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timing to specific rates are difficult, people with DS can perform at self-selected and maximal rates. Thus, future interventions with people with DS can use rate modifications with general instructions or enhanced motivation. This research was supported by the Jerome Lejeune Foundation.

Developmental pathways of change in health-related fitness and motor competence are related to obesity development in childhood

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The epidemic obesity in childhood is well acknowledged worldwide. Although researchers agree that explaining models for childhood obesity can include several risk factors, the question remains as to which specific predictors can be the touchstone to solving the problem. In recent years, a model of developmental mechanisms influencing the physical activity and weight pathways of children has been presented by Stodden and colleagues (2008). In this model it is predicted that children will evolve through a positive spiral of engagement, or else through a negative spiral of disengagement, depending on the recursive effects of exercise and physical fitness, allied to motor competence and perceived motor competence during childhood. This study partially tests for this model, examining how different developmental pathways of physical fitness and motor competence relate to weight status at the end of childhood. Five hundred and seven primary school children were assessed annually on their growth, fitness and motor competence. Three groups were formed according to their rate of change in fitness and motor performance (slow, average, and high rate of change). A logistic regression was used to predict the odds ratio of becoming overweight or obese depending on the developmental pathway of change in fitness and motor competence along childhood. Results show that children that experienced a negative development on fitness and motor competence were several times more prone to become overweight or obese (OW+O) at the end of childhood (OR from 3.2 to 7.1). Negative development on cardiorespiratory fitness, arm strength, and standing long jump performance, assumed the most significant risk values for developing an OW+O condition. In conclusion, developing a positive fitness and motor competence pathway during childhood protects from obesity and overweight status. These results are in accordance with the theoretical model of Stodden and colleagues (2008).

Combination of resistance training and sensory attention focused exercise for the treatment of motor symptoms, gait and strength in Parkinson's disease

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Exercise strategies such as Sensory Attention Focused Exercise (PD SAFEx) and resistance training are effective treatments for Parkinson's disease (PD). PD SAFEx improves motor symptom severity, while resistance training improves strength, mobility and gait in PD. Interestingly, both types of exercise result in symptom improvements. The objective of this study was to determine if combining resistance and sensory training would improve motor symptoms beyond sensory training alone. PD patients were enrolled into 1 of 2 groups: PD SAFEx ($n = 27$) or resistance training plus PD SAFEx (R+PD SAFEx) ($n = 28$). Patients were tested before exercise (pre), after 3 months of exercise (post), and 3 months after no exercise (washout). The primary outcome measure was motor symptom severity measured by the Unified Parkinson's Disease Rating Scale motor section (UPDRS III). Secondary measures were spatiotemporal aspects of gait, and a subset of participants were also tested on the 6-repetition sub-maximal leg press strength test (6RM) (PD SAFEx, $n = 7$; R+PD SAFEx, $n = 8$). There was no difference between groups for the UPDRS III, but observation of the means showed a 3.7 and 1.4 point improvement for the PD SAFEx and R+PD SAFEx respectively. A significant interaction between group and time (pre-post-washout) was seen for percent time spent in double support (%DS) ($p < 0.01$), with %DS significantly increasing for the PD SAFEx group. Base of support also increased in the PD SAFEx group ($p < 0.01$), but only for the more affected limb in the R+PD SAFEx group ($p < 0.05$). Lastly, PD SAFEx and R+PD SAFEx both improved on the 6RM, by 38% and 41% respectively, with the improvement lasting in only in the PD SAFEx over the washout period. Overall, while both groups improved motor symptom severity and strength, PD SAFEx showed the larger change to motor symptoms and lasting strength improvements. Therefore, the combination of resistance and sensory training has no added benefit for the treatment of PD. Exercise interventions should focus on sensory training for the treatment of PD symptoms.

Hand preference tendencies of children with Autism spectrum disorders

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Autism spectrum disorder (ASD) is one of the most common forms of developmental disabilities of childhood (Fombonne, 2009). Rooted in atypical language and social development, in conjunction with repetitive behaviors (American Psychiatric Association, 2000) it is also suggested that motor impairments are a core feature of ASD (Fournier, et al., 2010), and are more prevalent in comparison to the general population (Matson, et al., 2011). Handedness is defined as the preferred hand for manual tasks (McManus, et al., 1992), where 90% of the population is right-handed. Young children typically have weak, inconsistent hand preference tendencies, where handedness is established at age 6, and consistency improves with age (Bryden et al., 2006). Children with ASD, in comparison, display ambiguous or inconsistent hand use strategies (e.g., Dane & Balci, 2007; Markoulakis et al., 2012), due to motor impairments. This study aimed to investigate whether children with ASD ($n = 13$) demonstrate consistent hand preference tendencies in comparison to their neurotypical counterparts ($n = 75$). The Annett Pegboard (AP) and WatHand