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**Institutionen för klinisk vetenskap, intervention och teknik,  
Enheten för pediatrik**

## **Cardiometabolic health in students and young adults with mild/moderate intellectual disabilities: Results from a longitudinal follow-up study and a school intervention**

**AKADEMISK AVHANDLING**

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## **ABSTRACT**

### **Background**

Adults with intellectual disabilities (ID) develop the metabolic syndrome and cardiovascular disease more frequently than individuals without ID. The knowledge about cardiometabolic risk factors in adolescents with mild/moderate ID is scarce.

### **Aims**

The aims were 1) to examine cardiometabolic health among adolescents with ID 2) to study the progress of cardiometabolic risk factors from adolescence to young adulthood among young adults with and without ID 3) to evaluate whether a health-promoting program in an upper secondary school for students with ID could reduce cardiometabolic risk factors 4) to evaluate whether the plate model pattern, inlaid in a specially designed lunch plate, increases vegetable intake.

### **Material and Methods**

Sixty-six adolescents with mild/moderate ID, mean age 18.6y recruited from one upper secondary school for students with ID (year 1-4) were investigated in a cross sectional study (Paper I). Controls were 90 students without ID, mean age 17.8y, recruited from practical and theoretical programs at schools nearby. In the follow-up study five years later 35% (n=23) of the now young adults with ID and 33% (n =30) from the control group were re-investigated (Paper II). Measures were anthropometrics, blood pressure, DXA, fasting blood samples and a submaximal cardiovascular fitness test. The multifactorial school intervention was evaluated on last year students after two years of intervention (n = 11) and compared with their base-line data (Paper I) and with last year students in Paper I (Paper III). The special plate with the plate model inlaid was evaluated in an observational study. The intervention group (n = 27) had eaten on the special plate during school lunches for at least six months. The control group (n=62) was recruited from two other upper secondary schools for students with ID. Food intake was estimated from video recordings and digital photos (Paper IV).

### **Results**

Adolescents with ID had a higher prevalence and severity of cardiometabolic risk factors together with low cardiovascular fitness compared to the control group. At follow-up as young adults (mean age 24.3) 35% were classified as obese and 22% had developed the metabolic syndrome. Those without ID from practical educational programs also developed cardiometabolic risk factors but they did not reach the same level as the group with ID. After two years of school intervention cardiometabolic risk factors had decreased and no one were obese. Evaluation of the special plate showed no difference in vegetable intake between intervention and control group. Eighty-eight percent ate  $\geq 37.5\%$  vegetables. The intervention group chose food with a lower fat content and with more carbohydrates, had less plate waste and took fewer portions.

### **Conclusions**

Already during adolescence individuals with ID have more cardiometabolic risk factors than those without ID and as young adults individuals with ID in this study has a cardiometabolic health and cardiovascular fitness similar to the Swedish middle-age population. Actions to promote healthy living habits during school hours including the use of the special plate were promising. This indicates that it is not the ID condition itself but the effects ID has on the living conditions that causes the high cardiometabolic risk. Thus, the results in this thesis shows that initiatives especially designed for individuals with ID to promote healthier living habits are required and are likely to be effective.