

**Parallel Session RTD Line 3 / Diet and weight gain prevention:  
observation perspective**

**Lecture 5: Associations between protein intake and subsequent  
changes in weight and waist circumference in a large  
prospective study**

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**Abstract**

Background: As protein is considered to increase thermogenesis and satiety more than other macronutrients, attention has lately turned to its potential beneficial effects on weight loss and maintenance.

Objective: To investigate the associations between intake of total and subgroups (animal and plant) of protein and subsequent changes in weight or waist circumference in a large prospective study.

Methods: 89432 men and women with baseline dietary information and repeated anthropometric measures of weight and waist circumference from 5 countries participating in European Prospective Investigation into Cancer and Nutrition (EPIC) were followed for a mean of 6.5 years. Associations between intake of protein or subgroups of protein and changes in weight (grams/year) or waist circumference (cm/year) were investigated using gender-specific multiple regression analyses stratified on centre. Summed estimates were subsequently calculated using a meta-analytic approach.

Results: Intake of total and animal protein was positively associated with subsequent weight gain for both genders; the effect was strongest among women, where a 150 Kcal higher intake was associated with a yearly weight increase of 78 g (95% CI 35 to 119) and 82 g/y (95% CI: 41 to 124) for total and animal protein respectively. (For men the effects were 29 g/y (95% CI: -1 to 59) and 30 g/y (95% CI: -8 to 68) respectively). Although positive associations were seen in most centres a considerable degree of heterogeneity was still present across the centres. There was no overall association between intake of plant protein and subsequent changes in weight and also no strong indication of heterogeneity across centres.

No overall significant associations between intake of protein or any of the subgroups and changes in waist circumference were present, but as for weight changes considerable heterogeneity across centres were seen especially for total and animal protein.

Conclusion: A higher intake of protein, especially from animal origin seems to promote long term weight gain, while no clear associations were seen for waist changes. This study does not support that a diet high in total protein have beneficial effects on weight loss and maintenance, but it may suggest that type of protein could be of importance. Additional analyses investigating the main food items contributing to protein intake could be performed to provide further insight.