

Background To investigate the feasibility of a physical exercise programme with treadmill for persons with Rett syndrome (RS) in order to promote fitness and health.

Methods A daily training programme on a treadmill was designed for four females with RS over a period of 2 months with tests performed in three intervals, at time 1, 2 and 3, 2 months apart with intervention taking place between tests 2 and 3. Participants were four girls with RS aged 8.5–11 years (mean: 10 years) attending the educational facility Beit Issie Shapiro, Raanana, Israel, all with independent mobility and with typical characteristics of RS stage III. The training took place at the educational facility, on a 1400 model treadmill (Trimline, capable of very low speeds < 0.5 k/h), with very long side rails. Special low side rails were adapted to the treadmill in order to fit the height of the children and velcro straps were added to assist in safely placing the hands. Pulse was monitored constantly during exercise by an A3 polar pulse belt. Pulse measurements at rest during training were considered as evaluators of aerobic physical condition. Functional measurement was based on a scale specially established for the present study. The scale was a 31-item motor-functioning tool that measures the ability of participants to knee walk and knee stand, to get up to a standing position, duration of walking different paths, and to go up and down stairs and slopes.

Results The study showed that physical fitness of the children at the end of the training programme had improved considerably ($P < 0.05$). Tests showed that general functional abilities had improved considerably ($P < 0.0001$). Although all items of the functional ability measure showed impressive positive change, some of the 31 items on it showed statistically significant improvement (knee walking, going up and down stairs and speed of walking for 25 m. Pearson correlation showed high linkage ($r = -0.76$) between functional improvement and change in physical fitness.

Conclusions Physical fitness programme executed on a daily basis is capable of improving functional ability of children with RS. Nonprofessional personnel can execute such a programme under supervision of a qualified physical therapist.