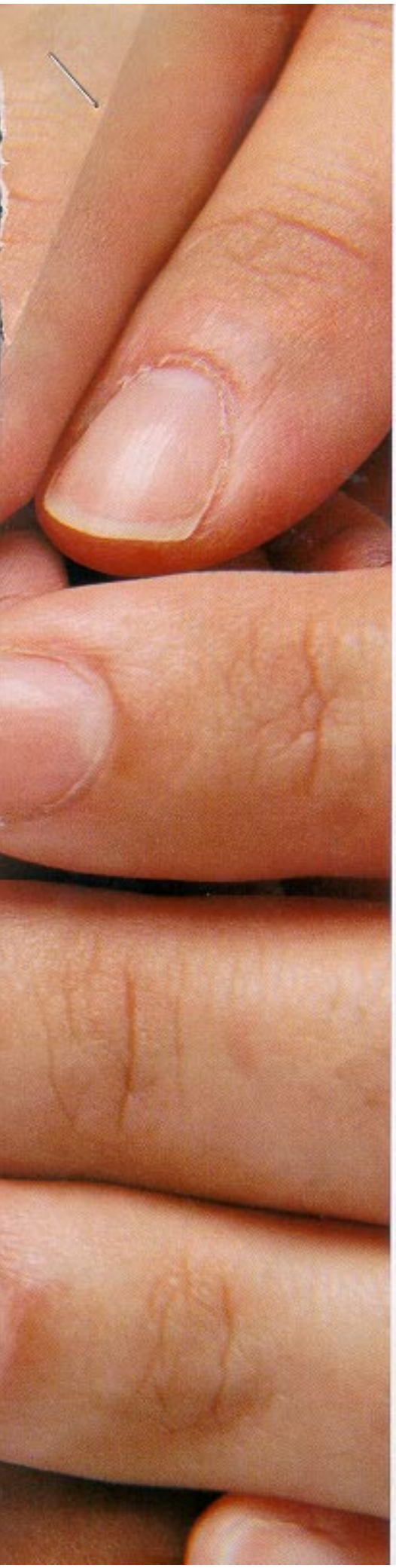


The MAGIC of TOUCH

Massage's healing powers make it serious medicine.

NEWBORNS are meant to be touched, but at the age of 11 days everything about Brandan Owens says *hands off.* Huddled in his clear Plexiglas incubator in the Newborn Intermediate Care Unit at Jackson Memorial Hospital in Miami, Brandan seems as inaccessible as Snow White in her glass coffin. Born eight weeks premature, weighing four pounds, he is dwarfed by the small blue teddy bear at his feet. Large fire-engine-red letters on the incubator spell out WARNING. A thicket of electrodes taped to his ankle leads to a monitor whose neon-green lines zigzag madly. Every time his heart rate dips below 80 or rises above 120, the monitor beeps. Brandan must live in this artificially warmed environment because his own underdeveloped system cannot

SKIN IS THE HUMAN BODY'S LARGEST ORGAN. IT ACCOUNTS FOR 18 PERCENT OF OUR BODY WEIGHT AND COVERS ABOUT 19 SQUARE FEET.

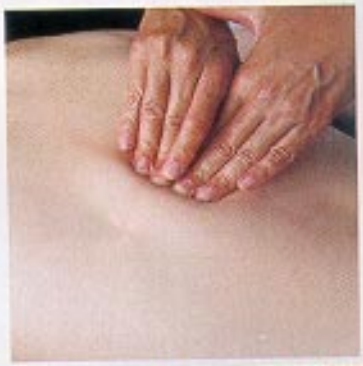
By **George Howe Colt**
Photography by
Howard Schatz
Reporting by
Anne Hollister

yet regulate his body temperature. He has had several spells of apnea (a brief cessation of breathing), a risk factor for sudden infant death syndrome, the fatal, inexplicable malady that causes sleeping children to stop breathing. Sealed in his Isolette—the very name of the incubator he lies in is forbidding—Brandan seems so remote that when he opens his tiny mouth to cry, the sound appears to come from a great distance.

Brandan's mother, a high school senior, gives a nervous start as Maria Hernandez-Reif of the Touch Research Institute (TRI) reaches through the Isolette's portholes and begins to massage the baby. Her hand is larger than Brandan's entire back; as her fingers move in firm downward strokes, the baby's translucent skin looks as if it might tear as easily as tissue paper. Now Hernandez-Reif's fingers stroke an arm as fragile as a twig. (And she is not just touching but applying gentle pressure—too light and it tickles, too strong and it hurts.) The uninitiated onlooker might wonder if he is witnessing a form of torture.

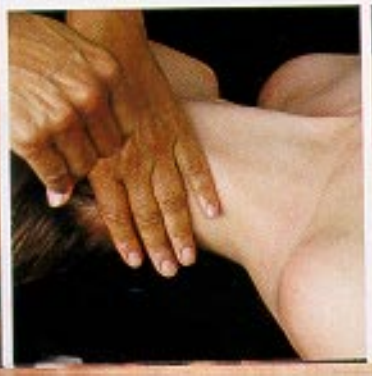
Far from injuring the infant, the massage may be saving his life. In fact, if Brandan is like most of the premature babies studied at TRI, he will reap benefits nothing short of astonishing. With three massages a day for 10 days, he will be more alert, active and responsive than nonmassaged infants of his size and condition. He will be more able to tolerate noise and to calm himself. He will sleep more deeply. He will have fewer episodes of apnea. He will gain weight 47 percent faster. He will get out of the hospital six days sooner. And though at first Brandan screws up his face in distaste as Hernandez-Reif's hands move over his shriveled body, he gradually relaxes, purses his lips thoughtfully and extends his legs, froglike, seemingly in pleasure. By the end of the 15-minute massage, Brandan is peaceful but alert, his blueberry-size eyes moving about, taking in all they can. If he could purr in contentment, he would.

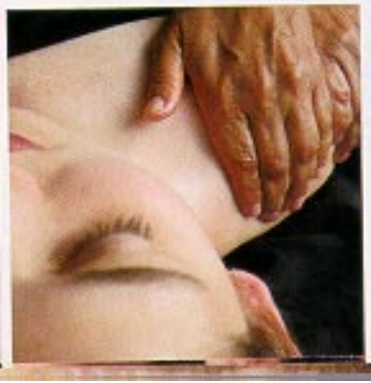
SINCE MASSAGE, LIKE COCAINE, STIMULATES THE PRODUCTION OF ENDORPHINS, LACK OF TOUCH MAY LEAD TO ADDICTIVE BEHAVIORS.



Brandan is reaping the benefit of investigations dating back to the 13th century, when the German emperor Frederick II, curious to know what language children would speak if they were raised without hearing any words at all, decided to conduct a little empirical research. Seizing a number of newborns from their parents, he gave them to nurses who fed the infants but were forbidden to cuddle or talk to them. The babies never learned a language. They all died before they could talk. Frederick's linguistic experiment was a flop, yet he had unwittingly made an important discovery: Tactile stimulation can be a matter of life and death. As the historian Salimbene wrote of Frederick's research subjects in 1248, "They could not live without petting." Unfortunately, Frederick's finding has inadvertently been confirmed many times since then, most recently in Romania during the early 1990s, when thousands of infants warehoused in orphanages—some of them virtually left alone in their cribs for two years—were found to be severely impaired.

Such tragedies affirm what we instinctively





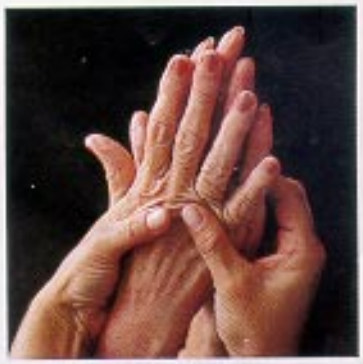
ANOREXIA: Massage improves body image in people suffering from eating disorders. As one recovering anorexic says, "I told myself, 'If this person thinks my body is O.K. enough to touch me, maybe my body is O.K.'"

know—that touch is a primal need, as necessary for growth as food, clothing or shelter. Michelangelo knew this: When he painted God extending a hand toward Adam on the ceiling of the Sistine Chapel, he chose touch to depict the gift of life. From the nuzzles and caresses between mother and infant that form the foundation of the self, to the holding of hands between a son and his dying father that allows a final letting go, touch is our most intimate and powerful form of communication. It can be aggressive—the finger jabbed into the chest, the slap in the face. It can be tender—the hug that comforts a crying child, the hand on the shoulder that steadies a restless teenager. The effect of even the most casual touch has been seen in numerous studies. (Waitresses who touched their customers on the hand or shoulder as they returned change, for example, received larger tips than those who didn't.) Small wonder that politicians believe wading into crowds to "press the flesh" will pay off on election day.

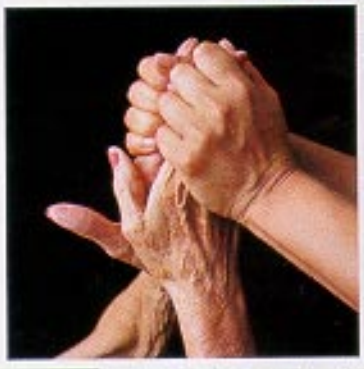
The idea that touch can heal is an old one. The first written records of massage—the word comes from an Arabic word meaning *stroke*—date back 3,000 years to China. A bas-relief on the tomb of Ankh-mahor, a c. 2200 B.C. Egyptian priest, depicts a seated man receiving a vigorous foot rub. Hippocrates, the Greek physician known as the father of modern medicine, was a 4th century B.C. proselytizer for massage. "The physician must be experienced in many things, but most assuredly in rubbing," he wrote. In the Middle Ages, the Church saw manipulation of the body as the work of the devil; many protomasseuses may have been burned at the stake as witches. In the 20th century also, massage has often been assumed to be a front—not for the devil but for prostitution.

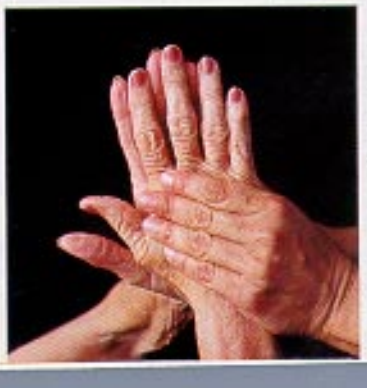
Massage has regained respectability in recent years and now enjoys unprecedented popularity. Some 25 million Americans make 60 million visits to 85,000 practitioners each year. Those numbers don't include employees of the growing number of institutions—including the U.S. Department of Justice—that offer massage in the workplace. Or the children of the 10,000 parents who learn baby massage each year. Massage is being used to boost athletic performance, reduce agitation in Alzheimer's patients and relieve stress at disaster sites. After the Oklahoma City bombing, volunteer therapists gave massages to exhausted rescue workers, numbed survivors and overworked pathologists. The state medical examiner observed that the massage therapists were accomplishing more in 15 minutes than psychologists could in an hour or two.

NURSING-HOME PATIENTS WHO RECEIVED FREQUENT MASSAGES SHOWED FEWER SIGNS OF SENILITY.

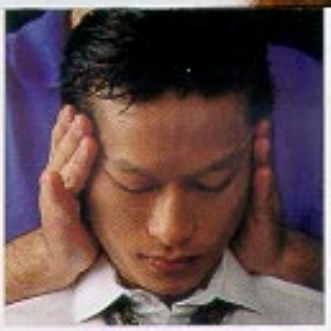


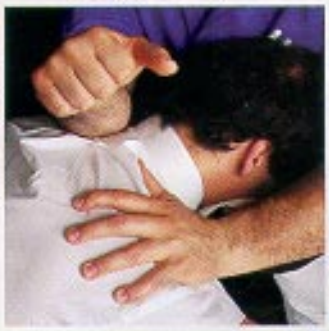
And now science is confirming what we knew in our hearts: that, as psychiatrist James Gordon puts it, "massage is medicine." Much of this science is generated in the immaculate offices of Miami's Touch Research Institute, the world's only scientific center devoted to exploring the effects of touch on health. Here, psychologist Tiffany Field directs a staff of 28 students, volunteers and massage therapists, and collaborates with researchers at the University of Miami, Duke and Harvard. More than 50 TRI ▶▶

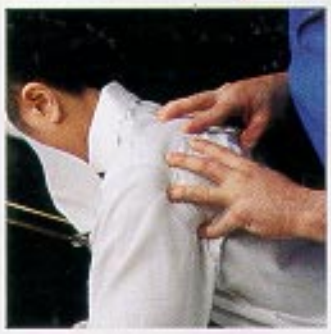




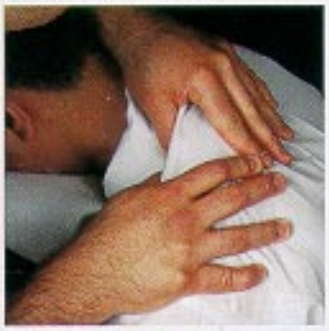
ARTHRITIS: By stimulating the circulation and lowering stress hormones, massage eases stiffness and pain in arthritis sufferers. Some older people, self-conscious about full-body treatment, prefer hand and foot massage.







STRESS: Far from being soporific, a 15-minute massage increases alertness and performance. No wonder Roman gladiators were massaged before entering the arena and 18th century Swedish cavalrymen were rubbed down between skirmishes.



studies have shown massage to have positive effects on conditions from colic to hyperactivity to diabetes to migraines—in fact, on every malady TRI has studied thus far. Massage, it seems, helps asthmatics breathe easier, boosts immune function in HIV-positive patients, improves autistic children's ability to concentrate, lowers anxiety in depressed adolescents and reduces apprehension in burn victims about to undergo debridement, the painful procedure in which contaminated skin is removed. "I started out thinking it was a bunch of hooey, but I've become a believer," says C. Gillon Ward, medical director of Jackson Memorial's Burn Center. "I guess there are just some things you can't explain yet."

Actually, we're beginning to explain them. When we say that somebody touches us emotionally, it means he or she has gone to the core of our being. Physical touch, too, is more than skin-deep. There are as many as five million touch receptors in our skin—3,000 in a single fingertip—that send messages along the spinal cord to the brain. A simple touch—a hand on a shoulder, an arm around a waist—can reduce the heart rate and lower blood pressure. (Even people in deep comas may show improved heart rates when their hands are held.) Touch also stimulates the brain to produce endorphins, the body's natural pain suppressors, which is why a mother's hug of a child who has skinned his knee can literally "make it better."

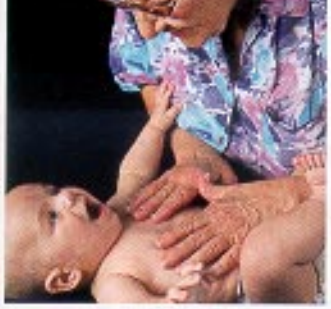
It isn't only the mother who makes it better—it's also the pressure. Duke professor Saul Schanberg found that rat pups separated from their mothers for 45 minutes underwent major internal changes, including a dramatic drop in growth hormones. Their systems began to shut down, just like the Romanian orphans'. Injections of growth hormones didn't help. But when a graduate student stroked the rat pups with a moist paintbrush—mimicking their mothers' tongues—the hormone levels went back up.

Stronger, sustained touch can have even greater effect. Massage may increase the lymph flow rate. It enhances immune function and lowers levels of the stress hormones cortisol and norepinephrine. Massage also stimulates the vagus, one of 12 cranial nerves that influence various bodily functions. One branch of the vagus travels to the gastrointestinal tract, where it facilitates the release of food-absorption hormones like insulin and glucose. That's one reason the massaged preemies in TRI studies gain weight faster. "They aren't eating any more formula than nonmassaged babies," says Field, "but their food absorption is more efficient."

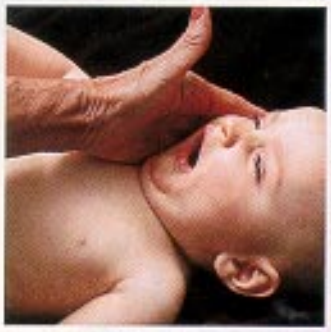
In Field's studies, massaged preemies were discharged from the hospital six days sooner—at a savings of $10,000 each. With 430,000 premature births in America each year, and a potential $4 billion in annual savings, one might think hospital nurseries would be falling all over themselves to establish massage programs. Yet only a handful of hospitals have them. Even Jackson Memorial, where Field's first preemie studies were done more than a dozen years ago, has no regular program of massage for preemies. Nurses have too much to do already, says a hospital spokesperson, and funding isn't available to bring in more therapists. The number of insurance companies covering massage for certain conditions is increasing but remains small.

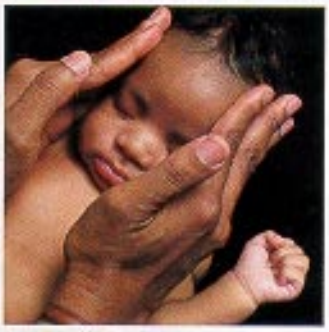
There may be a deeper reason for the resistance. America is what anthropologists call a "nontactile" society. Compared with most cultures, we are—so to speak—touchy about touch. When psychologist Sidney Jourard observed rates of casual touch among couples in cafés around the world, he reported the highest rate in Puerto Rico (180 times per hour). One of the lowest rates was in the U.S. (two times per hour). Field has discovered that French parents and children touch each other three times more frequently than their American counterparts, a pattern that continues with age. At McDonald's restaurants in Paris and Miami, Field found ➠

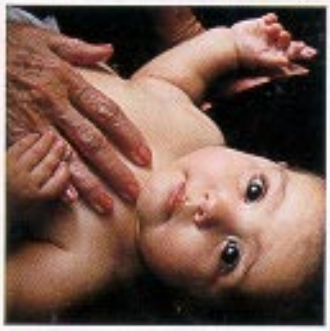
AFTER MASSAGE, OFFICE WORKERS COMPLETED A MATH TEST MORE QUICKLY AND WITH FEWER ERRORS.



DEPRESSION: Giving a massage to babies lowers anxiety in depressed older people even more than getting one themselves.







PET SCANS OF SEVERELY TOUCH-DEPRIVED INFANTS SHOW THAT CRITICAL SECTIONS OF THEIR BRAINS ARE BARELY ACTIVE, STALLING ENTIRE AREAS OF DEVELOPMENT.

that French adolescents demonstrate significantly more casual touching—leaning on a friend, putting an arm around another's shoulder. American teenagers were more likely to fiddle with their rings, crack their knuckles and engage in other forms of self-stimulation. "French parents and teachers alike are more physically affectionate and the kids are less aggressive," says Field. (Cultures that show more physical affection toward infants and children tend to have lower rates of adult violence.)

Field worries that Americans aren't getting enough touch, especially with growing concerns about sexual harassment and abuse in schools and workplaces. Even in preschools, touch has become taboo. (The National Education Association, which represents two million teachers, sums the matter up in a slogan: Teach, don't touch.) "The implications for children involve significant effects on their growth, development and emotional well-being," observes Field. She is not suggesting that Americans follow the example of the Andaman Islanders, who on meeting a friend they haven't seen in weeks sit down in the other's lap, throw their arms around each other's necks and weep till they're exhausted. But she believes touch is an essential part of daily life. "America is suffering from an epidemic of skin hunger," says Field, who talks of a "dose of touch" as if it were a vitamin. She envisions a kinder, touchier America in which teachers can hug students without fear of a lawsuit, in which parents massage their children at bedtime as naturally as they tuck them in.

One American school not suffering from skin hunger can be found six floors below Field's office. At the TRI preschool, teachers encourage "positive touch." They dole out unlimited hugs, backrubs and shoulder pats. Massages are as much a part of the curriculum as story time. Most of the 40 children, from six months to five years in age, get a daily 15-minute rubdown, which leaves them, according to TRI research, more alert, more responsive, able to sleep more deeply. It is the sensory antithesis of a Romanian orphanage. In one corner, a teacher holds an 18-month-old on her lap; in another, two toddlers snuggle playfully. And, lying on a water bed, seven-month-old John gets his daily massage from 80-year-old Madeline Chance.

Touch is the first sense to develop in humans. It may be the last to fade. If, as Frederick II found, babies wither and die without touch, would older people do the same? (As the speaker in a Tennyson poem mourns, "But O for the touch of a vanished hand.") TRI set up a study in which volunteers over age 60 were given three weeks of massage and then were trained to massage toddlers at the preschool. Giving massages proved even more beneficial than getting them. The elders exhibited less depression, lower stress hormones and less loneliness. They had fewer doctor visits, drank less coffee and made more social phone calls.

"Mothers always want to give," Madeline Chance likes to say. But after her husband died and her children grew up and moved away, she had no one to give to. "The best thing you can do when you're old is be busy," she says, "so I tried to volunteer everywhere." But she still felt lonely. She grew depressed. When she heard about the study of massage and the elderly, she signed up. She had never had a massage before but found it soothing. Like most of the volunteers, she liked giving massages even more. "You miss all that—the touching," she says quietly. It saddens her that things were so different when her children were young. "With my kids, I was told that you don't touch them or you'll spoil them," she says. "Every four hours you fed them, and if they cried, you let them. That's the way mothers were taught back then." When the research program ended, Chance continued to come in to help massage the toddlers.

"Baby, would you like a massage?" she asks John, a chubby seven-month-old. John gurgles up at her. ("You always ask if they want a massage," Chance explains, "and if the baby doesn't like it at any time, you stop.") She bends low over the child, her fingers gently stroking his back, as she demonstrates the various techniques: the Indian milking stroke, the feathering stroke, the effleurage. Her tanned, wrinkled hands, with their abstract map of veins and tendons, envelop the lush smoothness of the baby's skin. John, who had been fussy, gradually relaxes, gives himself up. Chance, too, had been tense. Now she begins to lose herself in her work. The baby grins a toothless smile and holds up his arms as if in ecstasy. Chance looks down at him and beams. Clearly, they are touching each other. ▭