

Can a Structured Intervention Programme Improve the Biophysical and Psychosocial Wellbeing in Children with Congenital Heart Disease?

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Introduction

Improved survival among children with congenital heart disease (CHD) has shifted focus to the long-term physical and psychological outcomes for these patients. There is evidence that children with CHD have lower levels of daily physical activity and a higher prevalence of obesity compared to their normal peers. The benefits of an active lifestyle within the general population have been well described. This study aims to determine if a structured intervention programme can improve both physical and psychological functioning in children with CHD.

Methods

This study is a prospective randomised control trial. Patients aged between 5-10 years with CHD were identified and invited to participate. Each patient underwent baseline assessment as detailed below:

Biophysical assessments:

- Weight, height, waist measurements
- Baseline heart rate, blood pressure, oxygen saturation
- Exercise stress test – Graded cycle ergometer protocol
- Actigraph accelerometer worn for 1 week

Psychosocial assessments:

- Kidscreen27
- Strengths and Difficulties Questionnaire
- Butler Self-image Profile

Following baseline assessment patients were randomised into intervention and control groups. The intervention group were invited to attend a one day education session during which motivational interviewing techniques were used to deliver advice on diet, exercise and positive lifestyle choices. They also received an individual written exercise plan to take home and implement. The control group continued with their usual level of care. After 4 months all participants were reassessed.

Baseline Results

- 163 patients were recruited, 100 were male (61.3%) with a mean age of 8.4 years (range 5.3 – 11.5)
- Patient subgroups: 18.4% acyanotic no intervention, 37.4% acyanotic repaired, 27.6% cyanotic corrected, 16.6% cyanotic palliated
- EST duration mean 5.89mins (SD 2.02),
- Actigraph: Average time spent in MVPA (Moderate-Vigorous Physical Activity) 45mins (SD - 27.2)
- The 'cyanotic palliated' subgroup had significantly shorter EST duration and lower levels of daily MVPA
- The 'cyanotic palliated' group also scored significantly lower on HrQOL subscale, physical wellbeing

Review Results

- There was a significant improvement in performance at peak exercise in the intervention group following the exercise programme

Conclusions:

The baseline assessments suggest that overall physical and psychological wellbeing is well preserved in the majority of children aged 5-11 years with CHD. A structured intervention programme significantly improved peak exercise capacity in young children with CHD.