

Exercise Capacity in Children with Chronic Fatigue Syndrome (CFS/ME)

Tim Takken, Thamar N. Henneken, Elise M. van de Putte, Paul J.M. Helders, and Raoul H.H. Engelbert.

Department of Pediatric Physical Therapy & Exercise Physiology, Wilhelmina Children's Hospital, University Medical Center Utrecht, the Netherlands. Email: t.takken@umcutrecht.nl



University Medical Center
Utrecht



Introduction

Chronic Fatigue Syndrome (CFS) is characterized by debilitating fatigue and affects physical and mental functioning. Several studies have been performed studying the exercise capacity of adults with CFS. However no studies have been performed in children and adolescents with CFS. The objective of this study was to evaluate exercise capacity in children and adolescents diagnosed with Chronic Fatigue Syndrome.

Methods

We examined 20 consecutive patients (12 girls and 8 boys; mean age 14.85 ± 3.7 years) diagnosed with CFS. Exercise capacity was measured using a maximal exercise test on a bicycle ergometer and an expired gas analysis system. Muscle strength was measured using hand-held myometry. Fatigue was assessed using the CIS-20 questionnaire and a daily activity diary was used to describe activities for three days.

Muscle strength of children with CFS was within the normal range (See Table 1).

Table 1. Muscle strength in Children with CFS (Z-scores)

	Wrist extensor	Hip flexor	Ankle dorsal flexor	Knee extension	Shoulder abductor	Grip strength
Z-score (SD)	-0,48 (1,43)	0,75 (0,95)	2,20 (1,75)	-0,60 (1,09)	1,41 (1,19)	-0,19 (0,93)

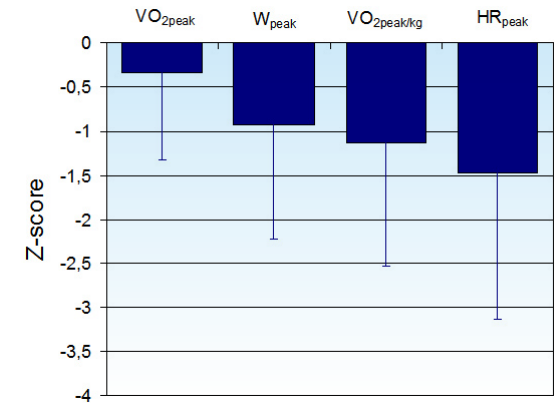


Figure 1. Exercise capacity in children with CFS (Z-scores)

Results

Children with CFS had a low-normal maximal oxygen uptake (VO_{2peak} (L/min) Z-score: -0.33 ± 1.0), and a somewhat reduced maximal work load (W_{peak}) Z-score: -0.93 ± 1.29) compared to reference values, while VO_{2peak}/kg was significantly reduced in children with CFS (Z-score: -1.13 ± 1.41). Both heart rate (Z-score 1.48 ± 1.66) and blood pressure at peak performance (systolic blood pressure Z-score: -1.09 ± 1.43 ; diastolic blood pressure -0.88 ± 1.58) were significantly reduced compared to reference values.

Conclusion

VO_{2peak}, W_{peak} and muscle strength were within normal ranges in children and adolescents with CFS.

