THE EFFECT OF CONJUGATE REINFORCEMENT ON THE LEG MOVEMENTS OF INFANTS WITH SPINA BIFIDA

Chapman, D, DeRosier, S, Martin, J, Payne, A

St. Catherine University

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BACKGROUND AND PURPOSE: Leg movements and kicks reflect lower extremity coordination and are directly related to when babies learn to walk. Little is known about the development of goal-directed leg movements in infants with spina bifida (SB). Will their ability to move their legs and kick be enhanced by visual and auditory feedback (conjugate reinforcement)? Thus, the purpose of this study was to describe how often infants with SB moved their legs and kicked when provided with visual and auditory feedback via an overhead mobile.

METHODS: The spontaneous and goal directed leg movements of five infants with lumbar or sacral SB were videotaped while supine: untethered (baseline); tethered to an overhead mobile (acquisition); and untethered (extinction). Data collection took place in the infants' homes when the parents reported that their baby was usually alert and active. Frame by frame behavior coding was used to identify leg movements and kicks.

ANALYSES: Paired t-tests were used to verify significant differences in the number of leg movements and kicks generated in each condition.

RESULTS: The infants produced significantly more leg movements in the experimental conditions compared to baseline (p = .014) and generated more kicks in the acquisition or extinction condition than in baseline, but this was not significant (p = .124). All five infants moved their tethered leg more than their untethered leg in the acquisition condition versus baseline. Each baby responded uniquely to the mobile paradigm with respect to the frequency and types of kicks generated, e.g. parallel knee kicks.

CONCLUSIONS: These results show that infants with SB use the mobile paradigm to generate more leg movements and kicks than they do spontaneously.

IMPLICATIONS: Infants who have increased opportunities to move their legs and kick will strengthen their leg muscles and the neural connections that support their ability to kick. This may influence when they learn to walk.