Gramkow, Stefanie (2015): Energy balance in the case of forest workers – discrepancy between energy expenditure and nutrient uptake at different occupational demands.

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The lack of physical activity and its consequences currently constitute an exploratory focus in sport science. In most cases studies focus on occupational groups working sedentary whilst being overweight. Professions with intensive physical activity remain mostly unconsidered. This study is based on the question how preponderance in physically active occupations like forestry is possible. Therefor the energy balance of forest workers is one research priority of this project.

In order to draw conclusions it was necessary to contrast energy consumption and energy expenditure. The enquiry of the energy expenditure was implemented with physical activity protocols and indirect calorimetry during typical occupational activities. Furthermore nutrition protocols were drawn up to determine the energy intake and enquiries of exterior conditions and of the body composition. The measurements were performed within seven days and three measurement cycles (t1=winter, t2=spring, t3=summer) to cover the seasonal variation and the different occupational activities of the test subjects.

The highest energy intake value was observed in t1 (3135 kcal per day). In all three measurement cycles the energy intake covered the energy requirement of a medium hard worker. The energy expenditure reached between 6.6 kcal/min during forest road construction and 9.4 kcal/min during wood harvesting. This corresponds to a Metabolic Equivalent of Tasks (MET) of 5-7, which can be classified as hard work.

A negative energy balance occured in all three measurement cycles These findings contradict to the changes in body composition (t3=20.81%) as well as the increasing BMI-values (t3=27.3). A physical stress profile can be assumed. It is devided into different phases, which vary in their intensity of stress and last over a longer period of time.