ABSTRACT

The purposes of this study were firstly, to determine the anthropometric variables that differ significantly (p \( \leq 0.05 \)) between successful and less successful young, South-African female gymnasts who participate in the floor item and secondly, to determine the anthropometric variables that contribute to the floor item performance of those gymnasts. Twelve young, female gymnasts (13.39 ± 2.14 years) from a gymnastics club in the North-West Province of South Africa participated in the study. Only gymnasts who participated at level 6-9 and junior as well as senior Olympic level were selected to participate in the study. Sixty-one anthropometric variables were measured on the dominant side of the body according to the methods of Norton et al. (1996). Independent t-tests revealed that the gymnast who obtained the highest marks (top 5) during the execution of the floor item during the South African Gymnastics Championships had statistical and practical significantly larger relaxed and flexed upper arm, wrist and ankle circumferences as well as mesomorphy values than the less successful gymnasts. The cluster analysis-reduced variables were used to perform a forward, stepwise multiple regression analysis which showed that bi-trochanterion (34.86%), femur (17.07%) and bi-deltoid breadth (4.93%); front thigh skinfold (19.71%); fat percentage (7.68%); acromial-radial (4.09%) and foot length (0.05%) as well as waist (6.68%), chest (2.92%) and gluteal thigh circumference (2.02%) contributed 100% to the variance in gymnasts’ floor performances. The contributions of bi-trochanterion breadth, femur breadth, gluteal thigh circumference and foot length to floor-gymnastic performance were significant. Only gluteal thigh circumference showed a negative relationship with floor-gymnastic performance. The conclusion that can therefore be drawn is that larger limb and torso circumferences, waist breadths, fat percentages and front thigh skinfolds, as well as upper arm and foot lengths are important anthropometric floor performance determinants for young, South African female gymnasts and should be included in the sports-scientific testing protocols of gymnasts.

Key words: Gymnastics; Floor; Anthropometry; Performance; Females; Girls.