



Oscillator and waterbed, on which a doll lies, used by Stanford researchers.

Stanford University at the APA meeting.

Studies conducted by Korner and her colleagues in the early 1970s convinced her that healthy full-term infants are "exquisitely sensitive" to movement stimulation throughout early development. Around the same time, William Mason of the University of California at Davis made similar observations with monkeys. As in the famous experiments of University of Wisconsin psychologist Harry F. Harlow, Mason reared infant monkeys in isolation with wire-mesh "surrogate mothers." Harlow produced autistic-like, self-mutilating monkeys who rocked back and forth, but Mason significantly offset these behaviors by using swinging, rather than stationary, surrogates.

These findings prompted Korner to consider the plight of premature infants kept alive in incubators, but deprived of normal movement sensations in the womb and the rocking of a crib or a mother's arms. Waterbeds were "the most gentle way I could think of," she says, to shake up the enclosed environment of preterms. The tiny beds are attached to oscillators that generate a head-to-foot rocking motion of about 2 millimeters, so slight it can barely be seen. Continuous oscillations of between 12 and 14 pulses per minute — within the average range of mothers' respirations during the third month of pregnancy — are used, as well as intermittent

oscillation periods that run for 25 minutes, then stop for 65 minutes. The latter set-up is based on an estimated 90-minute rest-activity cycle for infants.

The results of five waterbed studies conducted so far are relatively consistent, says Korner. Better physical coordination, quieter sleep and less irritability characterize small groups of preterms kept on waterbeds. They also have significantly fewer apneas during sleep. These repeated episodes of breathing cessation can, in severe cases, cause brain damage. Together with evidence that preterms raised on waterbeds have rounder, more naturally shaped heads and are more alert and responsive to others, "this may make them more appealing babies for their parents," notes Korner.

Fostering a child's "appeal" is a big step, she explains, since the 7 percent of youngsters born prematurely are disproportionately represented among victims of child abuse, "largely because they tend to be more difficult to raise."

The Stanford scientists have not, however, observed weight gains for waterbed babies when compared with controls. It may take stronger oscillations to provoke changes in metabolism and calorie uptake, says Korner.

Some intensive care units treating premature infants are beginning to use oscillating waterbeds, she points out. But the behavioral and biological consequences of flotation beds, as well as those of mothers' traditional arm and crib rocking, are not clear. In a current study of about 60 relatively healthy preterms, Korner and her colleagues plan to compare the effects of continuous and intermittently vibrating waterbeds with the changes, if any, provoked by waterbeds that do not move.

Whatever the findings, preterm infants are in for some moving — and touching — experiences in the future. □



An incubated infant's tiny legs get a workout with some outside help.

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