

# Description of AMRA Profiler UK Biobank measurements

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## Abdominal Adipose Tissue

The volume of adipose tissue is measured in litres using magnetic resonance imaging as described in [1]. The total abdominal adipose tissue (TAAT) is separated into intra-abdominal (IAAT) and abdominal subcutaneous (ASAT) adipose tissue.

### Intra-Abdominal Adipose Tissue

IAAT is the volume in litres of adipose tissue within the abdominal cavity.

### Abdominal Subcutaneous Adipose Tissue

ASAT is the volume in litres of subcutaneous adipose tissue from the level of the top of femoral head to the top of vertebrae T9.

### Total Abdominal Adipose Tissues

TAAT is the sum of IAAT and ASAT in litres.

### Intra-Abdominal Fat Ratio

The intra-abdominal fat ratio (IAFR) is the fraction of intra-abdominal adipose tissue in the abdominal region:

$$\text{IAFR} = \frac{\text{IAAT}}{\text{IAAT} + \text{ASAT}}$$

## Thigh Muscle Volume

The volume of the thigh muscles is measured in litres using magnetic resonance imaging as described in [2]. The muscle volume is defined as the *lean muscle volume*, being the volume enclosing the muscle subtracted by the volume of adipose tissue within the same volume. The total thigh muscle volume is separated for each left and right leg into anterior and posterior thigh muscle group volumes respectively.

### Anterior Thigh Muscle Group

The anterior thigh muscle comprises the following muscles:

- Quadriceps femoris
- Sartorius

### Posterior Thigh Muscle Group

The posterior thigh muscle comprises the following muscles:

- Hamstring
- Gluteus
- iliacus
- adductor

### References

- [1] Borga et al. "Validation of a Fast Method for Quantification of Intra-abdominal and Subcutaneous Adipose Tissue for Large Scale Human Studies" , *NMR in Biomedicine*, In Press 2015.
- [2] Karlsson et al. "Automatic and quantitative assessment of regional muscle volume by multi-atlas segmentation using whole-body water-fat MRI" , *Journal of Magnetic Resonance Imaging*, 41(6): 1558-1569, 2015.