Analysis of anthropometric characteristics and jumping ability in junior top level volleyball athletes. Comparison by role

**Introduction**

- The volleyball is a situational sport classified among activities lying on alternative anaerobic and aerobic processes, with an important participation of the muscular mass and anaerobic processes, with its important and demanding way to achieve the goal.
- Today, physical qualities associated with volleyball achievement seem to be decisive in determining the performance of the sport. The force, speed, and power are important characteristics to consider in the training process and the performance analysis of volleyball players.
- In evaluating and detecting talent perspectives, it is essential to have reference data on the performance of the best athletes.

**Methods**

- Data were collected from 42 volleyball players who trained with the Italian national junior teams. Players were divided into four groups:
  - Outside hitters (n = 14; age = 16.5 ± 1.4 y)
  - Middle blockers (n = 15; age = 16.1 ± 1.1 y)
  - Setters (n = 7; age = 16.4 ± 1.3 y)
  - Non-specific players (n = 6; age = 17.5 ± 8 y)

- Three kinds of data were collected:
  - Anthropological data (height, weight, body-fat, percentage of body-fat, body-mass index, body-mass index-for-age, body-mass index-for-height, body-mass index-for-height-for-age, body-mass index-for-height-for-body-fat, body-mass index-for-height-for-body-mass-index)
  - Visible data (peak height, peak height-for-age, peak height-for-age-for-body-mass-index, peak height-for-age-for-body-mass-index-for-height, peak height-for-age-for-body-mass-index-for-height-for-body-fat, peak height-for-age-for-body-mass-index-for-height-for-body-mass-index-for-age, peak height-for-age-for-body-mass-index-for-height-for-body-mass-index-for-height-for-body-fat, peak height-for-age-for-body-mass-index-for-height-for-body-mass-index-for-height-for-body-fat-for-age, peak height-for-age-for-body-mass-index-for-height-for-body-mass-index-for-height-for-body-fat-for-age-for-body-mass-index)
  - Visible data (peak height, peak height-for-age, peak height-for-age-for-body-mass-index, peak height-for-age-for-body-mass-index-for-height, peak height-for-age-for-body-mass-index-for-height-for-body-fat, peak height-for-age-for-body-mass-index-for-height-for-body-mass-index-for-age, peak height-for-age-for-body-mass-index-for-height-for-body-mass-index-for-height-for-body-fat, peak height-for-age-for-body-mass-index-for-height-for-body-mass-index-for-height-for-body-fat-for-age, peak height-for-age-for-body-mass-index-for-height-for-body-mass-index-for-height-for-body-fat-for-age-for-body-mass-index)

**Results**

- Significant differences between groups were found for height (p = 0.001), R1 (p = 0.02) and R2 (p = 0.05). The anthropological characteristics were significantly different for middle blockers (MB) than for setters (S) (Table 1).
- Comparing players' performance on the block tests, no significant differences appeared between groups (Table 2).
- Results of the test for the comparison of the jumping ability showed significant differences in Va (p = 0.001) with group MB performing better than groups S and U (non-specific players), and in Vb (p = 0.05) with group MB showing significantly better results.
- Analysis of the correlation matrix showed that height and weight were strongly correlated, as well as with R1 and R2 (Table 2).
- Performance on block tests and on vertical jumps were with each other correlated but no correlation was observed between results of block and vertical jumps (Table 2).
- While block tests gathered information provides an assessment of the jumping ability without connection to the specific skills, vertical tests give more specific information about the athlete's ability to use in a specific condition.
- High correlations were identified between anthropometric and vertical jumps for the correlation matrices, and the vertical jumps for the correlation matrices (Table 2).
- As confirmed by a multiple regression analysis all groups of variables were with each other correlated, except SHF which is only inversely correlated to vertical performance.