

FORMELÜBERSICHT FÜR DIE BESTIMMUNG VON KÖRPERWASSER TBW, FETTMASSE FM ODER FETTFREIER MASSE FFM BEI KINDERN UND JUGENDLICHEN:

Anthropometrie:

Lohmann (1986):	$FM (kg) = wt \times (5.28/D) - 4.86$
Deurenberg et al. (1990):	$FM (\%) = ((562 - 4.2 (\text{age (years)} - 2))/D - (525 - 4.7 (\text{age (years)} - 2))),$ where D is body density: Boys, $D (g/ml) = 1.690 - 0.0788 \times (\log (\text{sum of four skinfolds}))$ Girls, $D (g/ml) = 1.2063 - 0.0999 \times (\log (\text{sum of four skinfolds}))$
Slaughter et al. (1988):	Summe von HFD Subscapula + Triceps > 35mm: Jungen: $BF (\%) = 0.783 \times (\text{HFD Subscapula} + \text{Triceps}) + 1.6$ Mädchen: $BF (\%) = 0.546 \times (\text{HFD Subscapula} + \text{Triceps}) + 9.7$ Summe von HFD Subscapula + Triceps < 35mm: Jungen: $BF (\%) = 1.21 \times (\text{HFD Subscapula} + \text{Triceps}) - 0.008 \times (\text{HFD Subscapula} + \text{Triceps})^2 + k^*$ Mädchen: $BF (\%) = 1.33 \times (\text{HFD Subscapula} + \text{Triceps}) - 0.013 \times (\text{HFD Subscapula} + \text{Triceps})^2 - 2.5$

Bioelektrische Impedanz Analyse:

Cordain et al. (1988):	$FFM = 6.86 + 0.81 \times (Ht^2/R)$ (Ht in cm)
Davies et al. (1988):	$TBW = -0.5 + 0.60 \times (Ht^2/R)$ (Ht in m)
De Lorenzo et al. (1998):	$FFM = 2.33 + 0.588 \times (Ht^2/R) + 0.211 \times wt$ (Ht in cm)
Deurenberg et al. (1989):	$FFM = 0.430 \times 10^4 \times Ht^2/R + 0.354 \times wt + 0.9 \times \text{sex}$ (sex: 1 = männlich, 2 = weiblich; Ht in m)
Deurenberg et al. (1990):	Jungen und Mädchen im Alter von 7-9 Jahren: $FFM = 0.640 \times 10^4 \times (Ht^2/R) + 4.83$ Mädchen von 10-12 und Jungen von 10-15 Jahren: $FFM = 0.488 \times 10^4 \times (Ht^2/R) + 0.221 \times wt + 12.77 \times Ht - 14.7$ Mädchen älter als 13 und Jungen älter als 16 Jahre: $FFM = 0.258 \times 10^4 \times (Ht^2/R) + 0.375 \times wt + 6.3 \times \text{sex} + 10.5 \times Ht - 0.164 \times \text{age} - 6.5$ (sex: 1 = männlich, 2 = weiblich; Ht in m)
Fjeld et al. (1990):	$TBW = 0.76 + 0.18 \times (Ht^2/R) + 0.39 \times wt$ (Ht in cm)
Houtkooper et al. (1989):	$FM (\%) = -1.11 \times (Ht^2/R) + 1.04 \times wt + 15.16$ (Ht in cm)
Houtkooper et al. (1992):	$FFM = 0.61 \times (Ht^2/R) + 0.25 \times wt + 1.31$ (Ht in cm)
Kushner et al. (1992):	$TBW = 0.593 \times (Ht^2/R) + 0.065 \times wt + 0.04$ (Ht in cm)
Schaefer et al. (1994):	$FFM = 0.65 \times (Ht^2/R) + 0.68 \times \text{age} + 0.15$ (Ht in cm)
Wabitsch et al. (1996):	$TBW = 0.35 \times (Ht^2/R) + 0.27 \times \text{age} + 0.14 \times wt - 0.12$ (Ht in m)
Wühl et al. (1996):	$TBW = 1.99 + 0.144 \times (Ht^2/R) + 0.40 \times wt$ (Ht in cm)

Anthropometrie kombiniert mit Bioelektrischer Impedanz Analyse:

Goran et al. (1996):	$FFM (kg) = (0.16 \times (Ht^2/R)) + (0.67 \times wt) - (0.11 \times \text{TSF (mm)}) - (0.16 \times \text{SSF (mm)}) + (0.43 \times \text{sex}) + 2.41$ (sex: 1 = männlich, 2 = weiblich; Ht in cm)
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wt = weight (kg); Ht = height (in m oder cm); TBW = Total Body Water in l; FFM = Fat-Free-Mass in kg; FM = Fat Mass bzw. BF = Body Fat = Weight - FFM; TSF = Triceps Skinfold Thickness (mm); SSF = Subscapular skinfold thickness (mm); Age = years, HFD = Hautfaltendicke. k = Konstante nach Tanner-Reifestadium*

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