**Table 2. Summary of Aim 1a**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Model | Method | Variables | Adjusted R^2 | AIC | BIC | Coefficient of gender on outcome | Confidence interval of gender | P value for gender |
| Aim 1a-1: predict body build weight with all measurements | | | | | |  |  |  |
| Model 1a-1-1 | Model selection with `best` argument in `vselect` using all skeletal measurements, height, age and gender | Skeletal Biacromial | 0.8908 | -1345.17 | -1302.89 | Not available | Not available | Not available |
| Skeletal Biiliac |  |  |  |  |  |  |
| Skeletal Bitrochanteric |  |  |  |  |  |  |
| Skeletal chest depth |  |  |  |  |  |  |
| Skeletal chest |  |  |  |  |  |  |
| Skeletal wrist |  |  |  |  |  |  |
| Skeletal knee |  |  |  |  |  |  |
| Age |  |  |  |  |  |  |
| Height |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| Model 1a-1-2 | Replace skeletal measures with girth measures for knee, ankle, and wrist, and apply the same algorithm as in model 1-1a-1 | Skeletal Biacromial | 0.9170 | -1481.04 | -1426.07 | 1.02 | (0.99, 1.04) | 0.15 |
| Skeletal Biiliac |  |  |  |  |  |  |
| Skeletal Bitrochanteric |  |  |  |  |  |  |
| Skeletal chest depth |  |  |  |  |  |  |
| Skeletal chest |  |  |  |  |  |  |
| Skeletal elbow |  |  |  |  |  |  |
| Knee girth |  |  |  |  |  |  |
| Ankle girth |  |  |  |  |  |  |
| Wrist girth |  |  |  |  |  |  |
| Age |  |  |  |  |  |  |
| Height |  |  |  |  |  |  |
| Gender |  |  |  |  |  |  |
| Aim 1a-2: predict the body build weight with “sum, square and multiple” | | | | | | |  |  |
| Model 1a-2-1 | Use all girth measures, first sum them up, square, then multiply that by the height, among gender and age as predictors | Shoulder girth | 0.9591 | -1851.26 | -1838.58 | 1.00 | (0.99, 1.01) | 0.78 |
| Chest girth |  |  |  |  |  |  |
| Waist girth |  |  |  |  |  |  |
| Navel girth |  |  |  |  |  |  |
| Hip girth |  |  |  |  |  |  |
| Thigh girth |  |  |  |  |  |  |
| Bicep girth |  |  |  |  |  |  |
| Forearm girth |  |  |  |  |  |  |
| Knee girth |  |  |  |  |  |  |
| Calf girth |  |  |  |  |  |  |
|  |  | Ankle girth |  |  |  |  |  |  |
|  |  | Wrist girth |  |  |  |  |  |  |
|  |  | Age |  |  |  |  |  |  |
|  |  | Gender |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| Model 1a-2-2 | The same model as Model 1a-2-1, except that gender is dropped | Shoulder girth | 0.9592 | -1853.18 | -1844.73 | Not available | Not available | Not available |
| Chest girth |  |  |  |  |  |  |
| Waist girth |  |  |  |  |  |  |
| Navel girth |  |  |  |  |  |  |
| Hip girth |  |  |  |  |  |  |
|  | Thigh girth |  |  |  |  |  |  |
|  | Bicep girth |  |  |  |  |  |  |
|  | Forearm girth |  |  |  |  |  |  |
|  | Knee girth |  |  |  |  |  |  |
|  |  | Calf girth |  |  |  |  |  |  |
|  |  | Ankle girth |  |  |  |  |  |  |
|  |  | Wrist girth |  |  |  |  |  |  |
|  |  | Age |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| Model 1a-2-3 | Use all girth measures, first multiply each measure by the height, sum them up, and then square it, together with gender and age as predictors | Shoulder girth | 0.9253 | -1545.84 | -1533.15 | 1.02 | (1.01, 1.04) | <0.0001 |
| Chest girth |  |  |  |  |  |  |
| Waist girth |  |  |  |  |  |  |
| Navel girth |  |  |  |  |  |  |
| Hip girth |  |  |  |  |  |  |
| Thigh girth |  |  |  |  |  |  |
| Bicep girth |  |  |  |  |  |  |
| Forearm girth |  |  |  |  |  |  |
| Knee girth |  |  |  |  |  |  |
| Calf girth |  |  |  |  |  |  |
| Ankle girth |  |  |  |  |  |  |
| Wrist girth |  |  |  |  |  |  |
| Age |  |  |  |  |  |  |
| Gender |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| Model 1a-2-4 | Use only three constant girth measures, first sum them up, square, then multiply that by the height, among gender and age as predictors | Knee girth | 0.8228 | -1105.64 | -1088.72 | 1.06 | (1.04, 1.08) | <0.0001 |
| Ankle girth |  |  |  |  |  |  |
| Wrist girth |  |  |  |  |  |  |
| Age |  |  |  |  |  |  |
| Gender |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| Model 1a-2-5 | Use only three constant girth measures, first multiply each measure by the height, sum them up, and then square it, together with gender and age as predictors | Knee girth | 0.7981 | -1041.32 | -1028.63 | 1.05 | (1.03, 1.07) | <0.0001 |
| Ankle girth |  |  |  |  |  |  |
| Wrist girth |  |  |  |  |  |  |
| Age |  |  |  |  |  |  |
| Gender |  |  |  |  |  |  |