80 Weight gain due to muscle atrophy

Muscle atrophy due to physical inactivity (▶ Chapter 77) not only makes us lethargic and potentially ill, it also makes us fat. The following **sample calculation** demonstrates this:

In a young men, the proportion of muscle mass in relation to body weight should be around 40 %. A man with a total body weight of 75 kg theoretically should have 30 kg of muscle. This muscle mass alone is responsible for a daily energy consumption of approx. 450 kcal at the basal metabolic rate (2700 kcal total energy expenditure, two-thirds of which or 1800 kcal are burned by the basal metabolism, one-quarter of them utilized by the muscles). Accordingly, a kilogram of muscle built by training burns about 15 kcal a day even at rest: That corresponds to a weight of 650 g of fat per year. This calculation takes into account that fatty tissue binds around 10 % water. Conversely, every kilogram of muscle mass lost every year leaves a considerable amount of fat untouched in the subcutaneous compartments, which then expand more and more with increasing age. Within 10 years, that would translate into a weight gain of 6.5 kg under otherwise identical living conditions.

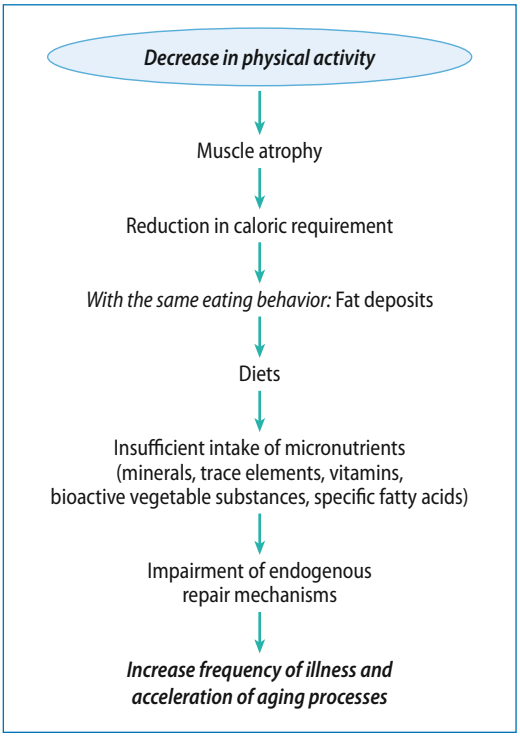

Fig. 80.1 Consequences of physical inactivity

> The more muscle mass that can be mobilized during physical activity, the greater is the energy expenditure and the more adipose tissue melts off.

The active metabolic rate benefits from muscle buildup as well. Thus, because younger athletes are usually equipped with more muscle mass than older ones, they usually don't have to exercise as much as older ones to lose the same amount of weight.

D. Mathias, *Staying healthy from 1 to 100*, DOI 10.1007/978-3-662-49195-9_80,