

Theory: The composition of the body

a. Fat free mass

The fat free mass of an adult is built as follows:

- Water 73%
- Bone mass 20%
- Muscle mass 50%

(De Wijn & Hekkens, 1985, Dutch)

The ratio extracellular water/ intracellular water increases when people get older. There is a shift from the intracellular part to the extracellular part. In individuals between 50 and 60 years old, this ratio was 1.0 for women and 0.8 for men (Shenkin 1996).

The amount of fat free mass from the ideal weight can be used as a reference for the amount of fat free mass in kg. For women this is 70% and for men it is 80%. As the amount fat free mass of a patient is less than 90 % of this amount, the patient can be classified as depleted.

b. Reference values of body water

Reference values based on the white American population for total body water, fat free mass and body cell mass per age category and sexes are mentioned in Roche 1996, table 11.4 en 11.5, pg. 212. This book gives an overview of the water distribution of a young man on pg. 26 table 2.1. Total body water is 40 kg, 57% is intracellular water and 43 % is extracellular water.

The amount of water in the body as a percentage of the body weight varies from 70% - 75% at birth till 40% in obese adults. A 15% reduction of body water by dehydration is life threatening, according to Roche chapter 2.

c. Reference values of fat percentage

A mean Dutch young man has a percentage of 15% body fat, in young women this is 25%. (pg. 41, de Wijn, Dutch) Table 1.11, blz.16 van Handbook of Clinical Dietetics shows that normal values for women are 20-31% and for men 12-21%, variation for different age categories is seen.

	age				
	0-30yr	31-40yr	41-50yr	51-60yr	61-100yr
men	12-18	13-19	14-20	16-20	17-20
women	20-26	21-27	22-28	22-30	22-31

Source: Staff of R.J.L. Systems, Inc. (64)

References

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