# **Yeadon Measurements**

#### Key:

#### denotes a joint centre

Segments P, T, C, A1, A2, B1, B2, J1, J2, K1, K2 are separated by alternating colors.

Levels are denoted as L<s># with <s> roughly denoting a body part, and # denoting the #-th level in the segment. Measurements are denoted as L<s>#<t>, with <t> denoting the type of measurement.

### There are 4 types of measurements:

L denotes a length measurement, not necessarily measured from previous level:

Ls1L-Ls5L measured from Ls0; Ls6L-Ls8L measured from Ls5

La2L-La4L measured from La0; La5L-La7L measured from La4 (same for segment b)

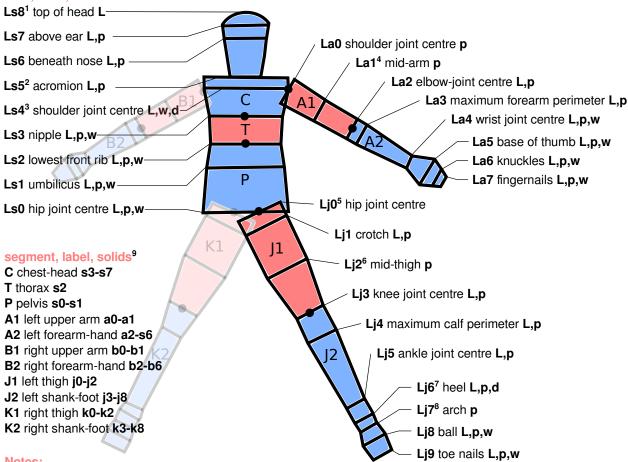
Lj1L, Lj3L-Lj5L measured from Lj0; Lj6L, Lj8L-Lj9L measured from Lj5 (same for segment k)

**p** denotes a perimeter measurement, must have  $2 < \mathbf{p/w} < \pi$ 

w denotes a width (medio-lateral, or side to side) measurement

d denotes a depth (anterior-posterior, or front to back) measurement

#### level, label, measurements needed



#### Notes:

Total mass can be measured in order to scale the default densities used for the solids (otherwise, mass is estimated). 1 s0 is the only semi-ellipsoidal solid.

- 2 two stadia at this level, one for s4 and one for s5. The parameters for the s4 stadium are calculated from Ls4's stadium. Ls5 perimeter measured around neck.
- 3 depth is measured in lieu of perimeter since arms interfere.
- 4 La1L is not measured, but is instead set as half of La2L.
- **5** stadium (circle) parameter calculated from the stadium at Ls0.
- 6 Lj2L is not measured, but is instead set as the average of Lj1L and Lj3L.
- 7 Lj6's (and Lk6's) stadia are the only stadia oriented anteroposteriorly.
- 8 Lj7L is not measured, but is instead set as the average of Lj6L and Lj8L.
- 9 Yeadon's 1990 paper indexes the solids from 1, while this formulations indexes from 0.

Yeadon, M. R. (1990). The simulation of aerial movement-ii. a mathematical inertia model of the human body. Journal of Biomechanics, 23:67-74.

### **Unit conversion**

Name:	Date:
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measToMeters (number to convert from measurement units into meters):

## **Measurement input**

measurement input		
Torso	Left arm	Right arm
Ls1L:	La2L:	Lb2L:
Ls2L:	La3L:	Lb3L:
Ls3L:	La4L:	Lb4L:
Ls4L:	La5L:	Lb5L:
Ls5L:	La6L:	Lb6L:
Ls6L:	La7L:	Lb7L:
Ls7L:		
Ls8L:	La0p:	Lb0p:
	La1p:	Lb1p:
Ls0p:	La2p:	Lb2p:
Ls1p:	La3p:	Lb3p:
Ls2p:	La4p:	Lb4p:
Ls3p:	La5p:	Lb5p:
Ls5p:	La6p:	Lb6p:
Ls6p:	La7p:	Lb7p:
Ls7p:	·	·
	La4w:	Lb4w:
Ls0w:	La5w:	Lb5w:
Ls1w:	La6w:	Lb6w:
Ls2w:	La7w:	Lb7w:
Ls3w:		
Ls4w:	Left leg	Right leg
	Lj1L:	Lk1L:
Ls4d:	Lj3L:	Lk3L:
	Lj4L:	Lk4L:
	Lj5L:	Lk5L:
	Lj6L:	Lk6L:
<b>Density Correction</b>	Lj8L:	Lk8L:
to ignore, set to 0	Lj9L:	Lk9L:
Total mass (kg):		
	Lj1p:	Lk1p:
	Lj2p:	Lk2p:
	Lj3p:	Lk3p:
	Lj4p:	Lk4p:
	Lj5p:	Lk5p:
	Lj6p:	Lk6p:
	Lj7p:	Lk7p:
	Lj8p:	Lk8p:
	Lj9p:	Lk9p:
	Lj8w:	Lk8w:
	Lj9w:	Lk9w:
	Lj6d:	Lk6d: