

Effects of exercise in addition to a family-based lifestyle intervention program on hepatic fat in children with overweight

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OBJECTIVE: Pediatric hepatic steatosis is highly prevalent and closely related to type 2 diabetes. This study aimed to determine whether the addition of supervised exercise to a family-based lifestyle and psycho-educational intervention results in greater reduction of percentage of hepatic fat (HF), adiposity, and cardiometabolic risk factors in children with overweight/obesity. **RESEARCH DESIGN AND METHODS:** The study subjects of this nonrandomized, two-arm, parallel design clinical trial were 116 overweight/obese children (10.6 ± 1.1 years of age, 53.4% girls) living in Vitoria-Gasteiz (Spain). For 22 weeks, they followed either a lifestyle and psycho-education program (control intervention [CInt], $N = 57$), consisting of two family-based education sessions/month, or the same plus supervised exercise (intensive intervention [II], $N = 59$) focused mainly on high-intensity aerobic workouts (3 sessions/week, 90 min/session). The primary outcome was the change in percentage of HF (as measured by MRI) between baseline and the end of the intervention period. Secondary outcomes included changes in BMI, fat mass index (FMI), abdominal fat (measured by DEXA), blood pressure, triglycerides, HDL, LDL, γ -glutamyl transferase, glucose, and insulin concentrations. **RESULTS:** A total of 102 children completed the trial ($N=53$ and $N=49$ in the C Int and II groups, respectively). Percentage of HF decreased only in the II group ($21.20 \pm 0.31\%$ vs. $0.04 \pm 0.30\%$, II and CInt groups, respectively), regardless of baseline value and any change in adiposity ($P < 0.01$).

BMI, FMI, abdominal fat ($P \leq 0.001$), and insulin ($P < 0.05$) were reduced in both groups.

CONCLUSIONS: Multicomponent intervention programs that include exercise training may help to reduce adiposity, insulin resistance, and hepatic steatosis in overweight/obese children. © 2019 by the American Diabetes Association.