The energy expenditure (24h total energy expenditure, TEE) of a healthy individual or a patient is a vital reference point for nutritional therapy to maintain body mass. TEE is usually determined by measuring resting energy expenditure (REE) by indirect calorimetry or by estimation with the help of formulae like the formula of Harris and Benedict with an accuracy of +/-20%. Further components of TEE (PAL, DIT) are estimated afterwards. TEE in intensive care patients is generally only 0-7% higher than REE, due to a low PAL and lower DIT. While diseases, like particularly sepsis, trauma and burns, cause a clinically relevant increase in REE between 40-80%, in many diseases, TEE is not markedly different from REE. A standard formula should not be used in critically ill patients, since energy expenditure changes depending on the course and the severity of disease. A clinical deterioration due to shock, severe sepsis or septic shock may lead to a drop of REE to a level only slightly (20%) above the normal REE of a healthy subject. Predominantly immobile patients should receive an energy intake between 1.0-1.2 times the determined REE, while immobile malnourished patients should receive a stepwise increased intake of 1.1-1.3 times the REE over a longer period. Critically ill patients in the acute stage of disease should be supplied equal or lower to the current TEE, energy.
intake should be increased stepwise up to 1.2 times (or up to 1.5 times in malnourished patients) thereafter.