lot of things began to make sense, from my bouts of depression and low self-esteem, to my discomfort with touch, to my relationships with men. Throughout adolescence, I'd avoided dating by burying myself in books. Around age 21, wanting desperately to be "normal," I did start dating, but the only relationships I had were abusive. All the nice guys I drove away, quite consciously, because the thought of being kissed or stroked in a loving way was too frightening. At work, I got promotions for my calm, analytical nature, and it wasn't a facade—I was so absent from my body that I didn't feel any pain from working fifty-hour weeks. In truth, I was unable to relax. Abusing myself felt normal. I even avoided taking hot baths because as a child the hot water always made my various welts and bruises sting.

A television report on depression finally made me realize that I needed psychotherapy. I stuck with it for several years, and it helped me to come to terms with my childhood, even to forgive and authentically love my parents. But the insult had been received through my bones, muscles, and skin; my body, still so rigid and guarded, still storing its own memories of deprivation and pain and its own sense of loss, needed healing too. Fortunately, I found a skilled massage therapist who is guided by a strong sense of intuition. At first, I just endured my massages silently, checking out by occupying my mind with things I had to do, worries, and so on. But slowly and gently, she started to challenge me, asking me, "How does this feel?" as she worked on different areas. That forced me to stay present and, in time, taught me to honor my body in other ways and circumstances. It was a long process, of course, but I knew I was on the right track when one day I was caught in a summer storm and I felt the raindrops pitter-pattering on my bare skin. The gentle, loving touch of rain was new, something that I had never experienced before (Anonymous, personal communication, April 2003).

Each year in the United States there are at least one million confirmed cases of physical and sexual childhood abuse.¹ Physical child abuse is defined as *any pattern of physical discipline and punishment performed by a more powerful individual to a person younger than age 18, often resulting in physical injury, such as marks, bruises, welts, or fractures*. Sexual child abuse is defined as *any pattern of coerced sexual contact performed with a child by a more powerful individual*.

In children younger than age 2, 10% of all injuries result from abuse by adults, as do 25% of all fractures in children younger than age 3, 10% of all pediatric burn injuries, and the majority of pediatric traumatic brain injuries. An estimated 22% of children with learning disabilities acquire them as a result of abuse and neglect.²⁻⁴ The consequences of this type of touch for children is of tremendous concern for the hands-

on therapist. Abusive touch is not only the cause of tremendous suffering during childhood, it also represents an ongoing source of tactile defensiveness and tension in adult clients.

When children have been severely traumatized, from being in a natural disaster to witnessing an act of violence to being molested or beaten, they tend to have certain characteristic responses to trauma. The core reactions include hyperarousal, constriction, dissociation, and feelings of helplessness. Children may also react with hypervigilance, an extreme sensitivity to light and sound, hyperactivity, exaggerated startle responses, nightmares, abrupt mood swings, a reduced ability to deal with stress, and insomnia.⁴⁻⁶ Children may not outgrow these reactions; stress can certainly have lifelong effects. It is not in the scope of this book to detail all the types of trauma that can befall a child; our focus here is on abuse that occurs through touch. For more information on this topic, see the suggested readings at the end of the chapter.

Children can be traumatized in ways that do not involve touch, such as seeing frightening images on television or movie screens, witnessing acts of violence, or being in a natural disaster or accident. Physical and sexual abuse, however, are distinguished from other forms of trauma by the element of touch and, when harm is transmitted through the hands of a powerful adult, the effects are far more complex and profound. A particularly negative effect is that children may become afraid of touch, in general or on specific areas of their bodies.

TACTILE DEFENSIVENESS CAUSED BY PAINFUL TOUCH

Examples of tactile defensiveness caused by painful touch include:

- Full-term infants who have experienced repeated heel lances for the purpose of drawing blood may associate simple skin cleansing with pain. In one study, infants of mothers with diabetes underwent 10 heel lances to test their blood within their first 24 hours. Each time, their heels were cleansed with alcohol and lanced. When the backs of their hands, which had never been cleansed or lanced before, were cleansed with alcohol prior to drawing blood samples, the infants began grimacing, moving their bodies, and crying, although no other procedure had been done. Within the first 24 hours, they were already conditioned to a certain type of touch meaning pain. They also had a more intense response to pain from blood draws than infants who had not received heel lances.⁷ Another study compared infants who were circumcised soon

after birth without any anesthetic with infants who received local anesthetic before circumcision. When the children who did not receive anesthetic were given vaccinations at 4 months, they had more pain and cried more than the infants who had been anesthetized.⁸

- Psychologist Thom Hartmann managed a residential treatment facility for severely emotionally disturbed children in New Hampshire. One Friday afternoon, 10-year-old Sally was left there for the weekend as an emergency placement. Nothing was known about the girl's history, only that she couldn't go home to her parents. Sally was assigned to the house of a child care worker named Linda, where the facility had an empty bed. That Friday night, Linda took Sally to the girl's bedroom and said, "Here's your bedroom, there's your bed, and there's a nightgown. You get ready for bed, and I'll be back in 10 minutes." When she returned, Sally had changed into her nightgown and was laying facedown on her bed. Linda sat on the bed next to her. Linda reached over to give Sally a gentle backrub and was just going to give the girl some words of encouragement, but she never had a chance because, just as her hand lightly touched Sally's shoulder, Sally exploded off the bed at her, screaming, clawing, biting, shouting that she was going to kill Linda, and slashing for Linda's face with her nails. Linda grabbed Sally's wrists and held her so that she couldn't hurt either of them, as Sally continued to sputter, shriek, and scream. Linda talked Sally down, saying, "It's okay, you're safe here, everything is going to be fine." After 4 or 5 minutes, an incredibly long time for such behavior to persist, Sally eventually stopped and lay quietly on the bed, panting to catch her breath. Thinking it was now a safe time to sit up, Linda let go of Sally's wrists and hoisted herself erect. She looked down at the little girl and saw that during the struggle, Sally's nightgown had worked its way up to the middle of her back. To her horror, Linda saw that Sally's back was covered with cigarette burns, both old and recent.⁹

There is a strong correlation between early physical and sexual abuse and adult health problems. Adults who were sexually or physically abused as children are more likely to be hypervigilant; to overreact to stress; to be depressed and anxious; to have chronic pain, including chronic pelvic pain and irritable bowel syndrome; and to be prone to substance abuse and sexual dysfunction.¹⁰⁻¹⁵ Sexual abuse victims are also more likely to be sexually active earlier in life. A history of childhood sexual abuse increases a woman's chance of contracting AIDS by 2 1/2 times because she is more likely to have multiple sexual partners.¹⁶

Inappropriate and hurtful touch may lead children to abuse others.^{4,17,18} Being abused or neglected as a child also increases the likelihood of arrest for a violent crime by 38%.⁴ Disturbances in the capacity to accept touch can deeply affect interpersonal relationships, especially those involving intimacy, because there is often an inability to trust others. Abused children are, consequently, unlikely to receive the healthy touch they need. Psychotherapy has limited value for them, even as adults, because they carry the effects of abuse in their bodies, as well as their minds.

APPROACH AND GOALS

Many of the tactile problems seen in adults' massage sessions may stem from childhood abuse. The author worked with an adult client who could not tolerate tapotement on his back; he was reminded of the physical abuse from his brothers, who used to punch him

in the back. Another adult client could not tolerate having her scalp massaged because, as a child, her grandmother braided her hair so tightly it made her cry; even the slightest pull on her hair was intolerable. Another was wary of touch in a large area around his armpits because, as a child, he had been tickled until he could not breathe. A friend of the author, who was taking a Hakomi bodywork class, lay down fully dressed upon a treatment table. When the instructor gently placed his palm on her lower abdomen, it triggered her first memories of the incest she had suffered as a small child more than 30 years before. Any hands-on therapist may inadvertently trigger memories, complete with tactile defensiveness, during a massage session. The recognition of abuse and the effects on both client and therapist during massage sessions led to "Trauma Touch," a special training for massage therapists. Therapists learn to recognize and help abuse victims in the context of massage therapy.



POINT OF INTEREST BOX 6-2

Helping Children Heal From Physical or Sexual Abuse

Ruth Rice's doctoral thesis in psychology was on the sensorimotor stimulation of premature infants. Called the Rice Sensorimotor Stimulation Technique, the technique consists of whole-body stroking and vestibular stimulation. It is extremely gentle and non-invasive and can be used with hospitalized infants, even very small or sick infants.¹ Dr. Rice worked with a 7-month-old infant who had been removed from his home because of physical abuse. He was so afraid of touch, he would shake and sweat whenever anyone touched him. Using her gentle technique, Dr. Rice massaged him for 10 minutes each day, every day for 1 week. At that time, there was a significant difference in his response to touch: He would no longer shake or sweat when touched and could relax instead (Rice R, personal communication, February 1985). A Touch Research Institute (TRI) study of sexually and physically abused children who lived in a shelter investigated the effect of massage. Children received a 15-minute Swedish massage once a day for a month; as a result, the children were less afraid of touch, more sociable, and better able to sleep.² Another TRI study found that massage reduced fear of touch, anxiety, depression, and blood cortisol levels of adults who were sexually abused.³

In Mexico, the author treated Raquelita, a 13-year-old girl with polio, in a class on massage for children who are disabled. When Raquelita was brought to the therapy room and realized she would be receiving some type of hands-on treatment, she began sobbing. She said all the physical therapy she had ever received had been painful. She was told that no one but her mother would touch her without her permis-

sion; her mother learned to do some simple Swedish massage strokes and massaged her twice in one afternoon. Raquelita was happy when she left for the day and gave her permission for students in the class to massage her. The last day of the course, she lay on the treatment table and smiled as her mother and three therapists massaged her at one time.

Suzie Klein is a massage therapist, a recreation therapist, and a foster mother to special needs children. Trained in the Trauma Touch program, she does "touch recovery work" with children. She provides them a safe environment to receive and accept healthy touch. The children are encouraged to explore her massage environment and are given many choices, including level of dress, lighting in the room, and how much touch or massage they receive, if any. Ms. Klein's emphasis is on gentle, nonthreatening touch; rather than stroking a child, she may use calming polarity therapy holds; pressure point massage; and the soothing weight of warm, rice-filled bags. Little by little, children who have been abused learn to trust her touch (Klein S, personal communication, March 1999).

References

1. Rice R: Neurophysiological development in premature infants following stimulation. *Journal of Developmental Psychology*, 13: 1977, p 69-76
2. Field T: Massage therapy for infants and children. *Developmental and Behavioral Pediatrics*, 16:108, 1995
3. Field T, Hernandez-Reif M, Hart S, et al: Massage therapy reduced aversion to touch and decreased anxiety, depression, and cortisol levels. *Journal of Bodywork and Movement Therapies*, 1:65-69, 1997

They are taught to respect the client's limits on touch and to help them accept touch without forcing it on them.¹⁹ Hands-on therapists have also devised ways to heal the effects of abusive touch (see Point of Interest Box 6–2).

GENERAL PRINCIPLES FOR MASSAGING PHYSICALLY OR SEXUALLY ABUSED CHILDREN

When working with children who have been abused, the goal is not to practice a massage technique, but rather to provide a safe environment to receive healthy, safe touch. Technique must be secondary.

1. Parents should accompany children at all times, to support them and to help the therapist arrive at an appropriate treatment.
2. Care must be taken to honor the child's boundaries and empower him to say no to undesired touch.
3. Give them choices, such as:
 - a. would they like to have their hair brushed instead of being massaged?
 - b. would they like to lie on the massage table or would they prefer to sit in a chair?
 - c. would they like to have a massage or would they like to just lay down under a blanket, with a hot pack on their chest or under their neck?
4. Any therapist may inadvertently do something that triggers an association with abuse; for example, one woman had experienced childhood abuse that involved having her arms tied above her head. As a result, she not only avoided lifting her arms above her head to wash her hair or hang curtains, she could not tolerate having her arms raised above her head during massage sessions.²⁰
5. Avoid areas that children do not want touched. A child who has been sexually abused can fear touch in many parts of the body, but especially around the pelvis, buttocks, thighs, or abdomen. Do not massage a child unclothed until a few sessions have been performed with the child clothed.
6. Use gentle touch and do not cause pain.
7. Ask the child often for feedback; observe the child for signs of stress, such as increased heart rate, increased muscle tension, a change in their breathing pattern, sweating, or anxiety.

MESSAGE TREATMENT FOR PHYSICALLY OR SEXUALLY ABUSED CHILDREN

The first time the child comes for treatment, give the parent a short massage while the child plays. Then

ask the child if she would like you to give her a massage. If she does not want you to massage her, ask if she would like her parent to give her a massage. If she is agreeable to this, have her choose where she will receive the massage and what clothing she will take off. Let her pick any massage tools or hot packs she would like used. Show the parent a few basic strokes (see Appendix A). Passive touch and other static techniques, such as polarity therapy, Jin Shin Do, Reiki, or craniosacral therapy, may be most effective at first. Swedish massage techniques may be too unpredictable; as your hands constantly change position, the child will not know exactly where your hands will move next. If she does not want massage at all, try to interest her in hot packs or massage toys she can use herself, and then continue to massage the parent. That may be all that is possible for a first session.

MESSAGE SEQUENCE FOR THE CHILD WHO WILL ACCEPT TOUCH

Positioning:

Have the child lie supine and fully clothed on the treatment table. Drape her completely, and give her a hot pack. A hot water bottle on the chest may be a comforting weight and, if the child is supine, she may place her hands on it, as well.

- Step 1. Begin with the basic relaxation sequence and passive touch on the face (Figure 3–1). Keep the hands still for at least 2 minutes. This may be all that is possible during the first session. If the child jumps off the table after 5 minutes, do not try to restrain her, but return to massaging the parent.
 - Step 2. If the child appears comfortable, ask permission to massage the head and neck, hands, or feet. These are generally safer and less guarded areas. Use the Swedish massage strokes described in Chapter 3, but do not use tapotement. Continue to observe the child carefully and ask for her feedback. As trust is built with the child over time, more massage may be allowed. For example, after a session with just the head, neck, hands, and feet, the back may be massaged next. Gradually, all the strokes of a whole-body massage may be accepted and appreciated.
-

AUTOIMMUNE DEFICIENCY SYNDROME

Autoimmune deficiency syndrome (AIDS) is an infection with the human immunodeficiency virus (HIV). This virus infects and destroys the body's T helper cells, which normally kill invading bacteria and fungal cells. When enough T cells are destroyed, children develop immunodeficiency, with a poor ability to fight infection, extreme weight loss, and central nerv-

ous system problems. Although there have been major advances in treatment, AIDS is still considered a terminal illness. Each year in the United States, 1,000 new cases of AIDS are reported in children younger than 13. HIV infection is the seventh leading cause of death in children ages 1 to 4.¹ 90% of American children with HIV acquire it from their mothers, in utero, during birth, or from breast-feeding. The remaining 10% acquire it from contaminated blood products, sexual abuse or activity, and intravenous blood use.² Of those who acquire HIV from their mothers, 25% have serious symptoms related to infection by age 1 and die in 2 to 4 years. The others have virtually no symptoms in the first 5 years and survive, at least, until age 9.

The most common physical complaints of children with HIV/AIDS are chronic fatigue; recurring diarrhea; acute weight loss; insomnia; fungal and viral infections, leading to mouth and dental pain; and the development of serious infections, such as pneumonia, sepsis, and meningitis. These children are also more likely to have cancer, particularly lymphoma, and they can develop diseases of the heart, lungs, kidneys, or other organs. HIV may also have subtle effects on cognition and neurodevelopment, and so these children may have greater incidences of attention deficit disorder and learning disabilities. Children with HIV may also experience depression, anxiety, and adjustment reactions, which may be related to the child's reaction to the fatigue and pain of a chronic illness, to neurologic aspects of the disease, or to a general feeling of malaise from the adverse effects of medication. Children with this disease frequently have extremely high stress levels: Only 38% of children with AIDS live with their parents, and they may experience other major stresses, such as long-term hospitalization or neglect. Unfortunately, this suppresses the immune system; one study of HIV+ children showed that those with an increased number of negative life events also had more suppressed immune systems.²

APPROACH AND GOALS

Kathleen Weber is a pediatric nurse, massage therapist, and project coordinator for pediatric AIDS clinical trials at Children's Memorial Hospital in Chicago, Illinois. She found that massage can help children with AIDS to relieve insomnia, reduce the muscle aches and cramps common with this disease, and maintain good circulation throughout the body. Because many people fear contracting the disease, many children with AIDS have not had their needs for touch met; sensitive, gentle massage can go a long way toward meeting this need. Massage may also stimulate the child's digestion and appetite and help

make breathing easier. Most important, massage releases the tension and stress that can be caused by the guarding of specific body areas traumatized by invasive medical procedures or physical pain (Weber K, RN, LMT, personal communication, April 1992).

Researchers at the Touch Research Institute conducted three studies on children with HIV/AIDS. In two separate studies with HIV-exposed infants, the massaged infants had significantly greater weight gain and less stress behavior than the nonmassaged, control infants. Sadly, the nonmassaged infants deteriorated, showing early signs of developmental delay and failure to thrive.³ A third study investigated the effect of massage with HIV-positive adolescents, ages 13 to 19, receiving similar drug regimens. Teens in the control group were led through 20 minutes of progressive muscle relaxation, twice a week for 12 weeks. Teens in the massage therapy group received a 20-minute seated massage, twice a week for 12 weeks. The technique included kneading, pressing, long strokes, finger pressure along the spine, and hand massage. The massage therapy group reported feeling less depressed than those in the relaxation group and showed improvement in immune function not shown in the relaxation group.⁴

MASSAGE FOR CHILDREN WITH HIV/AIDS

The basic relaxation sequence described in Chapter 3 cannot be used too often; continually remind the child to relax. Be sensitive to what the child needs and ask often for feedback. At the outset, ask the child if he or she has any areas that are sore, from needles or any other painful medical procedures, and carefully avoid touching these areas. Gentle stroking may be more appropriate than vigorous massage. At times, energy techniques, such as polarity therapy, Reiki, or craniosacral techniques, may be most effective. Simply laying your hands on a tight area, letting it be warmed by the heat of your hands, can be soothing. If the child is sick, massage only the hands and feet and gently stroke the forehead. Gently percussing the chest and upper back (Figure 3-9) may help a child expel mucus and relax the chest. Gentle, but thorough, massage of the abdomen, including thumb-stroking the stomach (Figure 5-4), may help stimulate the appetite.



1. Because even common childhood illnesses can be life threatening to children with AIDS, you should be careful that you are well and do not expose them to illness.
2. Do not massage tumors, undiagnosed lumps, or skin with open sores. Stay at least 2 inches away from any skin rash, unless the child is clothed; then gentle stroking, pressure points, or range-

of-motion exercises can be used. Certain therapists recommend staying away from the armpit and groin areas where there are large concentrations of lymph nodes; consult with the child's physician about this.

3. Wash your hands before and after massage. Gloves should always be worn if the child's skin or the skin on your hands is not smooth and intact. Weeping skin lesions or bleeding are absolute contraindications for massage of a specific area. Consult with the child's doctor about whether or not gloves should be worn at all times.

ASTHMA

Asthma, an allergic disorder compounded by emotional stress, is a chronic disease of the lungs. Children with asthma typically have airway hypersensitivity, inflammation, and occasional acute obstruction.^{1,2} It is the most common chronic condition and cause for hospitalization of children. Pediatric asthma is currently occurring in epidemic proportions in the United States, affecting 5 million children. In 1980, 3.6% of children suffered from asthma, compared with 7.5% in 1995 and 9% in 2001. Incidents of acute asthma among children have increased 100% in the past decade. Black children have significantly more asthma than white children, and hospitalization rates are up to 21 times higher in poor or minority areas than in affluent communities.³ Robert Ivker, an ear, nose, and throat physician and author of *Asthma Survival*, believes that four major factors contribute to the pediatric asthma epidemic—air pollution, immune dysfunction, allergies, and stress.²

When children have asthma, there is often a history of allergy in the family or they may have a parent with the disease. They may also have other allergic responses, such as hayfever. Common allergens that provoke an attack are animal fur and dander; mold; dust mites; fungi; and chemicals, such as paint fumes, car exhaust, and tobacco smoke. In cities, airborne particles of mouse and rat urine and the feces and corpses of dead cockroaches are primary indoor air pollutants that trigger pediatric asthma. Sudden vigorous exercise, viral infection (especially chest infections), or sudden changes in temperature and humidity can provoke an asthma attack, especially when children are emotionally stressed. During an attack, the muscles that surround the bronchi spasm and cause the airways to narrow. This constricts the outward passage of exhaled air; the effort of exhaling produces the characteristic wheeze. The mucous membranes become swollen and mucus is secreted in large amounts (Figure 6-2).



FIGURE 6-2 ■ Changes in Bronchiole During Asthma Attack. Note the constriction of the muscles surrounding the bronchioles, causing them to become narrower, and also the increased secretion of mucus. Reprinted with permission from Hardy NO: Westpoint, CT.

Pediatric asthma symptoms vary; one child may have less bronchospasm and more inflammation and swelling of the airways, another child may experience the opposite. Attacks may last minutes, hours, or even days. During this time, reduced oxygen causes alarm or panic. Usually the child needs to sit up and lean forward, which assists the accessory muscles of the chest to expand and contract. Lips and faces may become pale or bluish from lack of oxygen, if the attack is extreme. Lack of oxygen is truly a life-or-death situation, and panic can worsen an attack; the more scared a child becomes, the more the bronchial tubes spasm. The stress of asthma attacks often causes extreme tension in the respiratory muscles. Years of difficult breathing may cause a child to have extreme tension in the muscles of the back and rib cage, reduced mobility in the rib cage and spine and, possibly, a spinal curvature.⁴

Standard medical treatment for asthma consists of avoiding allergens; a daily dose of inhaled steroids; and an emergency bronchodilator, which may be used during an attack. Long term, these medications do not remove the cause of the asthma; however, inhaled corticosteroids do repair inflammatory damage to bronchial tissue without systemic adverse effects. Oral and intravenous corticosteroids, however, disrupt endocrine balance and damage a child's growth,

metabolism, appearance, and muscular and nervous function.¹

Several studies found that stress may have a major influence on the development of asthma and its clinical course. In one study, each child studied had one parent with asthma. Researchers found that parenting difficulties, such as the mother's depression, problems with infant care, and inadequate marital support significantly correlated with developing asthma early in childhood.⁵ Another study found that a child's risk of having asthma attacks significantly increased in the weeks after major negative life events or stress.⁶ Another study found that children in families that experienced intense levels of stress were three to four times more likely to develop asthma. The earlier stress was experienced in life, including in utero, the greater the risk of asthma.² A fourth study found that children hospitalized for asthma who later died of an asthma attack outside the hospital were more likely to have had psychological problems, such as depression, family dysfunction, or difficulty dealing with separation or loss.⁷ Robert Ivker identified several factors as possible sources of emotional stress that may aggravate asthma in children with the condition, including grief caused by the physical or emotional loss of a parent; a lack of bonding, especially a lack of physical affection, between the child with asthma and her parents; and a lack of closeness between the child's mother and father. Ivker believes that these emotional factors should be addressed and integrated as part of asthma treatment that goes beyond managing symptoms.²

EFFECTIVE MIND-BODY INTERVENTIONS IN ASTHMA TREATMENT

1. Medical hypnosis can affect the status of acute episodes by decreasing anxiety and relieving wheezing. For example, a 6-year-old boy with active wheezing and a respiratory rate of 36, improved dramatically under medical hypnosis and, within minutes, had no detectable wheezing and a respiratory rate of only 16.⁸ Even very young children can use hypnosis to reduce the frequency of acute episodes and the number of emergency department visits and hospitalizations. When they learn how to control their symptoms, children not only learn to stop acute episodes but also to increase their ease of breathing, which ultimately decreases medication.^{8,9}
2. Relaxation training, such as biofeedback and relaxation exercises, has been successful in shortening asthma attacks, reducing severity and frequency of acute attacks, and reducing the child's need for medication.¹⁰⁻¹⁴
3. Touch may have an immediate effect on a child's breathing. Brian Athorp has been a res-

piratory therapist for 30 years and a massage therapist for 10 years. It was when working as a respiratory therapist that he became so impressed with the therapeutic power of hands-on therapy that he was inspired to study massage therapy. For example, when doing a simple chest assessment before giving medication to an individual in an acute asthma attack, the respiratory therapist's hands are gently placed on the lateral aspects of the patient's ribcage. At times, Athorp noticed an immediate and dramatic improvement in the patient's breathing and emotional state; simply placing his hands on the person in a caring way could help a patient become less anxious and reduce the severity of an attack (Athorp B, personal communication, July 2002).

Diane Charmley observed that, in a hospital setting, a child's asthma worsens when anxious. A pediatric nurse and massage therapist, she found that **therapeutic touch** was an effective way to decrease children's asthma symptoms; standing behind children, talking to them, and helping them identify their feelings. Therapeutic touch anchored them and decreased their anxiety while they identified their feelings. With the therapist standing behind them, with no one looking at their face, the children could more freely express their feelings (Charmley D, RN, personal communication, October 2002).

APPROACH AND GOALS

Massage therapy can accomplish two goals: reduce symptoms of an acute asthma attack and reduce the frequency and severity of asthma attacks over time. Athorp feels that effectively applied massage techniques can reduce the child's symptoms during an asthma attack, which may reduce use of bronchodilators and other drugs. If a child can be reassured by massage and drawn out of her panic-driven isolation, she may require less medication for the asthma attack and less sedative or antianxiety medication. "Massage can introduce comfort and serenity into a world of pain and chaos . . . mitigating the adverse effects of what can be coldly impersonal critical care in a hospital setting (Athorp B, personal communication, July 2002)."

Dr. Cesario Hossri, a clinical psychologist and professor at the State University of Santo, Brazil, has been able to eliminate asthma attacks in most of the children with whom he works by using massage during an attack to relieve muscle spasm (most common in the muscles between the ribs and those of the back, shoulders, and diaphragm), to help dilate the bronchioles and to encourage respiration. When respiratory

distress is lessened and nasal breathing restored, Hossri uses hypnosis to suggest body relaxation and a sense of peace.¹⁵

Massage can also benefit children with asthma simply by reducing their stress levels. A Touch Research Institute study found that when parents gave daily Swedish massage to their children with asthma for 1 month, the children had fewer asthma attacks and were less anxious. The children also had improved pulmonary function, determined by daily peak air-flow readings. The parents gave the children simple relaxation massages, not addressing specific patterns of tension in the children.¹⁶

A long-term goal of massage therapy for children with asthma is to help them become aware of how it affects them physically and to give them tools to breathe more easily, before they build up a high level of muscle tension. During an asthma attack, a child may find it easier to breathe with her torso braced and supported by her arms. However, this position, although it stabilizes the chest wall, tenses the entire body. As a result, children may have tension in the intercostal, pectoral, trapezius, sternocleidomastoid, and scalene muscles. Massage therapists working with adults with respiratory problems find deep tension in the ribcage and back muscles and, yet, the adults are not aware how stress relates to the ability to breathe easily. A pilot study of massage with adults who had chronic asthma found that, despite having asthma for many years, most did not realize that stress played a role in their illness. After 12 weeks of seated massage sessions, they reported less chest tightness, wheezing, and fatigue, and a better ability to handle stress.¹⁷ Massage therapists Pamela Klimowitch and Patrick Malone, who work with adults with respiratory problems, observed deep tension in the chest, diaphragm, and back muscles of adults with chronic difficult breathing. After massage, these adults breathe easier and have less chest tightness.^{18,19}

MASSAGE AND HYDROTHERAPY FOR ASTHMA ATTACKS

During an attack, always observe the child carefully and have the child's bronchodilator or other medication available in case her condition worsens. Most individuals with asthma cannot lie down during an attack without further compromising the ability to breathe. They usually must sit up or recline at an angle of more than 45 degrees.

DRINKING HOT LIQUID

Provide hot liquids at the onset of an attack, such as soup or green or black tea. Any warm liquid may lessen the

severity of an asthma attack or quickly relieve it because warm liquids can soothe the bronchial tubes. The caffeine in green or black tea may stop initial symptoms for some individuals before the attacks escalate. Caffeine opens the airways much like the inhalers used by asthmatics. According to allergist and clinical immunologist, Eric Schenkel, MD, "Even during an attack, warm drinks can soothe it in 5 to 60 minutes. During the day of an attack, I recommend between six and eight glasses of warm water or another drink, continuing even after the attack ends."^{20,21}

STEAM INHALATION

Certain children's symptoms decrease if they are in a warm, humid room (temperature, high 70's to low 80's). Parents may take children into a bathroom, turn the shower on, and let it run, filling the air with steam. If this helps children breathe better, parents may stay in with them as long as is needed or until the hot water is gone. Make sure the child stays warm and does not become chilled when leaving the bathroom.

MOIST HEAT APPLICATION

Apply a moist heating pad or fomentation from the back of the neck to the waist. Have the child lay on this for 30 minutes. If she cannot lay supine, have her sit down in front of a table, place a pillow on the table, have her rest her hands on a pillow, and place her head on her hands. Put the hot application on her back in that position. Cover her back with a blanket or sheet.

CHEST HEATING COMPRESS

- Step 1. Put a hot fomentation or Hydrocollator pack on the chest for 10 minutes.
- Step 2. Make a compress by dipping a towel in cold water, wringing it out, and covering it with another towel or other insulating material.
- Step 3. Apply the heating compress around the child's chest.
- Step 4. Leave it for 1 hour or more.

MASSAGE SEQUENCE FOR AN ASTHMA ATTACK

The suggestions here are from a classic article by Dr. Cesario Hossri.¹⁵ Do not wait until a child is in the middle of an asthma attack to try massage! Learn at least some basic body massage strokes (Chapter 3), especially for the chest, stomach, and back. Do these strokes with the child, and emphasize learning to relax. When massaging the chest, stroke in between each rib with the fingertips,

beginning at the sternum and stroking around to the back. This will help relax the intercostal muscles. Use abdominal effleurage (page 82) and let your hand trace along the bottom ribs while it circles the top half of the abdomen. Do not push on the xyphoid process. Practice the massage sequence in this section at least a few times before trying it during an asthmatic attack. Have the child's bronchodilator or other medication available in case massage does not eliminate the attack.

- Step 1. Have the child lie prone. If not possible, place two or three large pillows on a table, seat the child on a chair in front of the table, with his hands on the pillow and his head on his hands. This exposes the back.
- Step 2. Massage next to the spine, from the lower back to the base of the occiput. Put your hands on either side of the spine, beginning at the lower back. With the tips of the middle and ring fingers, use gentle pressure to rub up and down on the tissue next to each vertebra 10 times, **ONLY ON EXHALATION**. Do more in areas that feel tight. Then vibrate or quiver your fingers on the same area briefly, **ONLY ON EXHALATION**. Work up the back one vertebra at a time.
- Step 3. Chest percussion (Figure 3-9) Gently percuss the spine between the shoulder blades. Continue for 30 seconds.
- Step 4. Thumbstroke between the scapulae (Figure 3-18). Repeat for 1 minute.
- Step 5. Thumbstroke on both sides of the neck next to the vertebrae. Repeat for 1 minute.
- Step 6. Abdominal effleurage (Figure 3-36). Have the child lie on his back. If he cannot lie supine, prop him up with as many pillows as needed to be comfortable. Massage the entire abdomen, using gentle pressure. Use more pressure as the child exhales. Repeat 10 times.
- Step 7. Chest friction (Figure 3-35). Repeat 10 times.
- Step 8. Basic relaxation sequence, emphasizing relaxation of the feet, stomach, and chest.

MASSAGE AND HYDROTHERAPY FOR CHILDREN WITH CHRONIC ASTHMA

MOIST HEAT APPLICATION

Moist heat application. Apply moist heat packs on the chest to warm and loosen the anterior myofascia and muscles of the chest before treatment, and on the upper back to warm and loosen the posterior musculature. An ideal way to integrate moist heat is to massage another part of the child's body for 10 minutes, while he or she is supine and heat packs are warming both the chest and the upper back.

CONTRAST TREATMENT OF THE CHEST

(Figure 3-55; see directions in Chapter 5)

MASSAGE SEQUENCE

- Step 1. Basic relaxation sequence with a focus on relaxed breathing. Include suggestions for relaxing the chest, upper back, and abdomen, such as "Feel your chest relax and get wider," "Feel your stomach get soft and warm," "Feel the muscles in between your shoulder blades relax," "Let your back slowly sink into the bed," and "Feel how softly and easily your ribs can move." It is also important to teach the child to breathe abdominally. Have him lie on his back, put his hands on his abdomen, and concentrate on the way his hands move during inhalation and exhalation. Ask him to see how much he can increase the movement of his hands by breathing deeply into the stomach. (Breathing should still be relaxed.) You may also have the child sit up, put one hand on the abdomen and one hand on the lower back, and increase the space between his hands by breathing into the abdomen. Another way to encourage deep, relaxed breathing is for the child to imagine his breath flowing into the lungs and pelvis as he inhales—feeling the chest and pelvis expanding—then, on the exhale, letting the chest and pelvis settle back to their original size. Repeat 10 to 20 times.
- Step 2. Effleurage the back (Figure 3-2). Repeat 10 times.
- Step 3. Knead the upper trapezius (Figure 3-17). Repeat for 30 seconds on each side.
- Step 4. Thumbstroke between the scapulae (Figure 3-18). Repeat for 1 minute.
- Step 5. Thumbstroke the lower back (Figure 3-19). Repeat for 1 minute.
- Step 6. Shoulder and neck effleurage (Figures 3-26 and 3-27). Repeat 10 times.
- Step 7. Chest and abdomen effleurage (Figure 3-34). Repeat for 1 minute.
- Step 8. Chest friction (Figure 3-35). Repeat for 30 seconds.
- Step 9. Rake between the ribs. Begin at the sternum and rake out to the sides of the chest, with each finger tracing between a different rib. Do not push on the xyphoid process. This stroke relaxes the intercostal muscles; however, the area may be ticklish, so go slowly and let the child become accustomed to the sensation. Work from the bottom to the top of the ribcage. Avoid breast tissue on a girl.
- Step 10. Chest and abdomen effleurage three times.
- Step 11. Passive range-of-motion exercises for the neck and shoulder joints (Figures 3-11 and 3-12).
- Step 12. Basic relaxation sequence, with a focus on relaxed breathing.

COMPLEMENTARY TREATMENTS

1. Acupuncture can relieve acute attacks.
2. Movement therapies, such as Feldenkrais and Alexander technique, can improve

- breathing by releasing tension and increasing mobility in the child's respiratory muscles.
3. Manipulative therapies can improve the mobility of the ribcage and spine.

ATTENTION DEFICIT DISORDER AND HYPERACTIVITY

Attention deficit disorder (ADD) is the most common neurodevelopmental disorder of childhood, affecting 3–5% of school-age children and at least four times as many boys as girls. ADD is a general term that includes a wide variety of children who may actually have different neurologic profiles and problems. ADD is characterized by a short attention span, impulsivity, and distractibility. Children display a low tolerance for frustration, a lack of motivation for all but the most stimulating activities, and a tendency to become bored easily. It is difficult for them to recognize the future consequences of their behavior and learn from their mistakes. Many have difficulty reading the nuances of social behavior and controlling their impulses, which causes social problems. Of children with ADD, 25% have a learning disability. Children with ADD are also at increased risk for depression and anxiety. Certain children with ADD are hyperactive as well; it is then termed attention deficit hyperactivity disorder (ADHD). Hyperactivity is a general restlessness or excessive level of movement; the child is in perpetual motion. ADD/ADHD can have serious and life-long effects on an individual's functioning (see Point of Interest Box 6–3). Despite these difficulties, some children with ADD/ADHD are highly successful in those areas where they devote their motivation, energy, and enthusiasm.¹

ADD can be inherited; however, other factors known to affect brain development may predispose children to this disorder, including infections of the brain, head trauma, maternal use of alcohol or cocaine, metabolic disorders, premature birth or low birth weight, and exposure to high levels of lead and mercury in utero or afterward. (One in 12 women of childbearing age has blood mercury levels that could interfere with fetal brain development.) Complications during labor, delivery, and infancy may also be related.^{2–4} Osteopath John Upledger believes that a structural problem involving malalignment of the cranial bones may be a primary factor in a significant percentage of children with ADD. He believes that head trauma, including that which occurs at birth, can cause this malalignment.⁵

Standard medical treatment for ADD includes appropriate school programs, behavior modification, counseling, and medication. As of 2002, about 4 million American children, mostly boys, were taking



POINT OF INTEREST BOX 6–3

ADD Is Serious

Diagnosis and treatment of ADD can be controversial, given the high number of children who have been diagnosed and that so many receive psychostimulant medications. Parents and professionals worry that children who have other problems are being diagnosed with ADD; for example, a child who is inattentive in a classroom may have a hearing problem, learning disability, or other problem that is not ADD. Despite these legitimate concerns, it is wrong to think that ADD is a minor disorder. The consequences of untreated ADD are: 52% will have drug and/or alcohol abuse as adults; 43% of untreated, aggressive boys who are hyperactive will be arrested for a felony by age 16; 35% never finish high school. A study of new inmates to one of the largest prisons in California reported 75% had a childhood history of ADD or learning disabilities.¹

Reference

1. Amen D: *ADD: A Guide for Primary Care Physicians*. Fairfield, CA: The Amen Clinic for Behavioral Medicine, 1999, p 51

methylphenidate (Ritalin).⁶ Psychostimulant medications, such as Ritalin and Cyclert, stimulate the parts of the brain associated with attention, arousal, and inhibition, but the effect lasts only as long as the drug is in the child's system. These drugs do nothing to treat neurologic dysfunction. Adverse effects may include loss of appetite, insomnia, and nervousness. According to child psychiatrist Elizabeth Guthrie, "Whenever I write a prescription for a child or a teenager, I am concerned not just about the possible adverse effects, but also the unknown. What about the subtle changes impacting the child's personality development? Are they all for the good? Do we know what they are?"⁷

There is an ongoing concern, within the medical community and among parents, that Ritalin may be overprescribed. Children with such problems as inattentiveness associated with a learning disability or a hearing impairment or simply very active and alert children, may be receiving Ritalin inappropriately.^{6,8}

Parents seeking additional therapies for their children have tried nutritional approaches, treatment of food allergies, craniosacral therapy, **neurofeedback**, and neurodevelopmental therapies. Each treatment appears to be effective for some children but not for all, probably reflecting the fact that ADD is a general term which covers a variety of conditions. Medical understanding of ADD is still evolving, and brain

scans and other technology may soon alter how this disorder is perceived. For example, psychiatrist Daniel Amen now asserts that there are six basic types of ADD, each with a different treatment.⁹

Parents of children with ADD may also experience a great deal of stress. They may be exhausted from years of chasing a hyperactive child; fielding complaints from neighbors, teachers, and peers about the child's behavior; trying various types of therapies; and worrying about their child. Even those parents with excellent parenting skills can be worn down by the constant demands of a child with ADD.

APPROACH AND GOALS

ADD is stressful for children, who often struggle academically and receive negative attention at school, in social situations, and at home. Certain therapies do not treat the cause of ADD but help the child deal with stress. Medical hypnosis, although not a primary treatment for attentional problems, can help the child be less anxious, sleep better, and develop strategies for controlling emotional outbursts. Relaxation training with biofeedback machines is also effective for controlling symptoms of ADD and hyperactivity.¹⁰ Massage therapy may fit in this category; although not treating the cause of ADD, it helps children reduce stress and be calmer. In one study, adolescent boys with ADD received 15-minute Swedish massage sessions on the back and neck. Massages were given every day after school for 10 consecutive school days. At the end of the study, the boys were less fidgety, rated themselves as happier, and were able to stay on a task longer in the classroom.¹¹ Acupressure has helped some children reduce or eliminate medication.¹² *High-Tech Touch* (Academic Therapy Publications, 1987) cites hyperactive children treated with acupressure massage. One 9-year-old girl not only began to act in a calm, poised manner, but also followed more complex directions and improved in fine- and gross-motor skills. Her medication (Ritalin) was withdrawn after three massage sessions. A 17-year-old boy with chronic behavior problems was resistant to massage at first, and it was several months before he showed improvement; with time, he became more relaxed, better able to focus, and more interested in his environment. Other children had less frequent and less intense temper tantrums.¹³ One hyperactive young boy received a few minutes of polarity therapy from his therapist whenever his behavior became hysterical; he would then fall asleep for an hour or two and awaken relaxed and able to interact normally with others.¹⁴ Other forms of touch have been used to treat hyperactive children. An approach developed by Jean Ayres treats hyperactive and touch-phobic children by gradually introducing them to touch. For

example, a technique that incorporates the calming effects of deep pressure, warmth, and slow stroking is to wrap the child snugly in a blanket and roll a ball slowly and firmly down her back for about 3 minutes.¹⁵

MASSAGE TREATMENT FOR ADD

Massage therapy, using the techniques described in this book, will help children reduce their tension levels and give them a true sense of what it means to be relaxed. Teaching children to manage their tension levels is as important as the physical benefit of massage. Use massage first to give the child the experience of relaxation and then spend more time teaching relaxation exercises. It may require considerable ingenuity on your part to get the child to lie relatively still during the first few massages. A short massage, rather than the time required for a full-body massage, will be necessary at first. It may be necessary to follow the children around to massage them, rather than expect them to lie still. Begin with the massage of the back described in Chapter 3; however, be prepared to use strokes from other parts of the body if the child is moving around. Do not restrain the child. If strokes for the back are well accepted, try to follow the entire sequence described in Chapter 3.

Be certain that there are no distractions in your office, such as clutter or loud noises. If children have specific music that they find relaxing, have the parent bring it along. A few simple toys may help keep the child occupied. You may wish to teach parents one or two simple massage strokes and the basic relaxation sequence, which can be done at naptime or bedtime when children are more likely to lay still. If parents practice them for just a short time every day, it will reinforce the learning of relaxation. Many such short repetitions can help the child learn to relax. Over time, children with ADD/ADHD can learn to relax and enjoy all the strokes of a full-body massage.

AUTISM

In order to receive pleasure from physical touch, it ought always to have been initiated by me and I ought, at the very least, to have been given a choice . . . When people didn't touch me, I never experienced this as neglect. I experienced it as love and understanding.¹

—Donna Williams, adult with autism

Autism is a biochemical brain disorder or dysfunction of the central nervous system, possibly caused by a neurochemical abnormality or a metabolic problem (see Point of Interest Box 6-4). About one in 1,000 children have autism; however, since



POINT OF INTEREST BOX 6-4

Autism and Sensory Input

There are three particular aspects of the decoding of sensory information that tend to be abnormal among people with autism. The registration of sensory information, controlled, in part, by the brain stem, is chronically often dramatically, faulty; common visual stimuli such as bright lights or moving objects often seem to go unnoticed, unobserved, while seemingly trivial objects—a loose thread on a jacket, a crumb on a patterned carpet—receive rapt attention.

The ability to modulate sensory input similarly appears to be flawed, leaving many people with autism unable to hear a focused conversation in a busy restaurant, for example, instead hearing each voice and every voice in a loud, confused, and congested jumble. In much the same manner, a hand placed on a shoulder or a forearm can seem like a stranglehold; a grape's slight acidity is little less than poison; an unfamiliar object—a chair, a doll, a ball—invades a bedroom, an otherwise safe environment, and holds the person horribly captive.

The ability to integrate information from the senses and to make that information meaningful similarly seems compromised, of course . . . the inability to use the senses to help locate one's body in space can impart something that you and I can only imagine as a kind of constant dizziness, making it difficult to plan and organize the series of muscle movements that lead a spoon to an open mouth, or that result in shoelaces successfully tied into bows—the senses getting in the way in those cases and in dozens more analogous to them.¹

—Russell Martin

Reference

1. Martin R: *Out of Silence: A Journey into Autism*. New York, NY: Henry Holt, 1994

the late 1980s the prevalence is increasing—it may currently be as high as 1 in 500.² For each girl with autism, there are three to four autistic boys. Children with autism typically have little ability to process social cues, emotional information, and language, meaning that they are unable to understand the feelings of others. About one-third has some type of visual dysfunction, one-half are nonverbal or have severely impaired speech, and three-fourths are mentally retarded. They often have sleep problems, short attention spans, phobias, rapid mood changes, and hyperactivity. Children with autism commonly have insensitivity or hypersensitivity to pain, heat, noise, smell, or touch. Many children with autism are so hypersen-

sitive to touch that they avoid it altogether. Repetitive behaviors, such as hand-flapping, biting themselves, or rocking, are common. Many years ago, psychiatrist Nik Waal observed that children with autism tend to have stiff shoulders, tightly clenched jaws and mouths, and shallow breathing.³

It is often difficult for health professionals to distinguish the autistic child's health problems from the odd behavior. For example, a 5-year-old boy with autism had not slept regularly for 3 years; he had chronic diarrhea, screamed repeatedly, and often lay on the sofa rubbing his stomach. Numerous pediatricians were unable to find an organic basis for his diarrhea, and psychiatrists told his parents that the screaming, sleep problems, and stomach rubbing were autistic behaviors. When the boy's family sought treatment from gastroenterologists in another country, it was found that the diarrhea was overflow from persistent constipation. A radiograph showed a fecal mass the size of a small cantaloupe. After treatment with laxatives, the boy was no longer in physical agony and his screaming, stomach rubbing, and sleep problems ceased.⁴

A child with autism is stressful for a family because these children have difficult behaviors, need a great deal of supervision, and give no emotional reward to their families as a result of their social disorder. Parents may feel isolated and need a great deal of both practical and emotional support.

Treatment should focus on promoting development and learning and reducing rigidity and stereotypical mannerisms. Standard treatment consists of behavior modification, teaching social and communication skills, speech-language therapy, medication, and family support.⁵ New approaches show promise, including biochemical approaches, such as the use of supplements and special diets, and therapies to improve sensory processing, such as the **HANDLE** approach.^{6,7}

APPROACH AND GOALS

Contrary to popular belief, children with autism can learn to relax, although it may require repeated training. In 1963, a group for children with autism began at a child development center. It consisted of four children with autism; three boys, ages 5, 6, and 9, and a girl, age 6. These children had lifelong patterns of extreme aloneness, no speech, and feeding problems; only one was toilet trained. At home, they were totally aloof or uncontrollably wild, with frequent, prolonged, and violent tantrums. After 2 years of behavior modification techniques, the children learned some speech and were able to interact with others. The staff had successfully reduced the length and intensity of the tantrums through mild physical restraint and repetition of rules; however, the children were still tense

and volatile. At this point, relaxation training became part of the daily routine. In each session, the children were told "Okay, now it's relax time." Lights were turned out and the children were told to put away their toys and relax on a mat. The children were then told to pretend they were lying in bed "where it is nice and comfortable," to breathe easily and to be calm, settled, and relaxed. The staff gently manipulated the children's arms, legs, and necks, while reminding them to relax. Any response approaching relaxed behavior was given immediate praise. Relaxation sessions were held every school day for 8 months. The first session lasted only 2 minutes before one child walked away but, as the children became more comfortable, the sessions increased to about 12 minutes. The children learned to become quiet and relaxed, clearly enjoying the sessions and spontaneously practicing relaxation at the program and at home. Their violent outbursts virtually disappeared, as well.⁸ When massaging children with autism, repeatedly coaching them in the basic relaxation sequence can help them learn to relax in much the same way.

There is a delicate balance between breaking through the isolation of a child with autism and overtreating the child. Donna Williams feels that it is important to persist even when the child appears to reject touch or other stimulation. She says, "I must, against my own feelings, suggest a strongly persistent, sensitive, although impersonal, approach to teach the child that 'the world' will not give up on [him]; that it will relentlessly make demands of the child. Otherwise, 'the world' will remain closed out."¹ Massage accustoms children to touch, helps them relax, and increases body awareness. Massage can help the child sleep better and reduce self-stimulatory behaviors, such as hand-biting or head-banging. According to psychologist Marian Meyed, by trial and error, the parents of some children with autism have realized that their child is physically and psychologically tenser than their other children and that they must help him relax so that sleep is possible. Although most children with autism do not want to be held at bedtime, other physical contact, such as patting, massaging the child's body, and sitting or lying down beside the child, is often successful.⁹

Psychiatrist Nik Waal used massage with a boy with autism and found that it released his muscle tension and created deeper breathing and better emotional adjustment. Waal had the boy sit on her lap and she began very gentle stroking to soothe him. Later, she used deeper pressure on the areas carrying the most tension.³ Two Touch Research Institute studies investigated the effects of stroking on autistic children. In the first study, each received touch therapy 15 minutes a day, 2 days per week, for 4 weeks. The children were fully clothed, but barefoot, and their bodies were

rubbed using moderate pressure and smooth stroking movements. When tested at the end of the study, touch aversion, stereotypic behaviors, and inattentiveness decreased.¹⁰ The second study compared two groups of autistic children; one group received a 15-minute massage before bedtime every night for 1 month, and the other group was read to. The children in the massage group showed fewer sleep problems at home, less stereotypic behavior, and were more attentive at school.¹¹

Several special education teachers used acupressure with children with autism and discovered that the children become more outgoing and responsive.¹² Osteopath John Upledger has successfully treated many autistic children with craniosacral therapy.¹³ In teaching massage classes for parents of children with disabilities, the author found that many of the simple Swedish massage strokes of a full-body massage must be modified to accommodate children with autism. Adjusting the environment or time of day may help a child be more accepting of massage. Parents usually know when their child will be most responsive to massage and what strokes will be most acceptable. Parents can massage the child at bedtime who will not lie still for a massage during the day. Larry Burns-Vidlak, a massage therapist and the father of three children with autism, combines wrestling or playing with massage. Rolling around on a bed or trampoline, he has his children put their arms around his neck while he uses his hands to rub their backs (Burns-Vidlak L, personal communication, April 1989).

MASSAGE FOR THE CHILD WITH AUTISM

Before beginning your first session with an autistic child, talk in detail with the parents to learn what is too little tactile stimulation and what is too much. Then, the extent of massage should be gauged by what the child can tolerate. Ask the parents to give the child a brief massage at least twice daily for a week before she is brought in for a session; this will give her some comfort with the idea of massage.

Swedish massage strokes are ideal and generally safe. The feet and hands may be a less defended area to begin with. Children should not disrobe unless they are comfortable with the idea, which may only come after a few sessions. If the child is only able to tolerate a short massage, she can be massaged for a few minutes, then the parent can be massaged, and then the child again. Showing the child how to do the strokes on her body may increase acceptance of massage.

Experiment with pressure; for example, try light stroking for children who tend to reject touch and deep pressure for children who are self-abusive (see self-abusive behavior in the Developmental Delay section). Use what works well for the child. Gentle,

slow massage to the wrist, elbow, shoulder, ankle, knee, and hip joints can be calming. Parents should learn massage strokes to give their child at bedtime or in the bathtub, where they can use soap lather instead of massage oil.

CATASTROPHIC ILLNESS

Catastrophic illnesses are those conditions in which children are gravely ill, whether from an acquired health problem, such as AIDS or cancer, or from a hereditary condition, such as cystic fibrosis. Catastrophic illness is both a major stress and a major challenge to children, including physical discomfort or pain, prolonged immobilization, and a loss of the sense of body intactness caused by disability. Medical regimens, such as dietary restrictions, limitation of activities, medication side effects, and painful or invasive medical procedures, may cause additional stress. Insomnia, anxiety, and depression are common manifestations of stress. Family members are under enormous strain, as well; they must do extensive caretaking at the same time that they are experiencing feelings of fear, helplessness, guilt, and anger.

In chronic diseases such as cystic fibrosis, children may have repeated hospitalizations, during times when they are too ill to remain at home. Should medical treatment fail and the illness become terminal, they may return to the hospital or remain at home under hospice care.

APPROACH AND GOALS

Gentle, individualized Swedish massage can address the needs of gravely ill children. It can help with the specific discomforts of each illness, as well as the major stress and discomfort noted above. Field et al. studied the effects of massage on 20 children with acute lymphoblastic leukemia. Children were given 15-minute whole body massages by their parents every day for 30 days. When compared with a standard treatment control group, they were less anxious and depressed and their white blood cell count increased significantly.¹ Hernandez-Reif et al. found that after 30 days of Swedish massage at bedtime from a parent, children with cystic fibrosis were less anxious, their mood was better, and their breathing was improved, as measured by peak airflow readings.² Similar findings were found when massages were given to teenagers with AIDS (see AIDS section).

Massage therapist Lyse Lussier has treated children with grave illnesses (Chapter 3) and finds that massage can relieve physical distress, such as pain, nausea, and discomfort from being immobilized, and psy-

chological distress, such as anxiety, lack of stimulation, insomnia, and feelings of isolation.

Massage therapist and former social worker Helen Campbell has worked with many gravely ill children, many with terminal illnesses, and has taught their families how to massage them. She has found that, in addition to the benefits to the previously mentioned child, massage has great gifts for the family, as well. Having something concrete and positive to do eases the feeling of helplessness and allows the family to express their love in a way beyond words. Massage can reduce the likelihood of parents becoming isolated from each other and grieving separately. Ms. Campbell also taught children to massage their siblings who were dying and found that they felt included as part of the health care team and had an opportunity to communicate their love and tenderness (Campbell H, personal communication, January 1989).

Receive permission from the child's physician before giving massage to the gravely ill child. It is usually feasible, even if there are surgical wounds, tubes, wires, ventilators, or other items to avoid. Helen Campbell worked with one girl with advanced aplastic anemia, which precluded massage. Instead, the girl was held gently, which was comforting to her. Permission should always be obtained from children themselves, who are already experiencing many medical procedures about which they have no choice. Before the first massage, the family could say, "A back rub might help you sleep better. Would you like to try it?"

SPECIFIC POINTS

- Identify all areas that should be avoided, especially intravenous sites, sores, dressings, catheter sites, and any painful areas. No matter how much of the child's body has cancer, or how many medical devices have to be worked around, there is usually at least one area of the body not affected by the cancer that the hands-on therapist can give comforting touch.
- Relief of edema is temporary, but comforting. The child often experiences relief for hours, with greater ease of movement, a more normal local temperature, and a more alive feeling due to the stimulation. The limb should be elevated, then massage distal to proximal (toward the heart) with a repeated gentle Swedish effleurage. The proximal part of the limb should be done first to open the lymph vessels for edema drainage.
- Children with cancer may have skin problems from medication, chemotherapy, or radiation. Problem areas should not be massaged unless there is a specific reason; the physician's permission must be obtained.

- No massage should be performed on or near an incision until 6 weeks after surgery, and then the child's physician should be consulted (see Scar Tissue, Chapter 4).
- Ask if children feel stiff or sore from lying in bed. Have them lay in novel positions and use range-of-motion exercises to relieve the effects of immobilization by increasing joint movement and circulation and giving them a three-dimensional experience of their bodies.
- Treat constipation with the techniques in Chapter 5; perform the strokes gently.

MASSAGE FOR CHILDREN WITH CATASTROPHIC ILLNESS

Positioning: Make sure the child is comfortably positioned, with extra pillows if needed. If the child is unable to talk, begin with a little massage, watching for such nonverbal signs of discomfort as tension in the face or changes in breathing.

Use the basic Swedish strokes of effleurage, petrissage, kneading, and raking described in Chapter 3, but be very gentle. Do not use vigorous muscle kneading or tapotement. Strokes should be long, even, and slow rather than short, fast, or choppy. For an emaciated child, use very light stroking from the head down toward the feet. The hands and feet can be massaged thoroughly, but gently. Head, neck, and shoulder massage may help relieve headaches. Gently stroking the forehead can release tension. If possible, help children breathe more freely by using the basic relaxation sequence. Energy techniques such as Polarity therapy, Reiki, and craniosacral therapy may also be appropriate because they use little or no pressure. Do not tire children by long sessions; even a few minutes of massage can be powerful and can be the nicest minutes of their day. If they want only a few minutes of massage, you may give massages to other family members as well. You may teach other family members how to massage children.

It cannot be stressed enough that children should not be exposed to germs. If you are ill, or even suspect that you are catching a cold or other minor illness, do not have any contact with gravely ill children.

COMPLEMENTARY THERAPY

Medical hypnosis has been successful for children as young as age 4 to treat the pain of their disease; reduce anxiety and pain caused by invasive medical procedures (such as spinal taps and bone marrow aspirates); and alleviate depression, insomnia, behavioral difficulties, and fear of death. Hypnosis for pain management has allowed children to reduce use of pain medication. Self-hypnosis has also been taught

to children; those who practice regularly, get the most consistent pain relief.³

CEREBRAL PALSY

Matthew, 4, had cerebral palsy and was both blind and quadriplegic. His mother told me she didn't think it was possible to become any closer to her son than she already was. But after learning to massage him, she said, with tears in her eyes, 'It's like he can cuddle back when I hold him now, the massage relaxes him so. When I massage him before bedtime he is able to sleep with his arms straight and not flexed like they always had been. When I don't have time for a complete massage, I will massage his arms, his hands, and his legs that are always so tight. He holds his thumb inside his fist, but since I've been massaging his hand, it is relaxing more and more.'¹

About one in 300 children is born with or develops cerebral palsy, a developmental disability that originates when the parts of the brain that control movement are damaged before or during birth or during infancy. This damage can result from certain infections during pregnancy, an Rh incompatibility, bleeding in the brain, and lack of oxygen or trauma during birth. After birth, prematurity and infections, such as meningitis, are causative. Damage may occur simultaneously to other areas of the brain; therefore, at least 25% of children with cerebral palsy have seizure disorders; at least 30% have visual, hearing, speech, and language impairments; and about 50% have mental retardation.²

Children with cerebral palsy have impaired voluntary movement. The effect of this varies, depending on the severity of the brain damage, the location of the damage, and if any other parts of the brain are damaged. There are three main types of cerebral palsy:

- Spastic cerebral palsy, the most common type, in which the voluntary muscles are stiff and contracted.
- Athetoid cerebral palsy. The child's muscles make involuntary writhing or stiffening movements.
- Ataxic cerebral palsy. The child has poor balance, difficulty using his or her hands, and difficulty beginning to sit or stand.

Hemiplegia, diplegia, and quadriplegia describe how much of the child's body is affected by the cerebral palsy (Figure 6-4). In addition to hypertonic musculature, children often become fixed in a tense position.

Standard medical treatment usually involves various types of therapy. Physical therapy works to increase gross motor activities and functional movement and to decrease tone. Occupational therapy

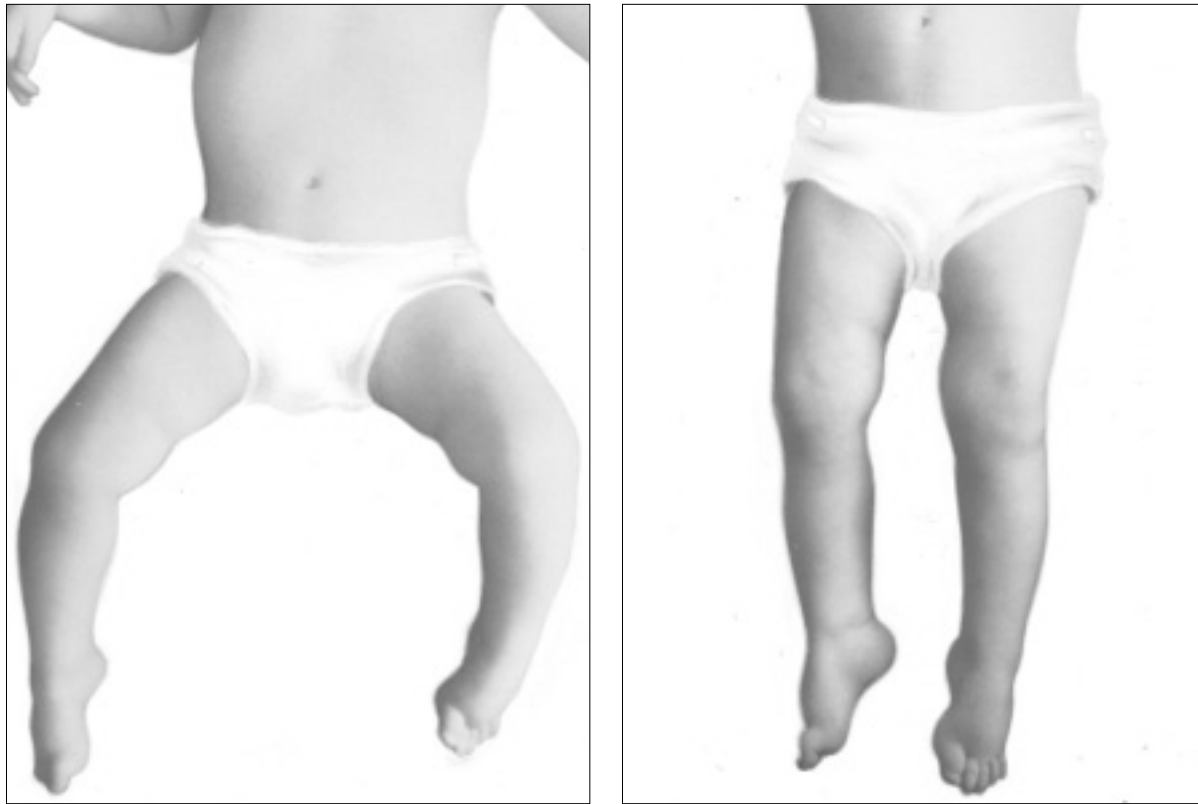


FIGURE 6-3 ■ Infant With Cerebral Palsy; **A**, Before, and **B**, After 10 Roling Sessions. Reprinted with permission from Robert Toporek.

helps the child with fine motor activities and activities of daily living. Orthopedic treatment may include surgery, braces, crutches, or splints, depending on the type and severity of cerebral palsy.

Massage has a number of benefits for children with cerebral palsy (see Case Study 6-1). Whether their condition is mild or severe, regular massage can make a significant improvement in the quality of their day-to-day life. As with all children with disabilities, stimulation, relaxation, greater acceptance of touch, deeper sleep, and improved body image are typical benefits. Swedish massage has helped children with cerebral palsy in the following ways:

- Alleviates constipation, which can be caused by hypotonic or hypertonic abdominal muscles (see Constipation Treatment, page 124).³
- Because spasticity is an ongoing problem for those with cerebral palsy, there is constant danger of contractures. Massage helps normalize muscle tone, can prevent contractures, and helps prevent existing contractures from worsening (Figure 6-5).
- Encourages deep breathing.
- Children with spastic cerebral palsy have learned to relax during treatments to consciously calm muscle spasms.

- By putting their bodies in different positions during therapy, releasing muscle tension and moving their joints in unaccustomed ways, massage can increase children's range of motion.
- Malocclusions are common as a result of the uncoordinated movements of the jaw, lip, and tongue muscles.² Massage can stimulate tone and/or release tension in the facial muscles and help decrease hypersensitivity around the mouth.

Researchers at the Touch Research Institute compared two groups of young children with cerebral palsy. The massage group received 30 minutes of massage, twice weekly for 12 weeks; the control group was read to for the same time. At the end of the study, the children who were massaged had reduced spasticity, less rigid muscle tone in the upper limbs, and improved gross and fine motor functioning.⁴ Other forms of massage and bodywork may also be effective for cerebral palsy.⁵ Myofascial techniques, such as Roling, can release restrictions and improve alignment (Figure 6-3). Regular acupressure massage helped several children with cerebral palsy advance in sensory-motor skills and improve relaxation and behavior.⁶ Swedish massage has been successfully combined with acupressure, as well as with trigger point therapy (Horden L, LMT, personal communica-

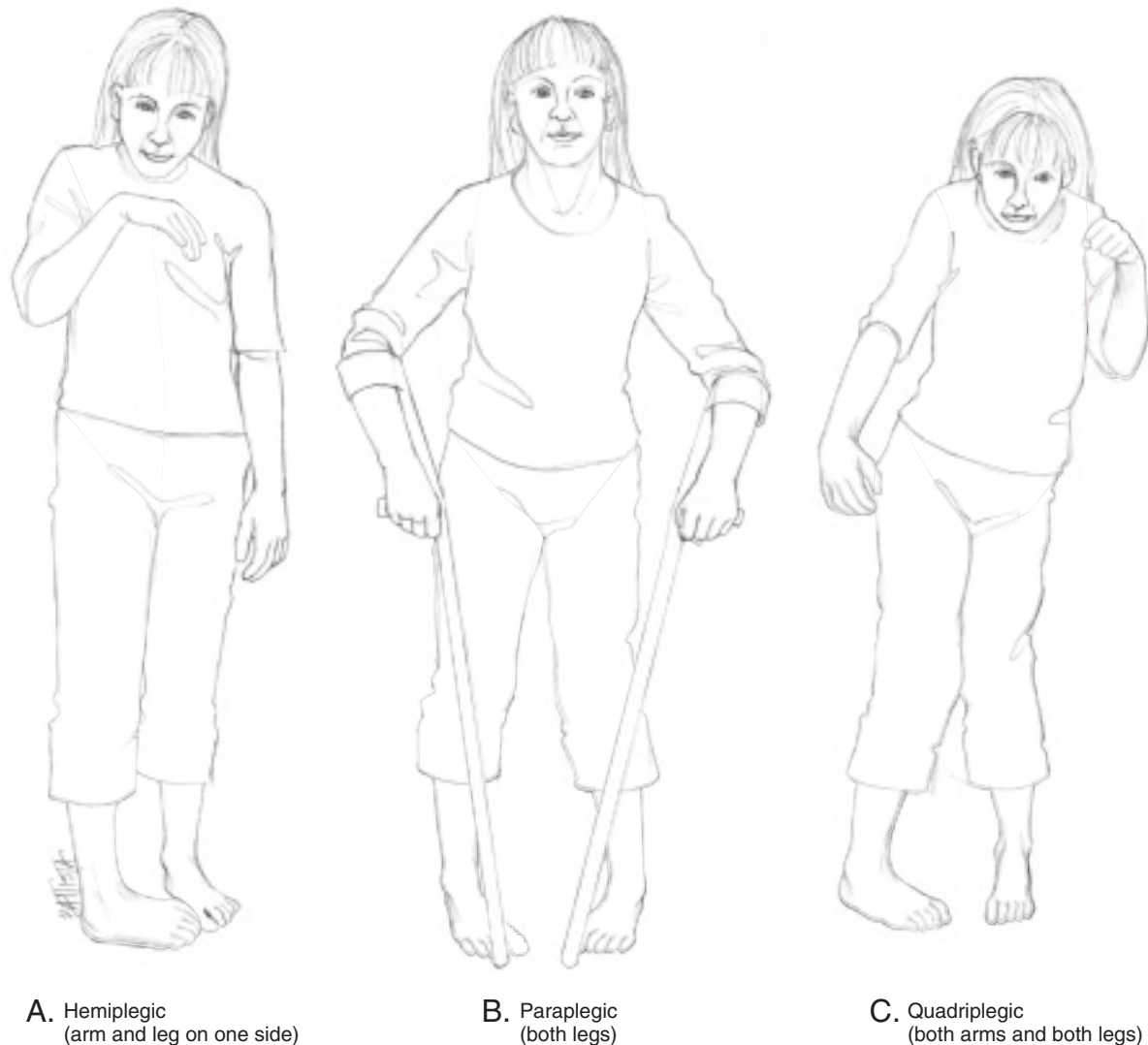


FIGURE 6-4 ■ Patterns of Involvement in Cerebral Palsy. **A**, Hemiplegia (arm and leg on one side); **B**, Paraplegia (both legs); and **C**, Quadriplegia (both arms and both legs).

tion, April 1991) and Thai massage.⁷ Craniosacral therapy has helped children with cerebral palsy with improved motor skills, increased range of motion in all joints, and decreased spasticity.⁸

MASSAGE FOR CEREBRAL PALSY

Because many children with cerebral palsy are hypersensitive to light or sound, begin with natural or low lighting and either soothing music or no music at all. The environment should be quiet and calm. Begin with the basic massage techniques in Chapter 3. In general, a whole-body massage once a week and 15 minutes daily on problem areas is recommended. If you teach parents how to do the daily massage, you can do the whole-body massage every week.

Pressure point massage, such as for neck and shoulder tension may also be effective (see Figures 5-6 and

5-7). Good positioning is important; consult with your physical therapist. The legs and back are good places to begin. Often, the feet may be hypersensitive to touch and massage may cause a reflex tightening of the leg. If this happens, use slow, deep pressure on the top of the foot first and, if the child can accept it without tensing, do the same on the bottom of the foot.

Facial massage can be valuable, especially if children have deep tension around the mouth or any feeding problems. Use the face massage techniques described in Chapter 3 and spend extra time on the face. Intraoral massage may be performed for deep tension inside the mouth, but you should receive extra training before doing this technique.

On any area that is sensitive to touch, begin with just a stroke or two until the child is more accepting of massage. As range of motion is increased after massage, this is an excellent time to do passive range-



CASE STUDY 6-1

TINA

Background

Tina is a 5-year-old girl who has floppy/ataxic cerebral palsy. Her development was normal until she was age 2, when she contracted an infection accompanied by a very high fever. She has been at a clinic for children with disabilities for 1½ years. The staff member caring for her is a kind, motherly, elderly woman. She has given Tina good care but is too busy to spend a great deal of time with her; therefore, Tina has spent a lot of time in a crib.

Tina is able to sit up but cannot roll over or crawl. She opens and closes her mouth and wrings her hands constantly. Her face is completely expressionless. In general, her muscles are low in tone, but her left hip rotators, right hip adductors, calf muscles, upper back and neck, and jaw are very tight. She is unable to lie flat on her stomach, but props herself up on her elbows.

Impression

Floppy/ataxic cerebral palsy, accompanied by boredom and lack of stimulation.

Treatment

Tina's initial treatment was a 30-minute whole-body Swedish massage. She showed no signs of hypersensitivity or tactile defensiveness. Massage sessions two through 10 included Swedish massage of the whole body. Extra time was spent on the tightest areas, and more stimulating strokes, such as tapotement, were done on hypotonic areas. Tina received a massage every day for 2 weeks. During the time she received the massages, she not only interacted with the author, she also had contact with the other people in the therapy room—patients, observers, and other new people. Out of the crib where she was accustomed to spending most of the day and night, she received far more stimulation than usual.

Response

During her third session, Tina rolled over for the first time since her illness. She also was able to lay flat on her stomach for the first time. After her fourth massage, she became animated and smiled for the first time. Tina received deep petrissage on her hands, which she showed signs of enjoying; she even stopped wringing her hands for a few minutes. After her fifth massage, she rolled over twice. When she was picked up and set down in a prone position, Tina put herself

on all fours and stayed up for a few seconds, for the first time since her illness. She then rolled over three times while her "grandmother" was changing her diaper and stopped wringing her hands. Each session found Tina slightly more animated and communicative and, by her tenth session, she looked like a different child. Tina also showed a dramatic improvement in her ability to move after a relatively small number of treatments. Not all children with cerebral palsy would show such fast improvement. Tina had the advantage of 2 years of normal brain development before contracting cerebral palsy, rather than having it at birth.

A visiting physical therapist recommended physical therapy to achieve these specific goals:

1. Exercises to strengthen and stretch the sides of her trunk and lateral neck muscles, to enable her to consistently rotate her trunk and roll over.
2. Exercises to strengthen her arm muscles to help her begin to crawl.
3. Exercises to stretch the gastrocnemius muscles so that they didn't interfere with her learning to walk. Tina habitually pointed her toes, and the muscles were tight and shortened.
4. Exercises to stretch the neck and shoulder muscles to help her as she began to crawl.

The author recommended that Tina continue to receive massage in combination with the physical therapy, because she needed to continue releasing tension in tight muscle groups and receiving the physical and social stimulation of the massage. The exercises to strengthen her muscles could be tiring and, by alternating a few minutes of exercises with a few minutes of massage, her exercise goals could be met without undue stress or physical discomfort.

Discussion Questions

1. Which tissues were affected by Tina's cerebral palsy?
2. What symptoms were present?
3. What changed features of Tina's daily life could have been related to her progress during the time she received massage?

of-motion exercises. An excellent shoulder range of motion, prescribed by physical therapist Deborah Bowes, is as follows: As you move the arm to rotate the shoulder, bring the child's hand around to touch her body, first the face, then the chest, arms, and legs

and back to the face. Using the child's hand to touch herself during range-of-motion exercises helps with joint motion and increases her awareness of the connection between the different parts of the body (Bowes D, personal communication, June 1990).

PREVENTION AND EARLY MANAGEMENT OF CONTRACTURES

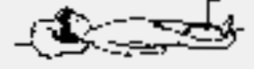
Contractures can often be prevented by (1) positioning, and (2) range-of-motion exercises.

POSITIONING

If a child is likely to develop contractures or has begun to develop them, try to position her to stretch the affected joints. Look for ways to do this during day-to-day activities: lying, sitting, being carried, playing, studying, bathing, and moving about.

During a severe illness (such as acute polio), or a recent spinal cord injury, contractures can develop quickly. Therefore, early preventive positioning is very important.

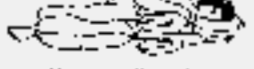
CORRECT



Put a pillow between legs to hold knees apart.


Living and sleeping straight helps prevent contractures.

CORRECT

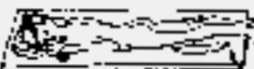


Also use pillows for side-lying to keep a good position.

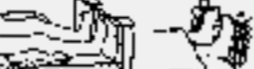
WRONG



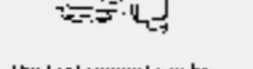
Lying and sleeping with the legs in a twisted or bent position causes contractures.




Putting feet hanging over edge helps prevent ankle contractures.



A foot board helps to prevent ankle contractures.

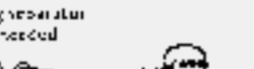


The foot support can be leaned forward a little so that the child can stretch it out by pushing against it. (Be sure to put it.)




Support feet at right angles.

If knee contractures might develop, keep the knees straight as much as possible.




Leg separator if needed.

A child who spends most of the time sitting should spend part of the day lying or standing (in a frame, if necessary). This will help prevent contractures of the hips and knees.

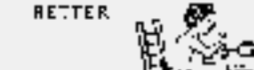


WRONG




Feet hanging off table to cause contractures.

BETTER



Foot rests.

BEST



Child-sized furniture.

Figure out ways to help the child stay in contracture-preventing positions.

For a child with spasticity whose legs press together or cross, look for ways to sit, lie, or carry him with his legs separated. Here are a few examples:


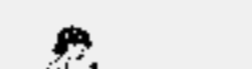

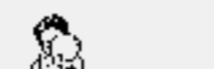





FIGURE 6-5 ■ Prevention and Early Management of Contractures. Reprinted with permission from Werner D. *Disabled Village Children*. Palo Alto, CA: Hesperian Foundation, 1987, p 196-198.

THE HYPOTONIC CHILD

Active voluntary movement and body awareness are increased following massage. Use bouncier, more rapid strokes. Experiment with different pressures to see what is most effective. Try using the pressure point massage techniques described in Chapter 3. Hydrotherapy may be combined with massage to stimulate muscle contraction (see Muscle Weakness, Chapter 5). Changing the texture of the surface on which the children are lying may also stimulate muscle tone. A pilot study of young, hypotonic children, some with Down syndrome, found that the simple act of lying prone on surfaces of different textures produced measurable increases in muscle tone. A surface with more texture, such as plush, velvet bathmats or rough, rubber doormats covered with cotton sheets, increased muscle tone more than a neutral surface, such as slick, uncovered vinyl.⁹ Wait until after massage to have the child do exercises that develop muscle tone.

THE HYPERTONIC CHILD

Massage will help reduce tone. Use slow, even rhythmic strokes. Experiment with different pressures to see which is most relaxing. Observe the child carefully; if there seems to be an increase in spasticity, delete the stroke that causes it. If any stroke causes spasticity or if the child's positioning during the stroke causes spasticity, try doing it in different ways until you find a way that reduces muscle tension. Facial massage can be valuable; consult with the child's occupational or speech therapist for a specific program.

If the child has a seizure disorder, be observant for signs of petit mal or eye muscle seizures that could lead to a larger seizure. Consult the physician or therapist if seizure activity occurs during massage sessions; deep relaxation may help reduce seizures that occur. Things that normally trigger seizures (such as loud noises or urination) may not do so when the child is deeply relaxed. Massage therapist Kathy Knowles worked with a child who consistently experienced seizures during massage. When he learned to relax and breathe easily while she massaged areas that were tight, his seizures stopped during the massage session (Knowles K, personal communication, June 1989).



A person with flaccid (limp) paralysis could be injured if a joint is moved or forced beyond its existing range of motion. The muscles could be stretched and joints dislocated without the individual's awareness. If muscle spasticity occurs during passive range of motion, stop the movement temporarily but continue to apply slow, gentle pressure on the part until the muscle relaxes, then proceed with the motion.¹⁰

COMPLEMENTARY THERAPIES

1. Aquatic pool therapy is excellent for children with cerebral palsy to relieve spasticity/muscle spasm, stretch tight areas, increase range of motion, learn how to relax, and encourage deeper breathing and greater body awareness.¹¹
2. *Yoga for the Special Child* is a program of hatha yoga adapted for children with disabilities by yoga teacher, Sonia Sumar. A physical therapist documented positive changes in a boy who received yoga therapy for 4 months in addition to his regular physical therapy. There was decreased muscle tone of his upper extremities; increased passive range of motion of his hamstrings, hip adductor, and hip rotator muscles; and overall quieting of his central nervous system. The boy's tendency to thrust his body into total body extension, hold his breath during efforts to move, and extend his jaw severely decreased. He was also better able to concentrate, was less distractible, made more eye contact, breathed more slowly and deeply, and was more able to relax his muscles.¹²
3. Poor fine-motor control in children with cerebral palsy has been successfully treated with relaxation training through biofeedback.¹³
4. Children with cerebral palsy have made major improvements in both fine- and gross-motor skills with the Feldenkrais Method.^{14,15}
5. HANDLE neurodevelopmental therapy has helped children with cerebral palsy make major advances.¹⁶

CHRONIC PAIN

This section briefly discusses three conditions that cause chronic pediatric pain and the use of massage therapy to help relieve stress and pain. Rather than discuss all conditions that cause chronic pain in children, the goal of this section is to help you understand the potential that massage has in dealing with painful conditions in general. Conditions causing chronic pain should only be treated with massage therapy after consulting with a child's physician.

HEMOPHILIA

Hemophilia is an inherited flaw in the blood clotting system and occurs only in males. Because the blood is deficient in an essential blood clotting protein, the body is not able to clot at the site of a wound. The boy has a permanent tendency toward spontaneous and traumatic hemorrhages. Hemophilia can be mild,

moderate, or severe, depending on the amount of clotting protein the body makes. Most boys have severe hemophilia. Boys with mild hemophilia have 5–50% of the normal clotting factor level. They don't bleed into their joints, but surgical or dental procedures can cause serious bleeding. In severe hemophilia, boys have no clotting factor. Bleeding into their muscles and joints can occur spontaneously, and any type of trauma or surgical procedure can be dangerous. Broken bones must be immediately immobilized so that soft tissue around the bone does not begin to bleed.

At the present, hemophiliacs regularly receive clotting factor. By infusing themselves with clotting factor, they can now prevent many bleeds and adverse effects before they occur. However, there are still many hardships with this disorder. Physical limitations, limited mobility, and hospitalization are stressful and disruptive. Pain is also a constant part of life. Joint bleeds are painful; as blood pools in the synovial membrane and stretches it, severe pain may result. Boys will also feel stiffness and swelling and refuse to move their joints because of the pain, often holding them in flexion. This leads to muscular atrophy and contractures. Contractures may even be seen in preschoolers, if hemophilia is severe. As one joint becomes less flexible, boys start to move differently and muscular compensations can occur in other parts of the body. Repeated bleeding into a joint will cause synovitis, arthritis, and degeneration.¹

Most boys with hemophilia have had negative experiences with touch from an early age. As even slight injuries cause bleeds, parents may have been afraid to touch them for fear of causing a bleed, resulting in touch deprivation and a lack of bonding. Boys may come to feel that they are “untouchables.” In addition, painful medical experiences, such as injection of clotting factor (either intravenously or intramuscularly), heel sticks, and Port-A-Caths may have led them to think of touch as a negative experience. Many men with hemophilia say they have never had a day in their life without pain.

JUVENILE RHEUMATOID ARTHRITIS

Juvenile rheumatoid arthritis (JRA) is defined as *the presence of arthritis lasting 6 weeks or longer in a child under 16 years of age*. This disease of chronic joint inflammation and pain is suspected to be an immune system disorder. Some children are more severely affected than others, but everyone with JRA has chronic pain. The most commonly affected joints are the knees, hips, ankles, wrists, fingers, and the cervical spine. These joints can be swollen and painful, making movement difficult. Contractures are likely if children do not move their joints through the maxi-

mum range of motion every day. Standard medical treatment for juvenile rheumatoid arthritis consists of anti-inflammatory medications, gentle exercise, and devices such as hand splints.²

Chronic pain and the loss of free movement invariably lead to some degree of depression in both these children and their families. Uncertainty about the future, feeling different from other children, and dependency on health care providers and significant others make it challenging for the child to cope.³

FIBROMYALGIA

Fibromyalgia is a syndrome of chronic widespread musculoskeletal pain. It occurs in about 10,000 American children, 90% of them adolescents.⁴ One study of 338 schoolchildren found that 6% of the children, some as young as age 10, met the American College of Rheumatology criteria for fibromyalgia (see below).⁵ Physicians who are expert in diagnosing fibromyalgia have identified it developing in toddlers.⁶

Fibromyalgia has two defining symptoms. The first is a widespread aching that has lasted at least 3 months and feels like the achiness of influenza. The second symptom is severe pain when specific points are pressed, including pain on both sides of the body, both above and below the waist, with point tenderness in at least 11 of 18 specified sites (see Figure 6–6). These tender points are not trigger points, and they do not refer pain like a trigger point. Children with fibromyalgia not only have chronic pain in their muscles and joints but they are stiff, sleep poorly, and are chronically tired. They are also more prone to headaches, swelling of the hands and feet, rigidity of the myofascia, numbness and tingling in the arms and legs, and sensitivity to cold. Fibromyalgia can affect a child's functioning as severely as juvenile rheumatoid arthritis.

Devin Starlanyl, a physician and fibromyalgia researcher who has fibromyalgia, believes that fibromyalgia is a systemic, nondegenerative, noninflammatory, nonprogressive disease of the brain's neurotransmitters.⁶ Fibromyalgia may be hereditary, as 40% of people with it have a close relative with similar symptoms. True fibromyalgia in a child often begins with an injury or a flulike illness. Traumatic events in childhood may also predispose a child to fibromyalgia; 47% of adults with fibromyalgia in one study had suffered physical or sexual abuse as children.⁷ Children may easily become depressed as they cope with constant physical discomfort; fatigue; restrictions on their activity; and an invisible, poorly understood condition. Children with widespread pain are significantly more likely to have emotional and behavioral problems.⁸

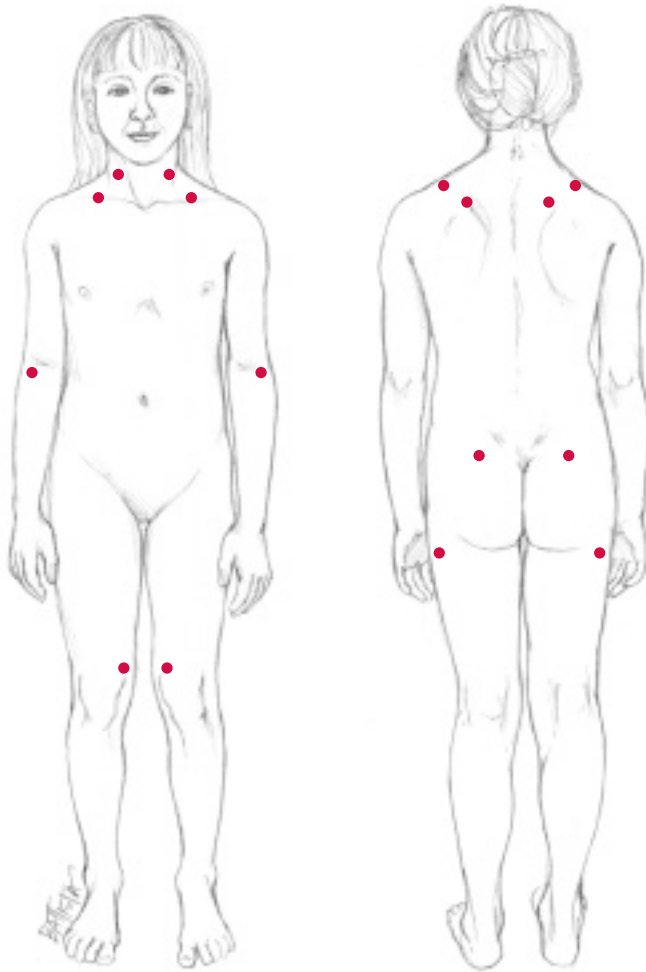


FIGURE 6-6 ■ The Tender Points of Fibromyalgia

Standard medical treatment for fibromyalgia in children includes regular physical therapy (including stretching and conditioning), muscle relaxants and/or steroid medication, and emotional support. A new treatment includes prescribing the medication guaifenesin to correct a metabolic defect.⁸ Children often are urged to exercise, but may suffer pain flare-ups if they exercise too hard. Warm water swimming can keep muscles conditioned without causing fatigue.

Children should be treated early and consistently to prevent their pain from developing into a full-blown condition.^{8,9} Their prognosis is better than that of adults: If therapy is aggressively pursued, 80% of young people have substantial resolution of the syndrome within 2 to 3 years.⁹ An untreated child may have lifelong fibromyalgia.

APPROACH AND GOALS

Massage therapy can help boys with hemophilia become accustomed to positive nurturing touch,

reduce pain, release stress and tension, and increase range of motion and nutrition to their joints. It is possible they may have fewer spontaneous bleeds. These effects, particularly the reduction in pain, have already been seen in adults.¹⁰ Massage therapist Renee Weaver specializes in working with people with hemophilia. When receiving massages at summer camp, boys with hemophilia slept better and needed less pain medication (Weaver R, LMT, personal communication, August 2002).

Massage helps children with rheumatoid arthritis release emotional tension, relieve pain and stiffness, and prevent contractures. It has an advantage over muscle relaxants, which relax muscles all over the body and cause drowsiness.¹¹ A Touch Research Institute study found that children with JRA between the ages of 5 and 14 experienced both short-term and long-term pain relief from massage. Parents gave the child a 15-minute Swedish massage every day for 30 days. At the end of the study, the children had less pain and morning stiffness, were less anxious, and had lower levels of the stress hormone cortisol.¹² The most substantial pain relief the author has observed in a child with this condition was in a 4-year-old boy whose parents learned massage, purchased a hot tub, and regularly massaged him and did range-of-motion exercises in the tub.

Massage therapy can also be extremely effective for fibromyalgia. It is reported to alleviate musculoskeletal aching and stiffness in children and adolescents.⁹ A Touch Research Institute study found that adults with fibromyalgia who received two massages a week for 5 weeks felt major improvements in their condition. They slept better and had less pain, fatigue, anxiety, and depression and their blood cortisol levels were lower. The massages consisted of 30 minutes of Swedish type stroking on the head, neck, shoulders, back, arms, legs, and feet.¹³ Unfortunately, no such research has yet been done with children.

MASSAGE AND HYDROTHERAPY FOR CHILDREN WITH CHRONIC PAIN

MOIST HEAT APPLICATIONS

1. Hot moist packs, such as an electric moist heating pad or Hydrocollator pack, help relax muscles and soothe the area before massage.
2. Warm baths with Epsom salts for 20 minutes can relax muscles before massage. For an adult, 1 cup Epsom salts would be used in a tub of warm water. Adjust the amount of Epsom salts to the size of the child; for example, use 1 cup for a 150-pound adult, $\frac{1}{2}$ cup for a 75-pound child, and $\frac{1}{3}$ cup for a 50-pound child. The temperature should be 100° to 105° F, whatever is comfortably warm to the child.

MASSAGE

- Step 1. Begin with the basic Swedish massage techniques in Chapter 3, treating any muscle or muscle groups that are causing or adding to sleep problems. For example, if children have areas that hurt and wake them up when they roll over at night, this can interfere with their sleep. Treat the areas causing the greatest pain or the greatest restriction of movement.
- Step 2. Begin with very light pressure. If children find deeper pressure helpful, you may gradually use more. Progressing from light to deep pressure may take many sessions. Children should not experience any flare-ups from the massage, and they may never be able to tolerate deep pressure. Overdoing massage can lead to a flare-up of pain and fatigue. Children should not return for another session if they are experiencing any flare-up of pain from the first session.
- Step 3. The therapist should err on the side of caution and be careful not to use too much pressure. Possibly supplement the techniques in this book with lighter pressure techniques, such as energetic techniques or craniosacral therapy.

CONTRACTURES

A contracture is the lack of complete active or passive range of motion due to limitation of joint, muscle, or soft tissue. Whenever joints are not regularly moved through their normal range of motion, contractures may develop. For children who are immobilized, it is vitally important that attention be paid to joint range of motion.

APPROACH AND GOALS

To prevent contractures, it is important to regularly position children in a way that stretches their affected joints. After massaging an area, stretch the affected part and do full range of motion. Doing massage first will loosen the area so that you will be able to stretch the soft tissue farther and move the joint much more. This should be done gently, to children's tolerance. Overstretching leads to pain, injury, and scar formation. It should feel great to the child to feel a stiff area loosening up!

MASSAGE AND HYDROTHERAPY FOR CONTRACTURES

HYDROTHERAPY: MOIST HEAT APPLICATION

Prior to massage, apply a hot pack, hydrocollator pack, or towels that have been wrung out in hot water, around the joint. Leave it on for 15 minutes.

MASSAGE AND STRETCHING SEQUENCE

Along with casts, braces, or special equipment to stretch contractures, steady, gentle, firm stretching can be done.

- Step 1. Effleurage the entire limb for 2 minutes.
- Step 2. Perform gentle range-of-motion exercises, even if you feel little or no movement in the joint, for 2 minutes.
- Step 3. Hold the limb in a steady, stretched position for 30 seconds.
- Step 4. Stretch the joint a little more and again hold the limb in a stretched position for 30 seconds.
- Step 5. Continue increasing the stretch this way for 5 to 10 minutes. Do this at least several times a day. Do not overstretch. It is okay if the stretching hurts slightly, but it should not be very painful.¹

For the effects of prolonged spasticity, the elongated or stretched position must be held for at least 4 of every 24 hours.²

DEVELOPMENTAL DELAY

Developmental delay is defined as *slowness in a child's mental or neurologic development*. As children mature, milestones, such as sitting, walking, and speaking, usually occur in a typical order. With developmental delay, these milestones may be achieved much later or may not be achieved at all; children learn more slowly than other children their age. For example, because the processes governing eye motion, alignment, visual acuity, and visual perception may mature slowly or abnormally, more than half of children with developmental delay have significant ocular disorders.¹ Children who are significantly delayed in all developmental areas are usually diagnosed with mental retardation. Emotional, behavioral, and psychiatric disorders are also three to four times more common in people with developmental delay than in the general public.² The leading cause of developmental delay is fetal alcohol syndrome, followed by cerebral palsy, Down syndrome, and spina bifida. Mothers who are alcoholics have a 30–40% chance of having a child with fetal alcohol syndrome.¹ Other known causes of developmental delay are brain damage during or after birth, **meningitis** in early childhood, head injuries, and maternal malnutrition. Prematurity is a major risk factor for developmental delay (see Point of Interest Box 6–5). Many times, however, the cause of developmental delay is never known.

APPROACH AND GOALS

Peggy Jones Farlow is a speech/language pathologist and massage therapist with 20 years of professional experience with developmentally delayed children.



POINT OF INTEREST BOX 6-5

Prematurity and Developmental Delay

Premature infants are those born before 37 weeks of gestation or who weigh under 5 1/2 pounds at birth. Because their bodies are not fully developed at birth, they may face major challenges, including jaundice; brain damage due to hemorrhage; problems with the digestive system, kidneys or lungs; an inability to control heat loss; and a greater susceptibility to the effects of stress and infection.¹ In the long-term, premature children have an increased incidence of developmental delay, cerebral palsy, hydrocephalus, blindness, deafness, or seizure disorders. Even without these obvious neurologic problems, subtle abnormalities may occur. Children born prematurely are also more likely to have ADHD, lower cognitive test scores, and be enrolled in special education classes. They are also more prone to behavior problems and psychiatric disorders. It is not possible to separate the damage to the child's brain from being underdeveloped at birth from the negative effects of early stress that are so common in premature infants, such as illness, maternal separation for long periods, and multiple painful procedures. Both are known to be harmful to the brain.^{2,3} It has only recently been recognized that many babies with brain-damage need follow-up for their lifetime. Although there may be little deficit at age 2, problems may arise later. Pilot studies show that just as catch-up growth may occur in the physical structure of the body, early intervention with educational and other therapies that help the development of the nervous system may be of considerable use.¹

A 1987 analysis of 19 studies of the effects of tactile/kinesthetic stimulation on premature infants showed that 72% of the infants receiving some form of tactile stimulation received positive benefits, such as better weight gain, more mature motor development, signs of less distress, or better sleep.⁴ Since that time,

other studies have substantiated those results, including studies at the Touch Research Institute that show benefits for premature babies with the additional challenges of exposure to cocaine or HIV in utero.^{5,7} Generally, the infants were gently stroked from head-to-toe on both sides of the body. No attempt was made to massage the muscles to release tension or eliminate knots.

When massaging a child who was premature, the massage techniques discussed in Chapter 3 may be used. If the child has not been massaged before, great care should be taken to notice any areas of tactile defensiveness, and they should be avoided until the child can be massaged with less fear. Stimulation and relaxation are important benefits from Swedish massage, but deep massage is probably not called for. Regular full-body massage is important for the child's neurologic and social development throughout childhood.

References

1. Nathanielsz P: *Life in the Womb—The Origins of Health and Disease*. Ithaca, NY: Promethean Press, 1999, p 211, 212
2. Bhutta AL, et al: Cognitive and behavioral outcomes of school-aged children who were born preterm: A meta-analysis. *Journal of the American Medical Association*, 288:728-737, 2002
3. Porter FL, et al: Long-term effects of pain in infants. *Journal of Developmental Behavioral Pediatrics*, 20:253-261, 1999
4. Ottenbacher KJ, et al: The effectiveness of tactile stimulation as a form of early intervention: A quantitative evaluation. *Journal of Developmental Behavioral Pediatrics*, 8:68-76, 1987
5. Acolet D, et al: Changes in plasma cortisol and catecholamine concentrations in response to massage in preterm infants. *Archive of Diseases of the Child*, 68:29-31, 1993
6. Hayes J: TAC-TIC therapy: A nonpharmacologic stroking intervention for premature infants. *Complementary Therapies in Nursing and Midwifery*, 4:25-27, 1998
7. Field T: *Touch Therapy*. London, England: Churchill Livingstone, 2000, p 3-21

She teaches parents and other caregivers a 10-minute routine of acupressure and Swedish massage strokes combined with specific words and sounds (see Point of Interest Box 6-6) She has observed significant increases in interchanges of language, speech, and vocalization, as children respond to the pleasure and fun of a massage routine. As an additional benefit, parents have reported that their children relax more readily and have improvement with problems such as constipation, hyperactivity, insomnia, and acceptance of touch.³

Pamela Marshalla-Rosenwinkle, also a speech-language pathologist, uses massage as part of oral sensorimotor therapy to help developmentally delayed children have normal oral-tactile sensitivity, improve tongue and jaw movements to enhance feeding and speech, and treat drooling and lip retraction (Rosenwinkle P, personal communication, December

1993).⁴ A simple, yet still sophisticated, use of massage is part of the *Yoga for the Special Child* approach of Sonia Sumar. Sumar has incorporated massage into her yoga program for developmentally disabled children to reduce constipation, relax and stimulate circulation in the muscles after strengthening exercises, and help children lie quietly during relaxation time.⁵

The authors of *Aromatherapy and Massage for People with Learning Disabilities* (Hands-On Press, 1991) advocate simple massage strokes to help people who are multihandicapped feel reassured, supported, and recognized by another person, as well as to increase body awareness. Those with multiple, severe disabilities may go through several stages before they can accept this massage. The stages typically progress from initially resisting touch to tolerating it to cooperating passively to actively enjoying the massage. The



POINT OF INTEREST BOX 6-6

Acupressure and Swedish Massage for Developmental Disability

Kathy Knowles, a massage therapist, worked for 10 years at the Pearl Buck Center in Eugene, Oregon. For many years this facility had an acupressure treatment program for adults and children who were developmentally disabled. Ms. Knowles's work was primarily with profoundly retarded teenagers; some had additional handicaps, such as cerebral palsy or autism. The teenagers tended to have poorly developed speech, delayed motor and self-help skills, and behavior problems. Many had experienced other stresses, such as deprivation or abuse. As a rule, they had not been touched and were afraid of it. Ms. Knowles did one or two sessions of massage per week with each child. She generally used acupressure, with some Swedish massage similar to the techniques described in Chapter 3. The children she worked with showed great improvement in four areas: (1) They showed more willingness to be touched. Some children who had shunned massage began to ask for it. This indicated increased trust of others, which was especially important for the children who had been deprived or abused. (2) They relaxed a great deal, which made them feel better and helped reduce inappropriate social behavior. Not able to lie still during the first sessions, some were able to after weeks or months of treatment. One more advanced teenage girl learned to consciously relax her back to stop muscle spasms. (3) They gained greater body awareness, which contributed to a more definite and more positive body image. (4) The teenagers became increasingly aware and present in relating to others, shown by less whining, the ability to make eye contact, and a greater willingness to communicate (Knowles K, personal communication, June 1989 and September 2002).

authors cite the story of a blind, severely spastic, and profoundly retarded 8-year-old girl. Massage was selected to help her increase body awareness and respond to touch and offer her more opportunities for close nonverbal communication and sensory learning. Initially, she was given only a 20-minute back massage at each session, which gradually progressed to include the entire body. She tended to sleep through massage at first; this may have been resistance or simply an adjustment to profound new feelings of relaxation. Gradually, she began to stay awake more, vocalize more, and show signs of pleasure by moving her body. Soon she began to show anticipation after simply smelling the scent of the massage oil and cooed and gurgled at the beginning of a session.⁶

A 1986 Michigan State Department of Education study investigated the possibility that massage could reduce self-abusive behavior in teenagers and young adults who were severely mentally impaired. Self-abuse, such as repetitive head-banging, hand-biting, and body-slapping, had not responded to conventional approaches. For 16 weeks, each person was given two or three 45-minute treatments per week by a massage therapist. Although not successful for everyone, massage helped in many cases; benefits noted were a reduction of agitated and self-abusive behavior, relief from chronic insomnia, and a more relaxed appearance.⁷ According to three separate case reports from psychiatrists and occupational therapists, massage or a combination of massage and vestibular stimulation (such as rocking) has had great success in reducing self-abusive behavior in difficult cases in which no other approach had been successful.⁸⁻¹⁰

Massage is a rich source of not only relaxation, but also of stimulation. Researchers at the Touch Research Institute investigated the effect of massage on two groups of young children with Down syndrome. One group received 30-minute massages twice weekly for 2 months, while the other group was read to. The children in the massage group improved in fine- and gross-motor functioning and decreased in hypotonicity, while the children in the other group did not.¹¹ The author has observed a significant increase in muscle tone after beginning massage in several children with Down syndrome. Exercise to increase their muscle strength will be more effective if massage is given first.

As a result of inadequate fluid and fiber intake, uncoordinated muscle contractions, and poor rectal sphincter control, constipation is a long-term problem for most children with severe developmental disabilities. Stool may be retained for long periods and become progressively harder and more immobile. If given regularly, the strokes for constipation discussed in Chapter 5 can help reduce it significantly.

MASSAGE FOR CHILDREN WITH DEVELOPMENTAL DELAY

The basic long-term goal for children with developmental delay is to accept and enjoy a full-body massage (Chapter 3). This may be possible only after a period of shorter massages. Begin by massaging the hands and feet, and observe children carefully. If they do not show signs of resistance or overstimulation, try massaging the back. If the back is well accepted, then proceed with the rest of the body. The head and abdomen are often guarded, so do not work with them until the children are accustomed to massage, and then you may use the neck and shoulder tension and constipation treatments discussed in Chapter 5.

Varying types of sensory stimulation strokes (Chapter 3) should be used when children can tolerate them. The extra forms of sensory stimulation on the section on tactile defensiveness (see page 189) may be used, but always follow the children's lead and do not force massage.

To teach conscious relaxation, have the child exhale all the way. Model this by making loud sighs when you exhale during the basic relaxation sequence.



Consult the child's physician and physical therapist before massaging the neck of any child with Down syndrome. Of children with Down syndrome, 15% have **atlantoaxial instability**, and forward flexion of the head could contribute to subluxation or spinal cord injury.

FETAL DRUG OR ALCOHOL EXPOSURE

Cocaine is a major assault on the children in the uterus. An assault far worse than hitting a small child with the palm of your hand in a fit of anger... They have been beaten and battered just as surely as if their parents had taken a stick to them after birth.¹

—Peter Nathanielsz, *obstetrician*

My son is adopted and was born drug affected and was abused in his first 5 years. He bit, spit, kicked, and hit often. Tantrums were huge and long. I used his blanket to roll him in some times and hold, snuggled and safe. We had a 60-minute bedtime routine. I'd sit close to him and read bedtime stories, firmly rub his back, and sing to him. . .When he was older and I started massage, he came to my 'office' (home practice room) and would let me do some massage... When I became licensed, we scheduled actual appointments for him at my real office. He determined how the massage would go, what was massaged and for how long, his level of dress, and the lotion. He would flip several times on the table as he put his massage together. He's 14 today and still asks to be massaged. It has been a huge part of our life.

—Suzie Klein, *massage therapist (Klein S, personal communication, September 2002)*

In the United States, 11% of newborns are born to mothers who use illicit drugs; 10% use marijuana, 1% use cocaine, and 0.5% use opiates.² It is impossible to estimate the number of babies affected by one substance alone because maternal substance abuse often includes multiple drugs, alcohol, and nicotine. For example, women who are trying to reduce the withdrawal crash after using cocaine often take alcohol, marijuana, opiates, tranquilizers, or barbiturates.² These women are also less likely to nourish their babies by eating a nutritious diet.

Babies with a history of maternal substance abuse face many challenges. They not only have physical problems caused by the drug, but also must go through drug withdrawal. The pattern of withdrawal varies according to what the abused drug was, how much and for how long the mother had been using the drug, and when it was last taken.² Cocaine causes decreased blood flow to the placenta, predisposing the fetus to brain injury and stunted growth before birth. Cocaine-affected infants are often extremely irritable and hypertonic (stiff), and esophageal reflux and severe gas pain are common because of weak or underdeveloped digestive systems. They respond poorly to attempts to comfort them and have difficulty receiving tactile stimulation. Because something as simple as a diaper change can cause inconsolable crying, nursing staff in the hospital may leave them alone for fear of irritating them; however, this deprives the infants of the touching and bonding needed to develop normally.

It may be extremely difficult for a parent, especially one recovering from drug use or still actively using drugs, to bond with an irritable, stiff, and difficult-to-calm baby, and this may further deprive the baby of the loving touch he or she needs to develop. Almost one-third of children whose mothers used cocaine, opiates, heroin, or methadone are removed from their parents and placed in foster homes.² As drug-affected children grow, they are at risk of having developmental delays, learning disabilities, hyperactivity, hearing deficits, and visual impairments.

Five to ten percent of pregnant American women drink enough alcohol to put their children at risk of having fetal alcohol syndrome (FAS), damage resulting from repeated exposure to alcohol in utero. Of every 1,000 American children, one to two are born with FAS each year.² Infants with FAS are jittery, irritable, have low muscle tone (including a weak suck), and may have tremors and abnormal sleep patterns. Most have severe feeding problems and grow slowly, even when given excellent nutrition.² At birth, their joint range of motion is restricted, especially in the hands and feet and, occasionally, they have contractures. Hypersensitivity of the hands and feet is common. They may have motor problems and seizures, heart defects, and craniofacial abnormalities, such as a thin upper lip, no groove below the nose, and small eyes³ (Figure 6-7). They are at risk of central nervous system abnormalities, such as hyperactivity and developmental delays and language difficulties; the majority will be mildly mentally retarded. FAS is the leading cause of mental retardation in the United States.

Because they are so irritable, they, like the drug-exposed infants, may be deprived of the loving touch they need to develop normally. Painful or invasive procedures may also cause trauma and tactile defensiveness.⁴ Infants may also develop trigger points as a result



FIGURE 6-7 ■ Three-Year-Old Girl With Fetal Alcohol Syndrome. She has characteristic facial features and is small for her age. Reprinted with permission from Morrissy R: *Lovell and Winter's Pediatric Orthopaedics*. Vol. 1. Baltimore, MD: Lippincott Williams & Wilkins, 2001, p 310.

of the effects of drugs on their systems. For example, gastroesophageal reflux may be associated with abnormal torticollislike head and neck positioning as the baby reacts to discomfort.⁵ As infants tense in reaction to pain, they may activate trigger points in the sternocleidomastoid muscles.⁶ Gastroesophageal reflux is also known to initiate trigger points in the abdominal muscles.⁷

APPROACH AND GOALS

Because they begin life with such major challenges, infants of substance-abusing mothers have a tremendous need for any methods that enhance growth and development. Studies at the Touch Research Institute show that premature infants who were prenatally exposed to cocaine benefitted from daily massage and passive exercise. In one study, the infants received three 15-minute Swedish massages and passive exercise of the arms and legs every day. After 10 days, they had gained more weight and had more advanced motor development, fewer postnatal complications, and fewer stress behaviors than a control group of infants who were exposed to cocaine but did not receive massage.⁸ Gentle massage given over time can release tension and encourage acceptance of touch.⁹

Massage therapist Robin Gregory, who has given massages to drug-affected babies in a neonatal intensive care unit, uses strokes tailored to their needs. These may include gentle cradling with the hands enclosing the head and buttocks; gentle rolling and pulling of the hands and fingers; slow flexion and extension of the limbs; and gentle strokes over the tops of the feet, toes, hands, and fingers. In the beginning, an entire touch session might consist of simply cradling the infant's body for a few minutes. At the first sign of infant stress, the therapist should stop stroking and use simple passive touch. Often, after two or three touch interactions, the drug-exposed babies begin to release and seek social interaction. There is an increase of oxygen to the bloodstream and their heart rates slow down. The infants sleep better, their appetites are stimulated, and they gradually become more interactive when massaged.¹⁰

Occupational therapists Pat Joyce and Cindy Clark use craniosacral therapy to treat gastroesophageal reflux in infants. They suspect that craniosacral therapy is effective because many cases of gastroesophageal reflux may be related to impingement on the vagus nerve where it passes through the jugular foramen and at the cranial base.¹¹ Massage therapist Kathy Knowles uses massage and **Watsu** to encourage deep relaxation in children with FAS, whom she has found have very rigid bodies, extremely malaligned cranial bones, and an impaired cranial rhythm (Knowles K, personal communication, September 2002).

Massage therapist Suzy Klein has worked with troubled children in many different settings; she has also been a foster parent for 17 children and has adopted a special needs child. For drug-affected children, she suggests doing gentle stretching along with massage, using water to reduce stress, and making as much skin contact as possible. She urges therapists not to fear handling children with severe problems. For tactile defensiveness, she believes that light stroking may actually irritate rather than soothe. Deeper touch; pressure point massage as opposed to stroking; and myofascial, craniosacral, and polarity therapy can be effective. Flaxseed-filled bags of different sizes can be used as calming devices for children with tactile defensiveness. The weight of the bags is soothing when warmed and placed on the back or abdomen (Klein S, personal communication, March 1999). Because one-third of children who have stomachaches in response to stress will continue this pattern as adults, helping children learn to release tension in the abdomen may help avoid chronic abdominal pain or problems.¹²

Different forms of vestibular stimulation are especially important for drug-affected infants and children. Drugs and alcohol can interfere with vestibular

development during fetal life and, if the children were hospitalized as infants, they may have been deprived of vestibular stimulation at that time as well. Small children normally receive this stimulation from being rocked, picked up and put down, and from their own body movements. If they are sick enough to be hospitalized as infants, they are not likely to get that stimulation. With the physical therapist's or physician's approval, vestibular stimulation such as rocking, swinging, or having them spin in a swivel chair may be incorporated into a massage session.

MASSAGE FOR THE DRUG-EXPOSED CHILD

As the drug-exposed infant grows, the basic techniques discussed in Chapter 3 will be beneficial. Frequent warm baths help reduce stress, and massage may be done in the bathtub using soap lather instead of oil. A gentle, sensitive full-body massage on a regular basis would be ideal. Be careful to do massage at the child's pace. It will be more effective to give the child frequent massages for shorter periods (two 30-minute massages rather than one 60-minute massage). Have the child do the basic relaxation sequence as often as possible.

Areas that have been traumatized should be given special attention to prevent the child from developing lifelong habits of guarding. For example, guarding around feeding tubes, monitors, and feet lances is common. Even when the child is older and does not have a feeding tube, there may be tension and restriction around the scar. If the child was on a ventilator, there may be tremendous tension in the mouth, jaw, and throat. Abdominal massage to the child's tolerance level will help release tension from the pain of esophageal reflux or gas.

HYDROCEPHALUS

Hydrocephalus is a condition in which a disruption in the flow of cerebrospinal fluid causes an accumulation in the ventricles of the brain. When the fluid backs up, the ventricles become enlarged, resulting in increased intracranial pressure, enlargement of the cranium, and compression and subsequent damage of nerve tissue. Many different signs and symptoms may result, including seizures, headaches, **strabismus**, swallowing difficulties, and atrophy of the brain. About one in 1,000 children has hydrocephalus.

Hydrocephalus has various causes, including maternal infection (with rubella or cytomegalovirus) during pregnancy, meningitis, head trauma (including birth trauma), brain hemorrhage, tumors, or cysts. This condition is also associated with other birth defects; the majority of children with spina bifida

(incomplete closure of the spine) also have hydrocephalus.¹

To treat hydrocephalus, a shunt is inserted that diverts the cerebrospinal fluid to the child's abdominal cavity. A small hole is drilled in the child's skull and a tube is inserted and threaded subcutaneously from small incisions at the ventricular and peritoneal insertion site (Figure 6–8). Unfortunately, shunts can become blocked by scar tissue or infection of the surrounding tissue; then the shunt is no longer able to divert the cerebrospinal fluid. If this occurs, the child will begin to have symptoms of increased intracranial pressure, including severe pain, lethargy, headache, vomiting, irritability, and visual problems. Blocked shunts must be replaced; unfortunately, each time another tube is inserted, brain matter is damaged or destroyed.

APPROACH AND GOALS

Massage can be a significant source of comfort for children with hydrocephalus (see Point of Interest Box 6–7). Basic Swedish massage (Chapter 3) can offer relaxation and relief from aches and pains and provide much-needed stimulation when the children's activities are limited or if immobilized. As the Keenes have done, other massage therapy techniques may be combined with the basic techniques described in Chapter 3.



FIGURE 6–8 ■ Boy With a Ventriculoperitoneal Shunt. The shunt removes excess cerebrospinal fluid from the ventricles and shunts it to the peritoneum. A one-way valve is present in the tubing behind the ear. From Bear MF, Connors BW, and Parasido MA: *Neuroscience—Exploring the Brain*. 2nd ed. Philadelphia, PA: Lippincott Williams & Wilkins, 2001.



POINT OF INTEREST BOX 6-7

Tim Keene's Story

Tim Keene, now 21, was born with hydrocephalus of unknown cause. His first shunt was inserted when he was 6 days old. Tim's childhood was normal and fully active; he excelled in sports and traveled with his family. Then, in 1997 at age 16, with no warning, his shunt failed. Tim immediately had neurosurgery to insert a new shunt. The original valve had deteriorated so much that, during surgery, it simply crumbled in the neurosurgeon's hand. The new shunt malfunctioned repeatedly as a result of scar tissue in Tim's brain; he remained hospitalized for 4 months.

Rich and Diane Keene, Tim's parents, are both professional massage therapists. At first, they used Swedish massage and reflexology to rouse him after surgery and to ease his discomfort. When his skull sutures were healed weeks later, they used craniosacral therapy to reduce the swelling and improve circulation. Aromatherapy was used to elevate his mood and help him relax. With massage, Tim required less pain medication than normal. Although he was discharged from the hospital after 4 months, he continued to have moderate to severe headaches daily and a slight motor weakness on the right side of his body.

When Tim's headache pain is a 1-7 on a 1-10 scale, his mother and father treat him with energy balancing, reflexology, and acupressure. Any pain greater than seven is probably a shunt failure and requires an immediate trip to the hospital. The pain is so severe, Tim says it is "like someone hitting your head with a hammer. The pain and the pressure are so bad you can't even think. The only thing on your mind is making it stop." Generally, for a headache he is massaged for about 30 minutes. "Sometimes I'll have a pounding headache

and my mom will work on me, doing some energy work and reflexology. Relief usually comes between 15 and 30 minutes and sometimes I fall asleep for hours." His father uses one particular technique when Tim has an optical headache. He presses inward with both thumbs near the bridge of Tim's nose and holds that point for at least 2 minutes. This takes the pressure off, and the pain diminishes in 5 to 30 minutes.¹

As of September of 2002, Tim had endured 92 shunt revisions, for which 22 holes had been drilled in his skull. The resulting damage, including scar tissue on his skull and brain, eventually caused seizures. Tim and his parents have thus spent long periods in the intensive care unit because Tim has experienced strokes, cardiac arrests, and other major medical problems as a result of the seizures. His parents continue to massage Tim every day. His mother says they do not always use the same techniques; they will try different types of massage and will not quit until they find something that makes him comfortable (Keene D, personal communication, September 2002). For example, sometimes they use myofascial release and light cross-fiber friction to strengthen and unwind Tim's tight muscles. Foot reflexology is helpful just to get him to relax. After 15 to 20 minutes of trigger point therapy, Tim's cognitive level is better, his speech is clearer, and his pain is greatly relieved. Alternating hot and cold packs on different parts of his body stimulate his circulation and help him feel more alive.

Reference

1. George T: With his parents' touch. *Massage Magazine*, January/February:44-48, 2000

MASSAGE FOR CHILDREN WITH HYDROCEPHALUS

Children with hydrocephalus are not all the same. There may be varying degrees of pain, restriction of activities, and other discomforts. A careful medical history should be taken to find out what is most bothersome to the child.

Positioning: Children may lie in any preferred position; even prone with the head turned to one side is safe.

All full-body massage technique strokes described in Chapter 3 may be used and adapted to the individual child's concerns. Observe the following cautions carefully and the massage will be safe.

1. Stay at least 4 inches away from the operative site, where the tube comes out of the skull.

2. Move the head slowly and gently so as not to traction the tube any time the child's neck needs to be moved or repositioned.
3. Do not use deep-tissue massage techniques that put pressure on the drainage tube; anything that yanks on the tube could disconnect it!
4. Craniosacral therapy has proven effective for Tim. Diane Keene cautions, however, that it could be dangerous because craniosacral therapy may affect the cerebrospinal fluid, and hydrocephalus is a disruption of the cerebrospinal fluid. She knows her son and his cranial rhythm well and does not want anyone working on him who does not know him just as well. Craniosacral therapy has been helpful in other cases of hydrocephalus, especially when the condition is due to improper pressure from

the occipital bone.² However, it should only be attempted if you have received advanced training with an expert in craniosacral therapy.

MUSCULAR DYSTROPHY

When I volunteered to bring massage to Muscular Dystrophy Camp in St. Louis, Missouri, I was overwhelmed by the youngsters' responses. They all wanted to get on the table, the response was incredible. When we couldn't get them up on the table, I worked on them in their wheelchairs. I let them tell me where they wanted me to work. Every one of them had a different ache or pain and some had numb places they wanted to feel again. These kids desperately wanted to be touched.¹

—Terrie Yardley-Nohr, *massage therapist*

Muscular dystrophy (MD) is an inherited muscle disease that affects about 1 in 3,000 males. Because their bodies do not produce dystropin, a protein that stabilizes the muscle membrane during muscle contraction, the muscle fibers gradually deteriorate and are replaced by fat and fibrous tissue. This muscle deterioration causes a gradual loss of muscular strength. The pelvic and leg muscles are affected first, followed by the muscles of the upper extremities. The involuntary muscles of the heart and diaphragm also deteriorate, eventually leading to respiratory and heart failure. Many boys require a wheelchair by age 10, and scoliosis often develops at approximately this age. Contractures are almost inevitable, and are caused by an imbalance of agonist and antagonist muscles, bad posture resulting from trying to stabilize the limbs when standing, or loss of range of motion from sitting in a wheelchair. Because the muscular tension that normally stimulates bone growth is deficient, MD can also lead to osteoporosis. Then, because their muscles are

weak, boys with this condition are prone to severe falls that can easily break their porous bones. Fractures are most common in the diaphyses of the femur and upper humerus.² Boys with this condition also tend to have learning disabilities and cognitive impairments.³

Standard medical therapy for muscular dystrophy includes physical therapy to delay or prevent contractures through daily passive stretching, and splinting and exercises to maximize muscle strength. Pool exercise encourages stamina and endurance, without the stress of fighting gravity, and enhances breathing. Orthopedic surgery may be used to release shortened tissue, lengthen contracted tendons, or transfer tendons to different locations. Corticosteroids are often prescribed. As boys and their families face his increasing disability and impending death, depression is common and counseling is often suggested. Despite medical therapy, the current prognosis for boys with muscular dystrophy is respiratory failure leading to death before adulthood.³

APPROACH AND GOALS

The massage techniques described in Chapter 3, combined with a routine of strengthening exercises and passive stretching, can help prevent or delay the onset of contracture, keep connective tissue supple, and dramatically increase comfort (Figure 6–9). When massage is introduced into a regular routine, strengthening and stretching can be less tedious and more enjoyable. Because boys with MD experience chronic high levels of stress, massage is especially appropriate for relaxation. The progressive relaxation sequence described in Chapter 3 is excellent for both relaxation and for strengthening muscles.

Dr. Meir Schneider has developed a special program to treat muscular dystrophy that includes a



FIGURE 6–9 ■ Massage for a Boy With Muscular Dystrophy. Reprinted with permission from Werner D: *Nothing About Us Without Us*. Palo Alto, CA: HealthWrights, 1998, p 270.



POINT OF INTEREST BOX 6-8

Massage for a Boy With Muscular Dystrophy

In 1991, the author showed a video of Meir Schneider's techniques for muscular dystrophy to the staff and patients of a clinic for children with disabilities in Ajoya, Mexico. The clinic staff, with no instruction, began intensive treatment of Angel, a 6-year-old boy with muscular dystrophy (MD) who was visiting the clinic with his mother. Three young men with spinal-cord injuries, with no massage training other than receiving massage therapy from the author, formed the core of those treating the boy. Angel was insecure, fretful, uncooperative, and feared everyone but his mother; he was judged impossible to treat by a visiting physical therapist. The boy received an intense program of daily massage sessions, followed by exercise to build muscle strength. Exercises were playful and designed to encourage full muscle use without fatigue. Angel was treated for several hours daily for 2 weeks. At this time, his gait was visibly improved, and he had made gains in his capacity to lift and move different parts of his body. He had also changed from a fearful, whiny boy to a much happier one. His mother was so happy with the results that she continued his massage and exercises at home and, when the boy returned to the clinic 3 months later, his walking had improved even more.¹

Reference

1. Werner D: *Nothing About Us Without Us—Innovative Technology By, For, and With Disabled Persons*. Palo Alto, CA: HealthWrights, 1998, p 109-111, 269-273

unique form of massage (Point of Interest Box 6-8). Consisting of gentle circular motions with the fingertips over the entire body and concentrating on the most important and affected muscles, it is designed to regenerate weak muscle. The massage is combined with movement, visualization, and relaxation exercises. Dr. Schneider, whose doctoral thesis was on movement therapy for muscular dystrophy, has helped many affected individuals regain normal muscle strength, but this is not a "cure" for MD—therapy must be ongoing.^{4,5}

MASSAGE AND HYDROTHERAPY FOR CHILDREN WITH MUSCULAR DYSTROPHY

Hydrotherapy:

1. Moist heat applications, such as hydrocollator packs, may be used before massage to improve circulation to the tissue and aid relaxation.

2. Hydrotherapy may be combined with massage to stimulate weak muscles (see page 142).

MASSAGE THERAPY FOR MUSCULAR DYSTROPHY

- Step 1. Use the basic relaxation sequence to encourage deep, relaxed breathing. The progressive relaxation sequence can also be used but, if the child appears to be fatigued by the muscle contractions, stop immediately.
- Step 2. Use the full-body Swedish massage strokes described in Chapter 3. Be especially careful to not apply too much pressure. A few minutes of strengthening exercises and passive stretching may be alternated with a few minutes of massage.
 - The tissue around the joints can be tight and fibrous; spend extra time performing effleurage and petrissage around the joints, moving at right angles to the muscle fibers. Use light to medium pressure.
 - When massaging the chest and stomach, stroke between the ribs and along the bottom ribs (see the section on asthma, page 162). Do not push on the xiphoid process.
 - It is important to massage the feet and hands. Include gentle range-of-motion exercises on the ankles, toes, wrist, and fingers and include passive stretching as prescribed by the physical therapist.
 - If constipation is a problem, see page 124.

SCOLIOSIS

About one in 100 children younger than age 8 has scoliosis, which is defined as *an abnormal lateral and rotational curvature of the spine* (see Figure 6-10). More simply, scoliosis is not only a sideways deviation of the spine, but also a spiral twisting of the vertebrae. In children ages 7 to 16, one in 50 has scoliosis; however, less than 10% have curves large enough to require treatment. Of the more serious cases that do require treatment, there are six girls to each boy.¹

Scoliosis has several causes. It can be caused by a congenital defect in the bones of the spine, such as two or more vertebrae being fused together or a vertebrae having missing or poorly formed parts. It can also develop from a neurologic or muscular disorder. For example, a child with athetotic cerebral palsy who has spasticity on only one side of the trunk muscles can develop scoliosis. It can also be caused by the way children use their bodies. For example, a **leg-length discrepancy** can be a cause of functional, not anatomic scoliosis.² Other causes of functional scoliosis include habitual sitting or standing in an improper position, tilting of the head caused by some type of

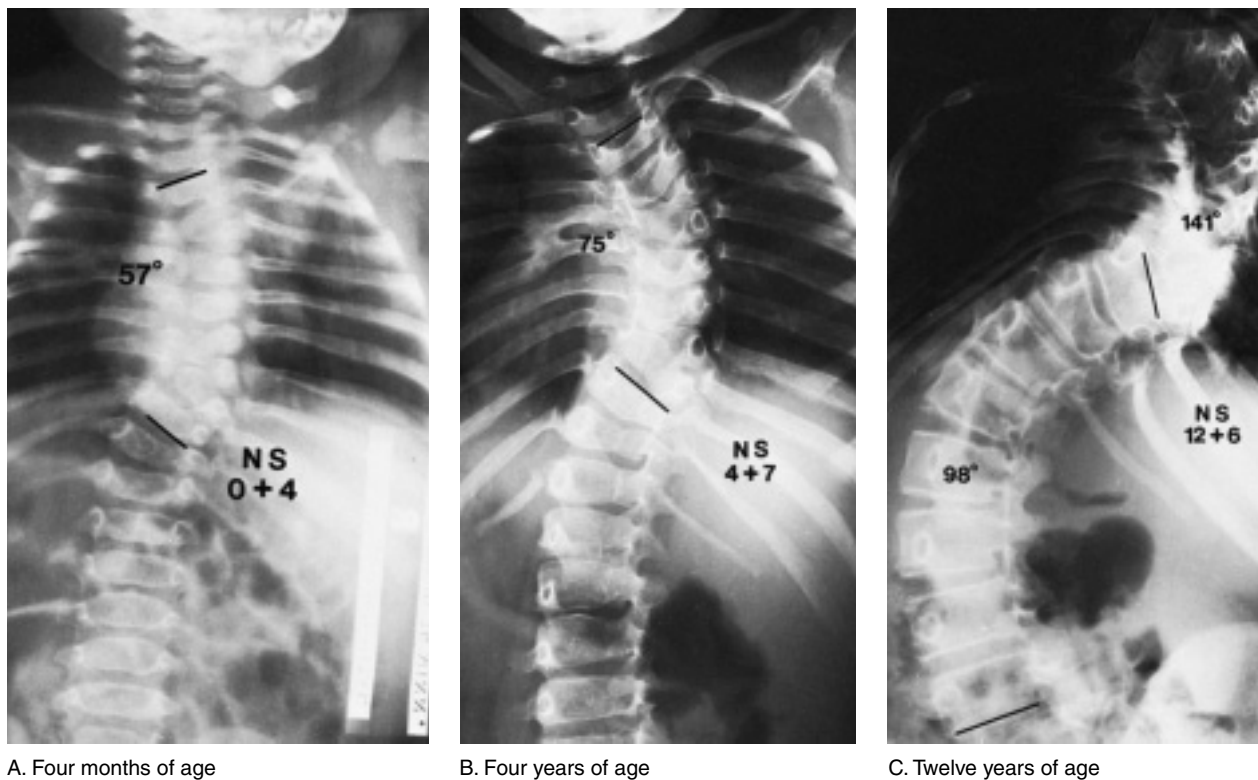


FIGURE 6-10 ■ A Girl's Skeleton Radically Deformed by Untreated Congenital Scoliosis. Reprinted with permission from Morrissy R. *Lovell and Winter's Pediatric Orthopaedics*. Vol. 1. Baltimore, MD: Lippincott Williams & Wilkins, 2001, p 728.

visual dysfunction, and paralysis of spinal muscles. During an attack of sciatica, muscles on the painful side can contract and cause a temporary lateral curvature.³ Many times the cause of scoliosis is not known. Functional scoliosis can become anatomic; if the scoliosis is left untreated long enough, the vertebrae eventually remodel to reflect the imbalances and permanently imprint a postural pattern. In many cases, muscle tension both causes and accompanies scoliosis. Muscles may pull the spine out of alignment, and the malalignment may activate trigger points. For example, scoliosis is known to activate trigger points in the rhomboid and serratus posterior muscles.²

Scoliosis can have serious consequences. Adults with untreated scoliosis, aged 40 to 60, have about twice the mortality rate as control groups with no scoliosis; those with thoracic curves can have significant cardiac and respiratory complications. Adults may also have major cosmetic deformities, significant back pain, and difficulty breathing.¹

Standard medical treatment for scoliosis consists of postural exercises, such as gluteal and abdominal muscle strengthening, stretching of the muscles of the chest and lower extremities, braces, and surgery for severe curvature. Spinal fusion, which involves inserting rods that straighten and fuse the affected verte-

brae, is the most common surgical procedure for scoliosis.

APPROACH AND GOALS

Massage alone cannot heal scoliosis. The child's physician or physical therapist should be consulted about the cause. If some congenital problem requires surgery or another underlying cause has not been addressed, this should be done first. For example, inefficient postural habits can be retrained, a short leg may be treated with a lift in the shoe, or a poorly fitted wheelchair can be adjusted. After the cause is addressed, massage may help with chronic muscular tension and imbalance.

Excess muscle tension can be treated with whole-body Swedish massage strokes (Chapter 3) and with other types of massage and bodywork. Extra time should be spent massaging the muscles of the back but, because scoliosis affects the entire body, the entire body should be treated. A great deal of time should be devoted to passive range-of-motion exercises. A whole-body massage once a week, along with daily massage to the entire back, would be ideal. Parents can learn to do the daily massage.

Massage therapist and educator Meir Schneider has had excellent results reducing or correcting scoliosis.

sis with a program combining massage and passive and active movement. He believes that massage is needed before exercise can be effective because many back muscles may be too tight to allow any movement. Gentle touch is used to stimulate and warm weakened muscles; deep tissue massage is recommended in only those areas where strong muscles have become rigid.⁴

MASSAGE FOR CHILDREN WITH SCOLIOSIS

Positioning: Children should be put in unusual positions that stretch their muscles and put their bones in a different relationship to each other during massage. For example, as they lie supine on the treatment table, have them twist the spine by rotating both legs to one side and turning the head and upper body to the opposite side. This stretches the midback. Positions should always be comfortable; use pillows or bolsters for support, if necessary. Parents can help hold children in these positions. Another novel position is with children laying prone over a large pillow or padded stool that is at waist level, so that they are almost on all fours. This gives you the opportunity to move their hip joints in internal and external rotation in a way that they will not normally do themselves, and to have greater access to the muscles around the hip joint and the muscles on the sides of the torso. They may also be lying on their sides, with one arm overhead and twisted to the back, with the hips rolled forward. Massage strokes should be modified for these different positions. For example, if the child is lying on his side, back effleurage, which is described in Chapter 3, will need to be done on the half of the back that is uppermost, then when the child rolls over, back effleurage can be done on the other side of the back, which will now be uppermost.

WHOLE-BODY MASSAGE

The ideal regimen for this condition is a whole-body massage, with concentration on the muscles of the back. Back muscles that are especially tight should be massaged for a longer time, with as much pressure as can be well tolerated. Any stretching or strengthening exercises prescribed by the child's physical therapist can also be incorporated into the massage.

TACTILE DEFENSIVENESS

One thing I couldn't learn was how to feel. Robyn's mom would always hug her before she went off to school, and she insisted on doing this to me, too . . . So every morning, like a rock, I learned to tolerate get-

ting hugged. I told my friend's mother that being hugged hurt me and that it felt like I was being burned. She insisted that this was nonsense, but it didn't make the feeling go away. At first my head would spin, I felt like I was going to faint. I would only hug her when routine called for it.¹

—Donna Williams, who is autistic

Tactile defensiveness is defined as *the fear and dislike of most touch sensations*. There are two types of tactile defensiveness. The first is caused by negative experiences with touch, such as child abuse (page 158). The other is caused by an irregularity in the nervous system, often seen in children with learning disabilities and other, more serious, conditions. This irregularity causes certain sensory information to be overwhelming. Its cause is not known, although one suspected cause is oxygen deprivation during birth, which could damage cells that process tactile stimuli. Another suspected cause is environmental toxins that affect genetically predisposed children.² Examples of tactile defensiveness include:

- Avoiding having hands in sand, mud, or finger paints, or having bare feet in mud, sand, or grass.
- Stiffening the body when being picked up and struggling against being held, cuddled, hugged, patted, or stroked; being resistant to being dressed; having dental work or having hair cut.
- Difficulty concentrating or learning when there is a minor tactile distraction that most other children could tolerate, such as a loose thread in a sock or a breeze that blows the hairs on the skin.
- Removing clothes more often than most children to get rid of annoying sensations caused by the tags in a shirt or socks on the feet. Conversely, wearing long-sleeved shirts or sweaters even when it is warm.

Tactile defensiveness can have profound effects on development. Children may be unable to develop a good body image and spatial awareness; they may have a tendency to retreat from interpersonal contact and communication with others; and they may not want to use their hands for grasping, feeding themselves, and reaching out to explore their environment. Some children may react with irritation, anxiety, restlessness, fear, or emotional stress to ordinary touch sensations. This response may severely limit their activities; tactile defensiveness often results in tactile deprivation. Tension or stress may make the child even more tactile defensive.

Relaxation training can effectively reduce tactile defensiveness in certain children. In a study of children ages 4 to 11, both progressive relaxation and autogenic training increased tactile perception and decreased tactile defensiveness.³

APPROACH AND GOALS

The massage therapist will rarely see a child for tactile defensiveness alone, but may see children with neurodevelopmental differences who are touch phobic. The authors of *Aromatherapy and Massage for People With Learning Disabilities* use an approach they call "Multisensory Massage." This approach is used to increase tolerance of touch. This approach uses fabrics of different textures, massage tools, water, soft brushes, massage oils and lotions, and oils scented with essential oils. A foot massage may begin by gently rubbing the feet with a piece of velvet, then with a soft brush and, finally, with silky material. This could be followed by a few minutes of soaking the feet in a portable foot spa with essential oils in the water, drying the feet with a soft towel, and giving a foot massage. After the massage, the lotion or oil could be wiped off with flannel, a soft towel, or another soft cloth. All this touch would certainly not be easily accepted in a first session; it may require many sessions of only one type of touch sensation, such as fabric alone or water in a foot bath, before a child could accept all these forms of tactile stimulation on the feet.⁴

The author taught the mother of a 2-year-old child with **Behr syndrome** (a condition in which the child has mental retardation, visual deficits, ataxia, and spasticity) to stimulate and massage her daughter's hands using a variety of tactile sensations. The girl's hands were so sensitive that she had not progressed to grasping objects. Her mother let her play with bathtub toys in a pan of warm water, then in a pan of cold water with new toys. The little girl loved water and was so distracted that she barely noticed her mother massaging one hand at a time with soap lather. Later, her mother used Epsom salts and rubbed one hand at a time. Gradually, as she could tolerate more stimulation, her hands could be massaged out of the water with lotion or oil. This was done daily by the mother. After 2 weeks, her occupational therapist reported that the little girl was finally able to tolerate holding a spoon and could now begin learning to feed herself.

MASSAGE FOR CHILDREN WITH TACTILE DEFENSIVENESS

With some children it may seem that they will never be able to tolerate receiving massage. The key is to find one, small type of tactile stimulation that is acceptable and, from that, gradually build their tolerance. Great patience is required. Parents are often aware of what tactile stimulation is acceptable to their child. Massage therapist Larry Burns-Vidlak has three autistic children. He began by wrestling playfully with them when that was the only physical contact

they could tolerate (see Autism, page 167). You may need to try every massage stroke you know and do each one in different ways; you may need to invent a touch game using toys or music; you may need to try many types of sensory stimulation. Parents often know a toy or game that appeals to the child, and that one small thing can be a bridge to helping the child accept more touch.

Often if the child can hold or play with an item, he or she will feel more comfortable with it. For example, let the child roll a textured massage tool on someone else's hand or leg, play with a piece of fake fur, or put a warm flaxseed bag on his body. Massage techniques in which your hands remain still, such as passive touch and pressure point massage, may be more acceptable. Energetic techniques such as Polarity therapy and Reiki may also work well.

When stroking, move slowly and soothingly so that your actions are predictable. Always proceed at the child's pace and do not overwhelm her. Explain what you are about to do, and do not give touch in a way the child does not like. Other forms of sensory stimulation that can be incorporated into a massage session include:

- Warm water, heat applications, or linens. Washcloths can be wrung out in warm water and put on the hands and feet. The child can be washed off with warm water after a massage. Bathtub toys can be placed in a container of warm water with a towel underneath. Hot water bottles, heating pads, or microwaveable flaxseed- or rice-filled bags can be used. Warmed towels, blankets, or clothing may persuade a reluctant child to lie still. It also feels great to be wrapped in warmed linens after a massage.
- Cold water. Washcloths can be wrung out in cold water and put on the hands or feet on a hot day. The child can also be washed off with cool water after a massage. Bathtub toys can be placed in a container of cold water with a towel underneath.
- Soap lather. Soap lather may be used to massage a hand when a child is playing with toys in a container of water. Parents may try doing massage in the bathtub, using soap lather instead of massage oil.
- Epsom salts. One part of the body at a time may be rubbed with salt. This is great for decreasing tactile sensitivity in the hands. A good way to begin with a child with sensitive hands is to have him or her play with toys in a tub of warm or cold water, then slip one hand out and rub gently with salt, and replace in the water. The child will have her hand in salt water, and when her hands come out they should be washed with clean water or rubbed with oil or lotion.

- Different fabric textures. Make a glove and stroke the child with it during the massage for another tactile sensation. Give the child a piece of fake fur to play with. Coarse or soft towels can be used. Rubbing can be done slowly or briskly.
- Brushes of different textures. Try different brushes. If you cover the skin with a sheet, this makes the tactile stimulation easier to absorb. Soft baby brushes are easier for some children to accept.
- Balls (see page 68, Chapter 3). Large balls may work better for some children because they are less specific. Cover the child with a blanket and roll a large ball slowly down the back to the feet and back up.
- Flaxseed-filled fabric bags of different sizes. When placed on the back or abdomen, many children find the weight of the bag soothing. They can be warmed in a microwave, as well.

WHEELCHAIR RIDERS

Like prostheses, exercise equipment, or massage tables, wheelchairs are tools. They are a tremendous help in making children who are disabled more independent and should not be viewed as prisons by the children or the world at large. From a musculoskeletal point of view, however, they do have certain disadvantages (Figure 6-11). These include:

- Prolonged sitting can lead to habitually slumping forward, with constriction of the abdomen, a loss of cervical and lumbar curve, and increased thoracic **kyphosis**. In a sitting position, many joints are in constant flexion and contractures are more likely, particularly if there is spasticity or muscle weakness.
- Using a manual wheelchair is an excellent way to get physical exercise and keep the arm muscles strong, but the constant pushing while leaning forward can create upper body strain and thoracic kyphosis. The chest and upper back muscles can become chronically tightened. Overuse of the arms can cause pain in the shoulders, arms, and hands.
- Pressure ulcers are an ever-present danger for wheelchair riders because their weight is constantly pressing down on the hips, buttocks, and coccyx (Point of Interest Box 6-9). To prevent pressure ulcers, children need to take their weight completely off the buttocks for 1 full minute, at least once every 15 minutes. When they begin to use a wheelchair, children need careful supervision to help learn this habit. Their entire skin surface should also be checked for sores daily. Checking can be done by an adult or,

if they are old enough, children can learn to do this themselves with a mirror.¹

- Whether or not their wheelchairs fit them originally, children grow out of them. It is vital that wheelchairs continue to fit well, providing proper support and trunk and pelvic symmetry. As children grow, their wheelchairs should be checked frequently. Children can develop back pain, contractures, or scoliosis if their chairs are not well fitted.
- Being in a sitting position most of the time means decreased circulation to the legs, and less sensory stimulation to the rest of the body. Minor cuts may heal slowly, and the legs may be pale and cold to the touch.

APPROACH AND GOALS

Hydrotherapy can be helpful in conjunction with massage: moist heat applications may be used for muscular relaxation, salt glows of the legs and contrast treatments of the lower legs and feet may be used to dramatically improve the circulation in the legs, and cold water immersion can stimulate muscle contraction. All of these treatments are also an excellent source of sensory stimulation. Contrast treatments for developing or existing pressure ulcers can temporarily increase circulation to an area 70–100%, and exposure to a heat lamp helps pressure ulcers heal.

Massage therapy can address local problems, which are discussed below. However, when we look at the child's body as a whole, we can see that perhaps the greatest value of a massage session in this case is for wheelchair riders to experience their bodies in different configurations, not just the one or two positions they are normally in. This widens their body experience and enhances their body image. Local problems that can be addressed with massage include:

1. Upper body massage can counteract the chronic tightness of the pectoral muscles and the upper back if the child uses a manual wheelchair.
2. Massage can increase circulation to the legs, which is often very poor because the leg muscles are not contracting.
3. Lack of body awareness and contractures. Using passive movement can help a child reconnect the information from the joint proprioceptors to the brain, move fluid through the joints, and prevent contractures by combining passive movement with stretching. Passive movement is also very important to maintain joint motion following operative release or injury.
4. Pressure ulcers. Massage may prevent the development of pressure ulcers because poor

Healthy, comfortable, and functional positions

Whether or not a chair has wheels, the position in which it allows a child to sit is very important.

For most children, the chair should help them to sit more or less like this:

CAUTION: The seat should be wide enough to allow some free movement and narrow enough to give needed support

Common seating problems and possible solutions

Problem: Hips tilt back

In children with spastic cerebral palsy the hips often tilt backward. This triggers spasms that straighten the legs and cause other muscle tightness with loss of control.

Also children with weak hips or back often slump forward, many spine babies or severe polio often sit slumped with their hips tilted back and the back severely curved. This can lead to permanent deformity.

One of the most common causes of backward tilting hips is a chair like this one that is too big for the child.

Other causes of backward tilt and bad position are:

- A chair back that tilts far back and a cloth back that sags.
- These often cause the hips to tilt backward.
- Also footrests that are too forward so that knees do not bend correctly can often cause hips to tilt backward.

A good position can often be gained through:

- A firm, stiff, upright back at 90-degree angle to the seat.
- A chair that fits the child's body, not the adult's.
- The knees at right angles, and feet firmly supported.

BETTER

Many children will naturally slump forward in a chair with a fabric and upholstered back. The wheelchair back is firm and the child's feet are supported at right angles to the floor.

FIGURE 6-11 ■ A healthy, comfortable and functional sitting position is essential. Reprinted with permission from Werner D: *Disabled Village Children*. Palo Alto, CA: Hesperian Foundation, 1987, p 591.



POINT OF INTEREST BOX 6-9

Pressure Ulcers

Pressure ulcers, or decubitus ulcers, are skin lesions resulting from loss of tissue. They develop when the weight of one limb or the entire body puts pressure on the tissues overlying bony prominences or protuberances, which cuts off circulation to the area. Without oxygen and the nutrients that are carried in the blood, the skin and underlying tissue begin to die. Pressure ulcers, if not carefully treated, can worsen from a skin lesion to a deeper ulcer that can destroy the epidermis, the dermis, and the superficial fascia, as well as erode tissue down to the bone. The sore can become infected by bacteria, and then secondary infection of an open wound can occur, causing blood poisoning and even death if the bacteria gets into the general circulation. Potential sites of pressure ulcers include the heels, ankles, hips, buttocks, coccyx, elbows, and shoulders.

Those most likely to develop pressure ulcers include children who are so ill, weak, or disabled that they cannot roll over by themselves (caregivers need to turn them frequently and lay them on soft surfaces that reduce pressure on bony areas) and certain children with no sensation in parts of their body, such as those with spinal cord injury or spina bifida. Other factors that contribute to pressure ulcer development are protein or iron deficiency, vitamin C deficiency, incontinence, and poor local blood supply.^{1,2}

References

1. Taylor RV, et al: Ascorbic acid supplementation in the treatment of pressure sores. *Lancet*, 2:544-546, 1974
2. Bergstrom N, et al: *Pressure Ulcer Treatment. Clinical Practice Guidelines. Quick Reference Guide for Clinicians*, No. 15. Rockville, MD: Department of Health and Human Services, Public Health Service, Agency for Health Care Policy and Research. AHCPR Publication. No. 95-0653, December 1994, p 7

local blood supply contributes to their development. Massage can enhance the circulation of the general area where a pressure ulcer is developing, indirectly treating the ulcer.^{2,3}

HYDROTHERAPY AND MASSAGE FOR WHEELCHAIR RIDERS

Hydrotherapy treatments. Choose one to perform before massage:

MOIST HEAT APPLICATION

Apply a moist heating pad or Hydrocollator pack to areas of muscular tension or soreness for 3 minutes. Give cooler

applications to any areas with decreased sensation and monitor the child's skin more carefully than usual.

CONTRAST TREATMENT OF THE FEET

See Growing Pains section in Chapter 5 but, if possible, use taller containers of water that will immerse the feet and the entire lower legs.

COLD WATER IMMERSION FOLLOWED BY EXERCISE FOR MUSCLE WEAKNESS

See Muscle Weakness, page 142.

SALT GLOW OF THE LEGS

A salt glow of the back is pictured in Figures 3-53 and 3-54. See Chapter 3 for directions.

MASSAGE

1. Regular whole-body Swedish massage with extra time spent on passive range-of-motion exercises to all joints is recommended.
2. Follow the specific instructions in the section on each disability such as spinal cord injury or cerebral palsy.
3. During massage, children should be out of their wheelchairs and in different positions than they are normally accustomed to. Massage strokes can be adapted to these different positions, such as sidelying, prone, with the torso or legs rotating to one side or the other, or in a partial spinal twist. Do not put the child in any position that they find truly uncomfortable, but encourage them to try a position they would not normally be in. Extra bolsters or pillows will be helpful.
4. If children are in manual wheelchairs, their upper bodies should be thoroughly massaged, and the pectoral muscles should be stretched. Spend more time on passive range-of-motion exercises for the shoulder joints. Strengthening exercises to move the shoulders back may be necessary as well.
5. If children's legs are cold, white, or appear to have poor circulation, perform the basic effleurage strokes for the front and back of the legs (see Figures 3-21 and 3-49) many more times than in the basic full-body massage. For very poor circulation, continue these two strokes for 5 to 10 minutes.
6. If children have had problems with pressure sores in the past, massage of the buttocks can be helpful to increase the local circulation. Parents and other caregivers can be taught how to perform kneading of the buttocks for a few minutes each day. It should never be performed if there is a developing pressure sore.

7. If children are on a physical therapy program of stretching and strengthening exercises, these can be incorporated into a session. They can receive massage for a few minutes, they can do their exercises for a time, and when they become tired, they can rest and receive massage for a few minutes, and repeat. This can prevent fatigue and make their sessions more interesting. Stretching exercises are beneficial for muscles that are usually in a shortened position while sitting; these include the flexors of the shoulders, elbows, hips, knees, and ankles.



Passive movement to a paralyzed limb before it is massaged and massage of the paralyzed limb should be done carefully, especially if the child has reduced sensation.

MASSAGE AND HYDROTHERAPY FOR PRESSURE ULCERS

CONTRAST TREATMENT

- Step 1. Cover the pressure ulcer with a sterile dressing.
- Step 2. Apply washcloths or small towels that have been wrung out in hot water around the covered pressure ulcer. Cover the towels with a layer of plastic and then a towel to keep in the heat. Leave on for 3 minutes. Several small hot packs may be used instead of towels. Be sure to monitor the skin underneath the heat so the child's skin does not get burned.
- Step 3. Remove the towels and do ice massage over the same area—around the ulcer, not on it—for 1 minute. See page 91.
- Step 4. Repeat Steps 2 and 3 twice, for a total of three changes. The skin around the pressure ulcer will now be red, indicating that more blood has flowed into the area.

HEAT EXPOSURE

Use a 60-watt lightbulb in a goosenecked lamp. The light should be about 2 feet away from the ulcer. Shine the light on the ulcer to expose it to the heat from the bulb three times a day for 15 minutes. Because the child's skin must be monitored carefully for burning, do not leave the child unattended.²

MASSAGE

The first sign of a developing pressure ulcer is red skin that blanches or whitens when pressed firmly with a finger. At this point, pressure ulcer development may be halted by treatment with massage. Gently wash and dry the reddened area. Then gently massage the general area, but not the reddened portion. Stay at least 12 inches away from the reddened area; you are addressing the bloodflow in the

general area, not the ulcer itself. Any circulation-enhancing techniques, including effleurage toward the heart, gentle kneading, and petrissage, will be effective. Manual lymph drainage techniques may be indicated as well.³

SUMMARY

Massage therapy can be safely applied to children with many different special needs and situations. Many of the benefits that children with different disabilities receive from massage also highlight the powerful effects massage can have on different systems of the body. It is important for the therapist to consult with the child's physician or physical therapist and to observe contraindications; however, with proper information, you should never be afraid to handle a child. The information presented in Chapter 6 gives you the tools to touch children with special needs. Massage has tremendous potential to help children physically, emotionally, and mentally and to make a significant contribution to their well-being and quality of life.

REVIEW QUESTIONS

1. Explain the difference between a disability present at birth (birth defect) and an acquired disability. Give three examples of each.
2. Discuss the causes of some common problems faced by children who are disabled.
3. Name both the primary and secondary effects of cerebral palsy, hemophilia, premature birth, and visual impairment.
4. Name three conditions discussed in Chapter 6 in which hydrotherapy is used in conjunction with massage therapy and explain what effects the hydrotherapy produces.
5. Name one disability in which the most important effect of massage therapy is sensory stimulation, one in which mental relaxation is the most important effect, one in which relief of pain is the most important effect, and one in which increased joint circulation is the most important effect.
6. Give four examples from Chapter 6 of why a child might not wish to receive massage, and discuss how the therapist might make massage more acceptable to the child.
7. Explain how the full-body massage techniques described in Chapter 3 may be tailored to meet the needs of children with different conditions. Give examples.

Introduction

1. Mikita S: Voice of the client. *Professional Bodyworker's Journal*, Spring:88, 1998
2. The Risk and Prevention of Maltreatment for Children with Disabilities. Available at: www.nccanch.calib.com. Accessed May 2003

Problems Common to Children With Disabilities

1. Simon J, Calhoun J: *A Child's Eyes: A Guide to Pediatric Primary Care*. Gainesville, FL: Triad Publishing, 1998, p 186
2. Batshaw M: *Children With Disabilities*. Baltimore, MD: Paul Brookes Publishing, 1997, p 269
3. Scott E, Jan J, Freeman R: *Can't the Child See? A Guide for Parents and Professionals About Young Children Who Are Visually Impaired*. Ed. 3, Austin, TX: Pro-Ed, 1995, p 36
4. Wallender R, et al: Disability parameters: Chronic strain and adaptation of physically handicapped children and their mothers. *Journal of Pediatric Psychology*, 14:23, 1989
5. Jones H, quoted in Exley H, ed: *What It's Like to Be Me*. Cincinnati, OH: Friendship Press, 1984, p 81
6. Hastorf A, et al: Acknowledgment of handicap as a tactic in social interaction. *Journal of Personality and Social Psychology*, 37:1790-1797, 1979
7. Riddle I: Nursing intervention to promote body image integrity in children. *Nursing Clinics of North America*, 7:655, 1972
8. McDonald E: A healing in the theater of life. *Canadian Holistic Healing Association*, 7:9, 1986
9. Rowe H: Massage the handicapped child. *Tender Loving Care. The Newsletter of the International Association of Infant Massage Instructors*, 4:2, 1988
10. Benedict RB, et al: Reported maltreatment in children with multiple disabilities. *Child Abuse and Neglect*, 14:207, 1990
11. Sullivan PM, et al: Patterns of physical and sexual abuse of communicatively handicapped children. *Annals of Otolaryngology, Rhinology, & Laryngology*, 100:188, 1991
12. Llewellyn A: The abuse of children with disabilities in mainstream schooling. *Developmental Medicine & Child Neurology*, 37:740-743, 1995
13. Sinclair M, Von Weller A: Don't let the well run dry: The importance of water to your child's health. *Exceptional Parent Magazine*, May:66, 2001
14. Werner D: *Disabled Village Children*. Palo Alto, CA: Hesperian, 1988, p 77

General Principles of Massage for Children With Disabilities

1. Edwards D, Bruce G: For cerebral palsy patients, massage makes life better. *Massage Magazine*, July/August:106, 2001

Physical and Sexual Abuse

1. Burg F, Wald E, Ingelfinger J, Polin R: *Gellis and Kagan's Current Pediatric Therapy*. Philadelphia, PA: W.B. Saunders, 1999, p 406

2. Ogden J: *Skeletal Injury in the Child*. Philadelphia, PA: Lea and Febiger, 1982, p 198
3. Long T, Toscano K: *Handbook of Pediatric Physical Therapy*. Philadelphia, PA: Lippincott Williams & Wilkins, 2002, p 75
4. Karr-Morse R, Wiley M: *Ghosts from the Nursery—Tracing the Roots of Violence*. New York, NY: Atlantic Monthly Press, 1997, p 262
5. Levine P: *Healing the Tiger: The Innate Capacity to Transform Overwhelming Experiences*. Berkeley, CA: North Atlantic Books, 1997, p 11
6. Terr L: *Too Scared to Cry: How Trauma Affects Our Children. . . and Ultimately Us All*. New York, NY: Basic Books, 1990
7. Taddio A, et al: Conditioning and hyperalgesia in newborns exposed to repeated heel lances. *Journal of the American Medical Association*, August 21:857-861, 2002
8. Taddio A, et al: Effect of neonatal circumcision in pain response during subsequent routine vaccination. *Lancet*, 34:599-603, 1997
9. Hartmann T: *Thom Hartmann's Complete Guide to ADD*. Grass Valley, CA: Underwood Books, 1997, p 30
10. Walling M, et al: Abuse history and chronic pain in women: I. Prevalences of sexual abuse and physical abuse. II. A multivariate analysis of abuse and psychological morbidity. *Obstetrics and Gynecology*, 84:193-199, 200-206, 1994
11. Barsky A, et al: Histories of childhood trauma in adult hypochondriacal patients. *American Journal of Psychiatry*, 151:397, 1994
12. Thakkar R, McCanne T: The effect of daily stressors on physical health in women with and without a childhood history of sexual abuse. *Child Abuse and Neglect*, 24:209-222, 2000
13. Kendall-Tackett K: Physiological correlates of childhood abuse: Chronic hyperarousal in PTSD, depression, and irritable bowel syndrome. *Child Abuse and Neglect*, 24:799-809, 2000
14. Finestone H, et al: Chronic pain and health care utilization in women with a history of childhood sexual abuse. *Child Abuse and Neglect*, 4:547-555, 2000
15. Goldberg R, et al: Relationship between traumatic events in childhood and chronic pain. *Disability and Rehabilitation*, 21:23-30, 1999
16. Mines S: Chakra Man: AIDS, bodywork and inspiration. *Massage and Bodywork*, October/November:37, 2000
17. Lewis DO, et al: Toward a theory of the genesis of violence. *Journal of American Academy of Child Psychiatry*, 28:431-436, 1989
18. Magid K, McElvey C: *High Risk: Children Without a Conscience*. New York, NY: Bantam Books, 1987
19. Mowen K: Traumatouch therapy, an interdisciplinary approach to trauma. *Massage and Bodywork Magazine*, October/November:27-31, 2001
20. Edwards T: One trauma survivor's experience of massage. *The Journal of Soft Tissue Manipulation*, August/September:4-8, 1994

Autoimmune Deficiency Syndrome

1. Batshaw M: *Children With Disabilities*. Baltimore, MD: Paul Brookes Publishing, 1997, p 166-167

2. Plana LC, et al: Negative life events affect immune status in HIV+ children and adolescents. *Pediatrics*, 106:540-546, 2000
3. Scafadi F: HIV-exposed newborns show inferior orienting and abnormal reflexes on the Brazelton scale. *Journal of Pediatric Psychology*, 22:105-112, 1997
4. Field T: HIV adolescents show improved immune function following massage therapy. *International Journal of Neuroscience*, 106:35-45, 2001

Asthma

1. Duncan A: *Your Healthy Child*. New York, NY: J.P. Tarcher, 1990, p 65, 67
2. Ivker R, Nelson T: *Asthma Survival. The Holistic Medical Treatment Program for Asthma*. New York, NY: Putnam, 2001, p 2, 27-38
3. America's Children and the Environment. Available at: www.epa.gov/envirohealth/children/ace_2003.pdf. Accessed April 2003
4. Van Stratten M: *Complete Natural Health Consultant*. Northridge, England: Angus and Robertson, 1987, p 119
5. Klinnert MD, et al: Onset and persistence of childhood asthma: Predictors from infancy. *Pediatrics*, 108:E69, 2001
6. Sandberg S, et al: The role of acute and chronic stress in asthma attacks in children. *Lancet*, 6356:1932, 2000
7. Strunk RC: Physiologic and psychological characteristics associated with deaths due to asthma in childhood. *Journal of the American Medical Association*, 254:1193-1198, 1985
8. Olness K: *Hypnosis and Hypnotherapy with Children*. New York: Guilford Press, 1996, p 215, 219
9. Spiegel D: *Living Beyond Limits: New Help for Facing Life-Threatening Illness*. New York: Times Books, 1993, p 66
10. Erskine-Milliss M, Schonell P: Relaxation therapy in asthma: A critical review. *Psychosomatic Medicine*, August:365-370, 1981
11. Kotses H, Harver A, Segreto J, et al: Long-term effects of biofeedback-induced facial relaxation on measures of asthma severity in children. *Biofeedback Self Reg*, 16:1-21, 1991
12. Lehrer PM: Emotionally triggered asthma: A review of research literature and some hypotheses for self-regulation therapies. *Applied Psychophysiology Biofeedback*, 23:13-41, 1998
13. Vazquez I, Buceta J: Relaxation therapy in the treatment of bronchial asthma: effects on basal spirometric values. *Psychotherapy and Psychosomatics*, 60:106-12, 1993
14. Schwobel G: Psychosomatische therapies des asthma bronchiale. *Anzeim Fortsch*, 24:481-488, 1948
15. Hossri C: The treatment of asthma in children through acupuncture massage. *Journal of American Society of Psychosomatic Dentistry and Medicine*, 23:14-19, 1976
16. Field T, et al: Children with asthma have improved pulmonary functions after massage therapy. *Journal of Pediatrics*, 132:854-858, 1998
17. Malinski M, et al: The effect of massage on improving the quality of life for adult chronic asthma patients. *Journal of Allergy and Immunology Abstracts*, 95(part 2):182, 1995
18. Klimowitch P: Massage for respiratory problems. *Massage Therapy Journal*, Spring:42, 1993
19. Malone P: Comfort and benefits of massage for the emphysema patient. *Massage Therapy Journal*, Spring:39, 1990
20. Schenkel E, quoted in *High Speed Healing. The Fastest, Easiest, and Most Effective Shortcuts to Lasting Relief*. Emmaus, PA: Rodale Press, 1991, p 38
21. Natchetelo M: Ease your asthma. *Natural Health*, November/December:81, 2000

Attention Deficit Disorder

1. Batshaw M: *Children With Disabilities*. Baltimore, MD: Paul Brookes Publishing, 1997, p 450-451
2. Steingraber S: *Having Faith: An Ecologist's Journey to Motherhood*. Cambridge, MA: Perseus Publishing, 2001, p 115, 271
3. America's Children and the Environment. Available at: www.epa.gov/envirohealth/children/ace_2003.pdf. Accessed April 2003
4. Hartsough CS, et al: Medical factors in hyperactive and normal children: Prenatal developmental, and health history findings. *American Journal of Orthopsychiatry*, 55:190-210, 1985
5. Upledger J: Craniosacral therapy and attention deficit disorder. *Massage Today*, August:12, 2001
6. Hill R, Castro E: *Getting Rid of Ritalin: How Neurofeedback Can Successfully Treat Attention Deficit Disorder Without Drugs*. Charlottesville, VA: Hampton Roads Publishing, 2002, p xii, 15
7. Guthrie E: *The Trouble With Perfect: How Parents Can Avoid the Overachievement Trap and Still Raise Successful Children*. New York: Broadway Books, 2002, p 94
8. Safer D: Survey of medication treatment for hyperactive/inattentive students. *Journal of the American Medical Association*, 260:26, 1988
9. Amen D: *Healing ADD From the Inside Out*. Fairfield, CA: Institute for Behavioral Healthcare, 1999
10. Connolly D, et al: Electromyography biofeedback on hyperkinetic children. *Journal of Biofeedback*, 12:24-30, 1974
11. Field T: *Touch Therapy*. London, England: Churchill Livingstone, 2000, p 103
12. Zibart R: Acupressure study may pinpoint kids' needs. *Sage Magazine*, September:11, 2000
13. St. John J: *High-Tech Touch—Acupressure in the Schools*. Novato, CA: Academic Therapy Publications, 1987, p 56-58
14. Gordon R: *Your Healing Hands*. Oakland, CA: Wingbow Press, 1984, p 13
15. Ayres J: *Sensory Integration and the Child*. Los Angeles, CA: Western Psychological Services, 1981, p 115

Autism

1. Williams D: *Nobody Nowhere: The Extraordinary Biography of an Autistic*. New York: Doubleday, 1992, p 217
2. Batshaw M: *Children With Disabilities*. Baltimore, MD: Paul Brookes Publishing, 1997, p 436

3. Waal N: A special technique. In: Caplan G, ed. *Emotional Problems of Early Childhood*. New York: Basic Books, 1955, p 431-49
4. Birt L, Lopez M: Don't give up: Matthew's story. *Mothering Magazine*, May/June:53, 2000
5. Batshaw M: *Children With Disabilities*. Baltimore, MD: Paul Brookes Publishing, 1997, p 436
6. Rimland B: Promising approaches. What the experts are finding. *Mothering Magazine*, May/June:51-52, 2000
7. About HANDLE. Available at: www.handle.org. Accessed December 15, 2002
8. Graziano AM, Kean JE: Programmed relaxation and reciprocal inhibition with psychotic children. *Behavior Research and Therapy*, 6:433-437, 1968
9. Meyed M: *Parents and Children in Autism*. Washington, DC: V.H. Winston, 1979
10. Field T: *Touch Therapy*. London, England: Churchill Livingstone, 2000, p 97
11. Escalona A, et al: Brief report: Improvements in the behavior of children with autism following massage therapy. *Journal of Autism and Developmental Disorders*, 31:513, 2001
12. St. John J: *High-Tech Touch—Acupressure in the Schools*. Novato, CA: Academic Therapy Publications, 1987, p 57
13. Upledger J, Vredevoogd J: *Craniosacral Therapy*. Seattle, WA: Eastland Press, 1983, p 123
10. Linkous L, Stutts RM: Passive stimulation effects on the muscle tone of hypotonic, developmentally delayed young children. *Perceptual Motor Skills*, 71:951-954, 1990
11. Champion M: *Hydrotherapy in Pediatrics*. Rockville, MD: Aspen Systems, 1985, p 215
12. Sumar S: *Yoga for the Special Child: A Therapeutic Approach for Infants and Children With Down Syndrome, Cerebral Palsy and Learning Disabilities*. Evanston, IL: Special Child Publications, 1998, p 41
13. Volpe R: Feedback facilitated relaxation training in school counseling. *Canadian Counselor*, 9:117, 1975
14. Kramer L: A second chance for Seth: One family battles cerebral palsy. *Family Circle*, March:114-118, 1990
15. Silberbush C: *The Feldenkrais Method With Cerebral Palsy Children*. Berkeley, CA: Advanced Feldenkrais Seminars, 1988
16. Bluestone J, ed: *The Churkendoose Anthology*. Seattle, WA: HANDLE Institute, 2002

Catastrophic Illness

1. Field T, et al: Leukemia immune changes following massage therapy. *Journal of Bodywork and Movement Therapies*, p 271-274, 2001
2. Hernandez-Reif M, et al: Cystic fibrosis symptoms are reduced with massage therapy intervention. *Journal of Pediatric Psychology*, 24:183-189, 1999
3. Olness K: *Hypnosis and Hypnotherapy with Children*. New York: Guilford Press, 1996, p 294-297

Cerebral Palsy

1. Farlow P: Touch to teach: Massage helps special needs children. *Massage Magazine*, November/December:111, 2000
2. Batshaw M: *Children With Disabilities*. Baltimore, MD: Paul Brookes Publishing, 1997, p 511, 653
3. Stewart K: Massage for children with cerebral palsy. *Nursing Times*, 96:50-51, 2000
4. Hernandez-Reif M, et al: Cerebral palsy symptoms in children decreased following massage therapy. *Journal of Early Intervention (In Review)*
5. Edwards D, Bruce G: For cerebral palsy patients, massage makes life better. *Massage Magazine*, July/August:93-109, 2001
6. St. John J: *High-Tech Touch—Acupressure in the Schools*. Novato, CA: Academic Therapy Publications, 1987
7. Johnson V: My healing journey. *Massage Magazine*, July/August:97-101, 2001
8. Upledger J: *Craniospinal Therapy*. Seattle, WA: Eastland Press, 1983, p 116, 262
9. Bourne R: To Omar, with love. *Massage Therapy Journal*, Spring:68-76, 1996

Chronic Pain

1. Anderson A, Hotzan T, Masley J: *Physical Therapy in Bleeding Disorders*. New York: National Hemophilia Foundation, 2000, p 9
2. Long T, Toscano K: *Pediatric Physical Therapy*. Baltimore: Lippincott Williams & Wilkins, 2002 p 58
3. Salfors C: Chronic pain in children suffering from juvenile chronic arthritis. *Developmental Medicine and Child Neurology*, 48:44, 2001 (suppl 89)
4. Wallace D: *Making Sense of Fibromyalgia: A Guide for Patients and Their Families*. Oxford, England: Oxford University Press, 1999, p 110
5. Backstrom G: *When Muscle Pain Won't Go Away*. Dallas, TX: Taylor Publishing, 1995, p 2
6. Starlanyl D: *Fibromyalgia and Chronic Myofascial Pain*. Oakland, CA: New Harbinger Publications, 1996, p 8, 144
7. Goldberg R, et al: Relationship between traumatic events in childhood and chronic pain. *Disability and Rehabilitation*, 21:23-30, 1999
8. Mikkelsen Marja, et al: Psychiatric symptoms in preadolescents with musculoskeletal pain and fibromyalgia. *Pediatrics*, 100:113, 114, 1997
9. Calabro J: Fibromyalgia (fibrositis) in children. *The American Journal of Medicine*, 81:57-59, 1986 (suppl 3A)
10. Mowen K: Turning hurt into relief: Touching the hemophilia community. *Massage and Bodywork Magazine*, October/November:31-32, 1999
11. Qaiyumi S, quoted in Hunter TC: Massage therapy—Who kneads it? *Arthritis Today*, March/April:11, 1991
12. Field T, et al: Juvenile rheumatoid arthritis: benefits from massage therapy. *Journal of Pediatric Psychology*, 22:607-617, 1997
13. Sunshine, et al: Fibromyalgia benefits from massage therapy and transcutaneous electrical stimulation. *Journal of Clinical Rheumatology*, 2:18-22, 1996

Contractures

1. Werner D: *Disabled Village Children*. Palo Alto, CA: Hesperia, 1987, p 77-86

- Sanell L: *Fundamentals of Pediatric Orthopedics*. Philadelphia, PA: Lippincott Raven, 1998

Developmental Delay

- Batshaw M: *Children With Disabilities*. Baltimore, MD: Paul Brookes Publishing, 1997, p 146, 215
- Voelker R: Putting mental retardation and mental illness on health care professionals' radar screen. *Journal of the American Medical Association*, 288:433, 2002
- Farlow P: Touch to teach—Massage helps special-needs children. *Massage Magazine*, November/December:107-116, 2000
- Marshall-Rosenwinkle P: Oral-Motor Techniques in Articulation Therapy. Video available from Innovative Concepts, Seattle, WA
- Sumar S: *Yoga for the Special Child. A Therapeutic Approach for Infants and Children With Down Syndrome, Cerebral Palsy, and Learning Disabilities*. Chicago, IL: Special Yoga Publications, 1998
- Sanderson H, Harrison J, Price S: *Aromatherapy and Massage for People With Learning Disabilities*. Birmingham, England: Hands-On Press, 1991, p 156
- The Use of Massage Therapy in the Treatment of Self-Injurious Behavior. Wayne County Intermediate School District, Special Projects Department, Allen Park, MI, 1986
- Bright T: Reduction of self-injurious behavior using sensory-integrative techniques. *American Journal of Occupational Therapy*, 1981, 35:167-172
- Wells ME: Reduction of self-injurious behavior of mentally retarded persons using sensory-integrative techniques. *American Journal of Mental Deficiency*, 87:664-666, 1983
- Dosseter DR: Massage for very self-injurious behavior in a girl with Cornelia de Lange Syndrome. *Developmental Medicine and Child Neurology*, 33:636-640, 1991
- Hernandez-Reif M, et al: Children with Down syndrome improved in motor function and muscle tone. *Journal of Early Intervention* (In Review)

Fetal Drug or Alcohol Exposure

- Nathanielsz P: *Life in the Womb: The Origin of Health and Disease*. Ithaca, NY: Prometheus Press, 1999, p 185
- Batshaw M: *Children With Disabilities*. Baltimore, MD: Paul Brookes Publishing, 1997, p 109, 143, 146, 150, 153
- Long T, Toscano K: *Handbook of Pediatric Physical Therapy*. Baltimore, MD: Lippincott Williams & Wilkins, 2002, p 49
- Taddio A, et al: Conditioning and hyperalgesia in newborns exposed to repeated heel lances. *Journal of the American Medical Association*, August:857-866, 2002
- Meir R: Torticollis. In: Burg F, et al: *Gellis and Kagan's Current Pediatric Physical Therapy*. Philadelphia, PA: W.B. Saunders, 1999, p 945
- Simons D, Travell J: *Myofascial Pain and Dysfunction: The Triggerpoint Manual*. Vol. 1, ed. 2. Baltimore, MD: Lippincott Williams & Wilkins, 1999, 319

- Simons D, Travell JG: *Myofascial Pain and Dysfunction: The Triggerpoint Manual*. Vol. 2. Baltimore, MD: Lippincott Williams & Wilkins, 1999
- Field T: *Touch Therapy*. London, England: Churchill Livingstone, 2000, p 17
- Weber K: Massage for drug exposed infants. *Massage Therapy Journal*, 30:62, 1991
- Gregory R: Massage for drug-exposed newborns. *Massage Magazine*, 45:44-54, 1993
- Joyce P, Clark C: The use of craniosacral therapy to treat gastroesophageal reflux in infants. *Infants and Young Children*, 9:51-57, 1996
- Wasserman AL, et al: Psychogenic basis for abdominal pain in children and adolescents. *Journal of the American Academy of Child and Adolescent Psychiatry*, 27:179, 1988

Hydrocephalus

- Batshaw M: *Children With Disabilities*. Baltimore, MD: Paul Brookes Publishing, 1997, p 101, 535
- Dodson J: *Baby Beautiful: A Handbook of Baby Head Shaping*. Eugene, OR: Heirs Press, 1994, p 193

Muscular Dystrophy

- Schneider M, Gallup C: That person in the wheelchair needs your touch. *Massage Magazine*, 64:26, 1996
- Ogden J: *Skeletal Injury in the Child*. Philadelphia, PA: Lea and Febiger, 1982, p 187
- Batshaw M: *Children With Disabilities*. Baltimore, MD: Paul Brookes Publishing, 1997, p 325, 327
- Schneider M: *Handbook of Self-Healing*. New York: Penguin Putnam, 2004, p 315-329
- Schneider M, Gallup C: That person in the wheelchair needs your touch. *Massage Magazine*, 64:26-28, 1996

Scoliosis

- Campbell S, Vander Linden D, Palisano R: *Physical Therapy for Children*. W.B. Saunders, 2000, p 263, 271
- Travell J: *Myofascial Pain and Dysfunction: The Trigger Point Manual*. Vol. 1. Philadelphia, PA: Lippincott Williams & Wilkins, 1983, p 104, 616, 903
- Pugh M, ed: *Stedman's Medical Dictionary*. 2000, Baltimore, MD: Lippincott Williams & Wilkins, p 1606
- Schneider M: *Handbook of Self-Healing*. New York: Penguin Putnam, 2004, p 314

Tactile Defensiveness

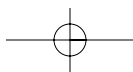
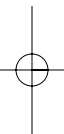
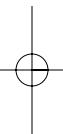
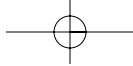
- Williams D: *Nobody Nowhere: The Extraordinary Biography of an Autistic*. New York, NY: Doubleday, 1992, p 72
- Ayres J: *Sensory Integration and the Child*. Los Angeles, CA: Western Psychological Services, 1981, p 54, 107
- Anneberg L: A Study of the Different Relaxation Techniques in Tactile Deficient and Tactile Defensive Children. Master's Thesis, University of Kansas, 1973
- Sanderson H, Harrison J, Price S: *Aromatherapy and Massage for People with Learning Difficulties*. Birmingham, England: Hands-On Publishing, 1991, p 86

Wheelchair Riders

1. Werner D: *Disabled Village Children*. Palo Alto, CA: Hesperian Foundation, 1987, p 196-198
2. Parker P, Dietz LR: *Nursing at Home—A Practical Guide to the Care of the Sick and the Invalid in the Home, Plus Self-Help Instructions for the Patient*. New York, NY: Crown Publishers, 1989, p 95
3. Harris R: Manual lymph drainage. *Massage Therapy Journal*, Winter:61-65, 1992

SUGGESTED READINGS

1. Batshaw M: *Children With Disabilities*. Baltimore, MD: Paul Brookes Publishing, 1997
2. Cautela J, Groden J: *Relaxation: A Comprehensive Manual for Adults, Children, and Children with Special Needs*. Champaign, IL: Research Press, 1978
3. Fuhr M, Drehbohl K: *Pediatric Massage for the Child With Special Needs*. Tucson, AZ: Therapy Skill Builders, 2000
4. Krementz J: *How It Feels to Fight for Your Life*. Boston, MA: Little, Brown, 1989
5. Krementz J: *How It Feels to Live With a Physical Disability*. New York, NY: Simon and Schuster, 1992
6. Levine P: *Healing the Tiger. The Innate Capacity to Transform Overwhelming Experiences*. Berkeley, CA: North Atlantic Books, 1997
7. Terr L: *Too Scared to Cry: How Trauma Affects Our Children. . . and Ultimately Us All*. New York: Basic Books, 1990
8. Werner D: *Disabled Village Children*. Palo Alto, CA: Hesperian Foundation, 1988



TEACHING MASSAGE TO PARENTS

Parenthood is a tremendous challenge and opportunity and a long-term investment of time, patience, energy, money, worry, and affection. To meet a child's needs, parents must be nurses, chefs, psychotherapists, cheerleaders, chauffeurs, teachers, and disciplinarians. There are no easy parenting formulas that are successful for every child; strategies that are successful with one child may not work at all with another. Strategies that worked at one stage of a child's development may totally fail at the next stage. In addition to these challenges, parenthood in America is significantly more stressful than in many other countries because there is less support from the extended family. When the nuclear family has no support network to help—grandparents, aunts, uncles, and cousins—a greater share of the family burden falls on the mother and father. If a child is born with, or develops, any major problem, such as a disability, a difficult temperament, or a serious illness, parents are confronted with greater challenges and need even more inner and outer resources. It is important for any health care provider working with children to understand that parents are often under a great deal of stress, and that they, as well as their children, should be treated with respect and understanding.

Parents are empowered when they are medically informed and have a say in the child's care. Learning massage will help parents be strong and effective parents. Examples of parents who used massage therapy to help their children have been given in this book, including Rich and Diane Keene and Mary Polk. They not only changed their children's lives for the better, they became active, rather than passive, advocates for their children.

GUIDELINES

Parents should be taught massage to help in the following situations:

- *First-aid massage.* When a child has any discomfort, ache, or pain that occurs frequently, it will probably be the parents who are with them when this occurs, and it is unlikely that the child will be

taken to a therapist for massage. The child who wakes up at night with gas pain or growing pains, who has a headache late in the day or muscle soreness after sports, or who needs help going to sleep should have a parent on the spot able to help.

- *Need for frequent massage.* Children often need massage more frequently than it is convenient to be seen by a professional or than the family can afford. A child who is chronically constipated should receive massage every day, or a child who is fighting a serious illness may need a short back massage every night to help him sleep. A child with a disability, such as cerebral palsy, profits by receiving 10 to 15 minutes of parental massage a day, in addition to regular weekly treatments with a massage therapist. Barry, a 50-year-old man with hemophilia, grew up at a time when most persons with hemophilia were immobilized after a joint bleed, and stretching was not advised. His father, a physician, believed in stretching the muscles and tendons after a bleed, instead of immobilizing the joint. Although it hurt and, at the time, Barry resented his father, stretching was done many times a day. Now, however, Barry does not have the severe arthritis of most men his age who have hemophilia; he says they envy his flexibility.¹
- *Improved bonding between parent and child.* Massage can enhance the parent-child relationship by providing more physical contact and quality time. A special education teacher explained how an acupressure class helped her relationship with her son: "My 13-year-old son was the subject of three acupressure sessions during a 4-day period. In the evening, we would turn on a favorite TV program and S. would sit in front of me on the couch with his legs on a footstool. I would give him a neck and shoulder release, in addition to using other upper body pressure points. Each session continued for about 30 minutes. The results were that S. immediately relaxed and continued to relax deeply throughout the session. Each session ended with mother and son cuddling and watching TV. The results were somewhat a surprise to me because my son had refused physical affection from me for about 6 months, stating that he was too old. Apparently he still craved affection of this

nature and acupressure was an acceptable form to receive; S. requested more sessions in the future. Another related result is an increase of communication between us. Sometime after his second session, he asked me to sit down and talk with him, saying, "We need to talk more together." The acupressure sessions have aided our relationship to become closer."²

PRINCIPLES

Massage therapists should keep in mind the following principles:

- Parents bring their children for massage therapy out of love and concern and should always be honored for this.
- Ask the parents how much time they have available to massage their children. If they do not have a lot of time, help them find a way to incorporate massage into the normal family routine. It is important not to overload the family with an expectation they are unable to meet. Never make the family feel guilty. Perhaps, if the parents are normally present during the child's bath time, massage can be done in the bathtub using soap lather. Or, children could receive massage at bedtime when the parents usually read to them.
- Listen carefully to what parents and children tell you; however, do not give parenting advice. The parent is the expert on their child, and the hands-on therapist is the expert on massage.
- Find out what the family knows about massage. Many parents already use small massage treatments to help their children. They may have massaged a newborn baby's tear duct to unblock it, rubbed tender gums to relieve painful swelling in a teething baby, or rubbed an injection site after an immunization to keep it from bruising. Many parents instinctively rub their children's backs to help them relax or sleep and massage them when they have pain at night, such as leg cramps or a stomachache.
- Keep instructions simple; do not overload the parents. Four strokes may be all they can absorb at one session. Anatomic terminology and technical information is not necessary. The 4-Stroke handout was created to help parents to go home and remember what was taught. Remembering four simple strokes at home is better than being taught many additional strokes and not remembering any strokes well.
- If possible, give parents a short massage session each time they come in with their child. Do not

force massage on them; if they would like to be massaged for just a short time, they do not need to disrobe or have massage oil applied to their skin. A simple massage may consist of kneading the neck and shoulders, petrissage of the palms or scalp, or using a ball to massage the back. Even 5 minutes of massage is enjoyable; this helps parents understand how the strokes feel and can motivate them to continue massage with their children.

- Always find something both honest and positive to tell parents about their parenting. This may be only something small, such as how they help the child do something, or how they relate to the child during massage. Build on the parent's strengths.

HOW TO TEACH MASSAGE TO PARENTS

Therapists can teach parents effective massage by using the following steps:

1. Use the 4-Stroke Massage handout as the basic teaching tool. Give the parents the handout and explain that you will teach them four different strokes that can be used on any part of the body.
2. With the child on the table and the parents watching, do all four strokes on the same part of the body. Then, as the parents try each stroke, offer any needed corrections. For example, if they want to learn how to massage the back, demonstrate warming (effleurage), thumbstroking (petrissage), kneading, and raking on different parts of the back. Then watch as they do each stroke and offer suggestions.
3. Demonstrate the basic relaxation sequence.
4. Write any special tips on the parent's 4-Stroke Massage instruction sheet (e.g., how many times to do a certain stroke or the best time of day to do massage).
5. Explain the contraindications on the instruction sheet.
6. Discuss the Troubleshooting and the Screening for Stress handouts.
7. Tell the parents that you are available to answer any questions.

REFERENCES

1. Finston P: *Parenting Plus—Raising Children With Special Health Needs*. New York: Dutton, 1990, p 98
2. San Benito County Special Teacher Education, quoted in Project PRES Newsletter, Capitola, CA, Winter:6:1986

MASSAGE STROKES



Warming Stroke (Effleurage).



Thumbstroking.



Kneading Stroke.



Raking Stroke.

Perform the basic relaxation sequence to help teach your child to relax.

Special tips or instructions:

CAUTION: Do not massage skin with sores, cuts, burns, boils, or infectious rashes, such as scabies. Do not massage inflamed joints, tumors, or any undiagnosed lumps. In the event of injuries, such as severe bruises, joint sprains, broken bones or dislocations, or chronic medical conditions, consult with your child's physician before beginning massage

TROUBLESHOOTING

The more you massage your child, the easier it will be for the child to release tension. However, everyone responds differently to massage each day, depending on their mood, tension level, need for closeness, exercise, and other factors. When massage does not seem to be working, for whatever reason, here are some ideas to help your child relax during the massage.

PROBLEM: MY CHILD FLINCHES OR WITHDRAWS WHEN A SPECIFIC AREA IS TOUCHED.

Possible solutions:

1. Ask your child how the area feels. Then ask if it is all right to massage there.
2. Place your palms on the area gently and slowly. Have the child do the basic relaxation sequence and then try massage again.
3. Continue massaging, but use very light pressure.
4. Move to an area where massage *is* comfortable, such as the back, and return to the first area when your child is relaxed.

PROBLEM: MY CHILD IS EXTREMELY TENSE AND CANNOT RELAX.

Possible solutions:

1. Do the basic relaxation sequence a few times.
2. Massage the area where the child feels most comfortable (often, the back).
3. Suggest a 20-minute warm bath. Try massage again.
4. Talk to your child about what is causing the tension.
5. Give your child a book to read during the massage.
6. Play soft music.
7. Wrap your child in a warm sheet or towel or give your child a hot pack or hot water bottle.

PROBLEM: MY CHILD CANNOT LIE STILL.

Possible solutions:

1. Do the basic relaxation sequence a few times.
2. Don't restrain your child! Try doing just a little massage each time. Doing less massage now often means you can do more later, as tolerance for touch increases.
3. Pick a time when your child is very relaxed, such as nap time or bedtime.
4. Use soap lather and massage the child's upper body when he or she is in the bathtub.
5. Follow the child around and do massage as he or she plays.
6. Tell a story or sing; this may hold a small child's attention.

PROBLEM: MY CHILD IS TICKLISH (TOO MUCH TICKLING CAN ALSO CAUSE THIS)

Possible solutions:

1. Do not persist or try to make the child ignore the tickles. This drives tension inward.
2. Try heavy pressure with your palms. Light pressure makes tickles worse.
3. Hold your hands over the area and let the child feel the warmth of your hands.
4. Massage the ticklish area when your child is just about to fall asleep.

PROBLEM: MY CHILD IS ANXIOUS ABOUT BEING UNDRESSED.

Possible solutions:

1. Respect your child's privacy. Use a sheet or towel to cover the entire body, except for the part being massaged.
2. Let your child remain clothed; massage head, neck and shoulders, hands, and feet.
3. Do pressure points through clothes (ask your therapist for instructions).

SCREENING FOR STRESS

Everyone experiences stress in a unique way; however, there are many indications when a child is stressed. No single symptom is an indicator of stress or underlying emotional disturbance. Many emotional problems can be reflected by the same symptoms. Look for clusters of symptoms that endure for extended periods.

It is difficult to compile a list of all the red-flag behaviors your child might display. The following list attempts to provide a comprehensive reference. This is a good start.

EMOTIONAL SIGNS:

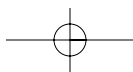
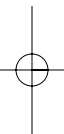
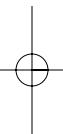
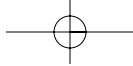
- Worked up, excited
- Worried, anxious
- Crying spells
- At loose ends
- Forgetful, confused
- Memory loss or lapses
- Difficulty concentrating, inattentive, distractible
- Sleeps too much or can not sleep, nightmares, fitful sleep
- Overeating, not eating
- Excessive snacking
- Depression, apathy
- Not responsive to nurturing efforts or comments
- Persistent fatigue
- Lowered level of achievement or performance
- Complains of being dizzy and disoriented
- Grouchy, irritable
- Makes excessive demands
- Bed-wetting, daytime wetting, or soiling
- Nervous
- Paces about, cannot sit still
- Excessive or irrational fear
- Panic or anxiety
- Clinging or overly dependent on caregiver
- Obsessive, repetitive, or ritualistic behavior
- Finger-tapping, foot-tapping, pencil-tapping, or leg tremors
- Frowning or scowling
- Anger outbursts, temper tantrums, aggressive acting out

BODY SIGNS:

- Upset stomach, nausea, churning sensation
- Heartburn, acid indigestion
- Intestinal upset or cramps
- Fast or irregular heartbeat
- Clammy, cold, or clenched hands
- Light-headedness or faintness
- Hot or cold spells
- Increased blood pressure
- Loss of breath or uneven breathing pattern
- Feels "tight" all over
- Tingling sensations on skin
- Cold sores in mouth or lips
- Feeling sick, with no observable symptoms
- Grinding teeth, jaw clenching
- Headaches
- Backaches and other muscular aches
- Low-grade infections
- Generalized body pain
- Hives
- Rash or acne
- Increased asthma or allergies
- Constipation or diarrhea
- Coughing, habitual throat clearing or vocalizations
- Dry mouth or throat
- Tight and stiff muscles
- Muscle twitching, facial tics
- Stuttering or stammering
- Inability to stand still or stay in one place
- Shaky hands
- Onset of poor vision
- Increased perspiration

When more than three or four of these signs are demonstrated within a week or so, there is a strong possibility your child is experiencing high stress levels. Emotional problems could also be part of the picture.

Adapted from Martin G: *Help! My Child Isn't Learning*. Colorado Springs, CO: Focus on the Family Publishing, p 41-43.



GLOSSARY

Affect: State of mind or emotional response.

Amblyopia: Also called *lazy eye*. Amblyopia occurs when one eye rolls in a different direction from the other: nothing is wrong with the optic equipment. The eye sends a poorly focused image to the brain, which can cause the loss of vision-related brain cells. Because the brain cannot fuse the two images into one image, it suppresses one image. The child with amblyopia has poor vision because the visual areas of the brain did not correctly develop before age 6.

Anomaly: A deviation from the general rule. In anatomy, an anomaly is any anatomic difference from the norm. For example, vertebrae that are differently shaped than normal are vertebral anomalies.

Anorexia nervosa: Literally means “without desire.” A mental disorder characterized by an intense fear of gaining weight or becoming fat; a disturbance in the way an individual experiences weight, size, or shape; a low or life-threatening body weight; denial of the seriousness of the current low body weight; and, in girls, loss of menstruation. At least 25% of those who are anorexic eventually die of this disorder.

Astigmatism: Near and far vision are blurred as a result of a misshapen cornea or lens of the eye.

Ataxia: The inability to coordinate voluntary muscle activity during voluntary movement.

Atlantoaxial instability: The laxity of the transverse ligaments that hold the odontoid process of the second cervical vertebrae close to the anterior arch of the first cervical vertebrae. To prevent subluxation and spinal cord injury, individuals with this condition should avoid exercises that place pressure on the neck muscles or any activity that causes extreme forward flexion of the neck.

Behr syndrome: A syndrome characterized by mental retardation, visual deficits, ataxia, and spasticity. Although the cause is unknown, it is thought to be genetic.

Bulimia: [Greek, *hunger of an ox*] A chronic disorder characterized by repeat episodes of binge eating (rapidly eating large quantities of food), followed by self-induced vomiting. Self-evaluation is unduly

influenced by body shape and weight. Despite a lack of outcome studies on bulimia nervosa, many clinicians believe that it will be shown that patients who are bulimic have a higher mortality rate than anorexics.

Cataract: Clouding of the lens of the eye, causing blurred vision and, in severe cases, white pupils.

Catatonia: A syndrome characterized by stupor or temporary loss of feeling and consciousness. Often found in schizophrenia.

Chorea: Irregular, spasmodic, involuntary movement of the limbs or facial muscles, often accompanied by hypotonia. Caused by a cerebral lesion of an unknown definition.

Conversion reaction: An unconscious defense mechanism in which anxiety that is caused by an unconscious conflict is converted and expressed symbolically as a physical symptom; an emotion is transformed into a physical manifestation. For example, cases have been reported such as a child who cannot walk although no pathology is found, or a child who has extreme pain with no organic cause. Rather than a major psychiatric disorder, a conversion reaction represents a form of body language—a plea for help from a child with no alternative method of communicating stress.

Cortisol: A steroidal hormone secreted by the adrenal cortex in response to stressors, such as extreme temperatures, rage, or fear. Cortisol is the most potent, naturally occurring, anti-inflammatory glucocorticoid hormone.

Craniosacral therapy: A gentle, hands-on therapy that addresses distortions in the bone and connective tissue of the skull, spine, and sacrum. Craniosacral therapy balances the flow of the cerebrospinal fluid and relieves tissue restriction throughout the body.

Cutaneous: Pertaining to the skin.

Danceability: A dance form, based on contact improvisation, that helps all children, with and without disabilities, discover the joy of self-expression through movement. Helps break down barriers between those with and without disabilities.

Debridement: Removal of dead tissue and foreign matter from a wound, often with a brush. Debridement is often painful.

Developmental delay: A delay or slowness in a child's development. A term often used interchangeably with mental retardation; however, a child can be delayed in some areas of his or her development without the IQ being affected.

Diplegia: Paralysis of corresponding parts on both sides of the body.

Encopresis: Persistent fecal soiling with no organic cause. A child is not considered to have encopresis until he is at least 4 years old because most toilet training is not complete until age 2^{1/2} years and a margin of error is allowed.

Endorphin: An opioid peptide hormone that may alter pain perception; thought to be analgesic (pain-killing) in action.

Eustachian tube: A tube that runs from each middle ear to the throat. Also called the pharyngotympanic tube because it connects the tympanic cavity to the nasopharynx.

Exocrine gland: A gland that secretes externally, either directly or through a duct. A sweat gland is an example of an exocrine gland.

Feldenkrais technique: A system of movement therapy pioneered by Moshe Feldenkrais. Based on gentle movements and performed with focused awareness, the technique improves ease of movement.

Growth hormone: A hormone produced by the pituitary gland that promotes body growth and fat mobilization.

HANDLE: Holistic Approach to NeuroDevelopment and Learning Efficiency. An integrative approach to identify and treat neurodevelopment disorders in children and adults that includes principles and perspectives from medicine, rehabilitation, psychology, education, and nutrition. The program focuses on the weaknesses in the child's neurologic system that are causing learning and social problems. Attention deficit disorder, autism, head injury, cerebral palsy, motor problems, hypersensitivity, obsessive-compulsive disorder, and other behavioral challenges may improve by addressing these basic weaknesses. Children are given a comprehensive neurodevelopmental assessment and a daily exercise program to strengthen the nervous system.

Hemiplegia: Paralysis of one side of the body.

Hydrocephalus: Excess fluid between the brain and the skull (see Hydrocephalus, Chapter 6).

Hydrochloric acid: An acid secreted by the stomach; part of the gastric juices that help digest proteins.

Hypermobility: Excessive range of motion in a joint, commonly caused by slack or relaxed ligaments around the joint. Diagnosis of whole-body hypermobility may be made if three of the following

signs are present: (1) Opposition of the thumb to the flexor aspect of the forearm; (2) Excessive dorsiflexion of the ankle and eversion of the foot; (3) Hyperextension of the elbows or knees by more than 10 degrees; and (4) Hyperextension of the fingers parallel to the extensor aspect of the forearm.

Hyperopia: Blurred near vision. Also called *farsightedness*.

Hypopituitarism: Inadequate secretion of pituitary hormones, with deficiencies in adrenocorticotropic hormone (ACTH) and somatotrophic growth hormone.

Ischemia: A lack of blood flow in a specific area, usually a result of constriction or damage to the arterial blood supply.

Jin Shin Do: A synthesis of traditional Oriental acupressure/acupuncture theory and technique with Taoist philosophy and modern psychology. Jin Shin Do releases muscular tension and stress through application of gradually deeper finger pressure to specific acupressure points on the body.

Kyphosis: An overdeveloped curve of the thoracic spine.

Leg-length discrepancy: When one leg is shorter than the other. The leg bone may actually be anatomically shorter, but instead the child may have muscle spasm, bad postural habits, or other factors that contribute to a functional discrepancy.

Malocclusion: A condition caused when the upper and lower teeth do not properly fit together.

Meconium: The first intestinal discharge of the newborn infant, consisting of mucus, bile, and epithelial cells. If meconium is aspirated by the newborn, it can cause aspiration pneumonia.

Medical hypnosis: Hypnosis administered by a physician.

Melatonin: A hormone, manufactured by the pineal gland, that is linked to sleep-wake cycles. Ordinarily, melatonin levels in the blood increase 10-fold just before sleep and peak around midnight.

Meningitis: An inflammation of the brain and meninges (spinal cord membranes), often caused by a bacterial infection. Meningitis most seriously affects children between ages 6 to 12 months. It can be fatal; in survivors, it can cause paralysis and mental retardation.

Mental retardation: A slowness or limitation in mental development. Often used interchangeably with the term *developmental delay*. Some individuals with developmental delay have normal IQs that may only become clear when those delays are treated.

Metastasis: To pass or invade; for example, dissemination of tumor cells by the lymphatics or blood cells.

- Myopia:** Blurred distance vision. Also called *nearsightedness*.
- Neurofeedback:** A nondrug therapy for attention deficit hyperactivity disorder (ADHD) and epilepsy. Electroencephalogram (EEG) sensors are placed on a child's head, and the brain waves are displayed on a video screen in an interactive game format. With practice, the child learns to change his or her brainwaves in order to score points on the game. Over time, neurofeedback teaches the child with ADHD to control his activity level and concentration and the child with epilepsy to decrease the number of seizures he or she has.
- Norepinephrine:** A vasoconstrictor stress hormone, secreted by the adrenals.
- Occlusion:** The act of closing. In dentistry, it refers to the way the upper and lower teeth contact. A normal occlusion occurs when the upper and lower teeth on both sides of the mouth come together at the same time. A malocclusion is when the teeth come together in an abnormal way, such as when the upper and lower teeth meet on one side before the other.
- Ossification:** The formation of osseous (bone) tissue by replacing cartilage with calcium phosphate, a mineral salt. Calcium phosphate occupies about 65% of the bone mass and gives it strength. The remainder of the bone mass is a collagen matrix that gives the bone elasticity.
- Osteotomy:** [*oste*, Latin for bone; *tomy*, Latin for incision] Cutting a bone.
- Periodontal:** Literally "around the teeth." It usually refers to the tissues around the teeth—the gums and bony tissues. Periodontal disease is most often an inflammation or infection of the gums.
- Poliomyelitis:** [*polio*, gray matter; *myelos*, marrow; *itis*, inflammation] Caused by the polio virus, this inflammation of the spinal cord leads to death or irreversible damage to nerve cells.
- Polydipsia:** Extreme thirst.
- Prolotherapy:** A therapy for torn ligaments, in which the ligament is injected with a sclerosing agent that causes the ligament to grow shorter and tighter.
- Proprioception:** The sense (perception) of the movement and position of the body, independent of visual input. This sense helps the child identify his location in space and his relationship to the external world. Proprioception is formed primarily from information coming from sensory nerve fibers in soft tissues and the vestibular apparatus. For example, information from the tendons tells position, length, and to what degree the fibers are being stretched; information from the fibrous capsules of joints gives feedback on joint activity and position.
- Pyloristhenosis:** A malformation of the stomach muscle that blocks the passage of food from the stomach to the small intestine. Pyloristhenosis must be treated surgically.
- Quadriplegia:** Paralysis of both arms and both legs.
- Reflex sympathetic dystrophy:** Diffuse persistent pain, usually in an extremity, and frequently following some local injury. Reflex sympathetic dystrophy is often associated with limitation or immobility of joints and vasomotor instability. In extreme cases, it leads to joint contractures and osteoporosis.
- Retinopathy of prematurity:** Damage to the retina caused by the administration of oxygen to premature infants. The child may develop cataracts, glaucoma, nearsightedness, or strabismus.
- Spica cast:** A cast made up of layers that overlap in a V pattern. It covers two body parts of greatly different size, such as the waist and the hip.
- Synapse:** A space between two neurons. Nerve impulses are transmitted from one neuron to another by chemicals called neurotransmitters.
- Synostosis:** When two bones, not normally united, grow together.
- Swedish massage:** Developed by Per Henrik Ling of Sweden in the nineteenth century, Swedish massage is a combination of five techniques (effleurage, petrissage, friction, tapotement and vibration), combined with passive joint movement.
- Strabismus:** The turning of an eye, either to the side or up or down, so that both eyes are unable to simultaneously look at the same thing. Also known as *crossed eyes*.
- Therapeutic touch:** A healing method in which the practitioner does not touch the body; the hands are held above the body in the person's energy field. The goal of therapeutic touch is to release any blockages in the person's energy field, contributing to release of tension, strengthening the person's own healing powers, and improving health.
- Torticollis:** Twisted neck; the head is persistently flexed and rotated. Commonly caused by fibrous shortening of the sternocleidomastoid muscle as a result of abnormal uterine position; birth trauma; cervical trauma; head tilt caused by vertical strabismus; malformations of the occipital or cervical bones; and inflammatory conditions of the neck tissue, such as pharyngitis or cellulitis. Congenital torticollis resolves spontaneously in 90% of cases, assuming the child does not have vertebral anomalies. Therapy may be prescribed that can be done by parents, with gentle stretches of the tightened sternocleidomastoid muscle. If physical therapy is not successful, children with torticollis may require surgery to release the sternocleidomastoid muscle, with postoperative physical therapy and splinting.

Trigger point: A hyperirritable area in a muscle that, when stimulated, can cause spasm and pain. Trigger points usually manifest as palpable nodules in taut bands of muscle. In contrast to tender points, which hurt only where they are touched, trigger points are tender where they are touched, but pain is also referred to an adjacent area of the body. Trigger points may result from sudden trauma, chronic repetitive strain, or prolonged chilling. Acute and chronic infections and fatigue may also predispose a muscle to develop a trigger point.

Trigger point therapy: Application of concentrated finger pressure to trigger points to break cycles of spasm and pain, as well as for relaxation.

Vestibular stimulation: Stimulation of the inner ear, often by techniques such as rocking or swinging a child.

Watsu: A form of Shiatsu massage performed in a pool of warm water. The therapist cradles the child, who floats in the water as the therapist performs a sequence of movements and Shiatsu pressure.

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PHYSICAL DIFFERENCES BETWEEN CHILDREN AND ADULTS

1. Vital Signs

	<i>Infant</i>	<i>Preschool-Age Child</i>	<i>School-Age Child</i>	<i>Teenager</i>	<i>Adult</i>
Pulse or Heart Rate	160	120	100	80	60–80
Systolic Blood Pressure	80	90	92	100	120
Respiratory Rate	40	30	18	12	12

2. Skeleton

	<i>Child</i>	<i>Adult</i>
Total Bones in body	330	206
Cranial Bones	Not fused	Fuse during puberty
Bone Growth Rate	Rapid	Slow
Skeletal Development	Non-ossified cartilage at birth	Ossified bone
Bone Strength	Porous, prone to fracture	Dense, less prone to fracture
Center of Gravity	At the xyphoid process	At the upper, anterior edge of the first sacral vertebrae

3. Soft Tissues

Compared with adult soft tissue:

- Pediatric periosteum is thicker, stronger, and more biologically active and has a greater blood supply.
- Pediatric joints have a greater range of motion because tendons and ligaments are less rigid.
- Pediatric muscles are less rigid, less dense, and less tight.
- Pediatric skin is thinner, softer, and more mobile.

4. Miscellaneous

Compared with adults:

- Children have a greater proportion of skin surface area to body size from which they lose heat, and so they can become chilled more easily.
- Infants and small children are more likely to become dehydrated because of their high metabolisms, small size, and relatively large surface area.
- Children have a lower sweating capacity, especially before puberty.

COMPLETE LIST OF STROKES FOR A FULL-BODY PEDIATRIC MASSAGE

Back Massage

1. Basic relaxation sequence and passive touch.
2. Apply oil or lotion.
3. Back effleurage 10 times.
4. Rake the back 3 times.
5. Back effleurage 3 times.
6. Knead the upper trapezius for 1 minute.
7. Back effleurage 3 times.
8. Thumbstroke between the scapula for 1 minute.
9. Back effleurage 3 times.
10. Thumbstroke the lower back for 1 minute.
11. Back effleurage 3 times.
12. Knead the buttocks.
13. Back effleurage 10 times.
14. Skin stimulation stroke.
15. Ball rolling.
16. Basic relaxation sequence.

Back of the Leg Massage

1. Basic relaxation sequence and passive touch.
2. Apply oil or lotion.
3. Leg effleurage 10 times.
4. Rake the back of the leg for 1 minute.
5. Leg effleurage 3 times.
6. Thumbstroke the back of the leg for 1 minute.
7. Leg effleurage 3 times.
8. Thumbstroke the sole of the foot for 1 minute.
9. Circle the ankle bones 6 times.
10. Leg effleurage 10 times.
11. Range-of-motion exercises for the hip and knee joints.
12. Skin stimulation stroke.
13. Ball rolling on the back of the leg and sole of the foot.
14. Basic relaxation sequence.

Head, Neck, and Shoulder Massage

1. Basic relaxation sequence and passive touch.
2. Apply oil or lotion.
3. Shoulder and neck effleurage 10 times.
4. Diagonal neck stroke 10 times.
5. Shoulder and neck effleurage 3 times.
6. Scalp petrissage for 1 minute.
7. Shoulder and neck effleurage 3 times.
8. Forehead and eye circles 3 times.
9. Shoulder and neck effleurage 6 times.
10. Cheek circles for 30 seconds.
11. Shoulder and neck effleurage 10 times.
12. Neck range-of-motion exercises.
13. Skin stimulation stroke.
14. Basic relaxation sequence.

Chest and Stomach Massage

1. Basic relaxation sequence and passive touch on the top of the shoulders.
2. Apply oil or lotion.
3. Chest and abdomen effleurage 10 times.
4. Chest friction for 30 seconds.
5. Chest and abdomen effleurage 3 times.
6. Abdominal effleurage 10 times.
7. Knead the abdomen for 1 minute.
8. Chest and abdomen effleurage 10 times.
9. Skin stimulation stroke.
10. Basic relaxation sequence.

Arm Massage

1. Basic relaxation sequence and passive touch.
2. Apply oil or lotion.
3. Arm effleurage 10 times.
4. Thumbstroke the inside of the arm for 1 minute.
5. Arm effleurage 3 times.
6. Rake the outside of the arm for 1 minute.
7. Arm effleurage 3 times.
8. Hand friction for 30 seconds.
9. Thumbstroke the back of the hand for 30 seconds.
10. Thumbstroke the palm for 30 seconds.
11. Stretch the fingers 3 times for each finger.
12. Arm effleurage 10 times.
13. Range-of-motion exercises for the shoulder, elbow, wrist, and finger joints.
14. Skin stimulation stroke.
15. Ball rolling.
16. Basic relaxation sequence.

Front of the Leg Massage

1. Basic relaxation sequence and passive touch.
2. Apply oil or lotion.
3. Leg effleurage 10 times.
4. Rake the front of the leg for 1 minute.
5. Leg effleurage 3 times.
6. Foot friction for 15 seconds.
7. Thumbstroke the top of the foot for 30 seconds.
8. Stretch and stroke the toes 3 times for each toe.
9. Leg effleurage 10 times.
10. Range-of-motion exercise of the hip, knee, ankle, and toe joints.
11. Skin stimulation stroke.
12. Ball rolling.
13. Basic relaxation sequence.