

## Comparative Characteristics of Body Composition in Sportsperson and Inactive Young Adults

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### Introduction

Changes in lifestyle patterns among young adults have significantly reduced levels of daily physical activity, which have led to negative consequences affecting metabolic processes and structural body components. Since body composition reflects the balance between muscle, fat, and metabolically active tissues, its assessment provides important information which can improve preventive healthcare and sports medicine.

### Aim

The purpose of this research was to identify differences in body composition indicators between individuals regularly doing sports activity and those not involved in structured physical activity.

### Materials and Methods

The research included young adults divided into two groups depending on their level of physical activity. The sportsmen group (group 1) consisted of individuals regularly engaged in physical exercise averaging  $1.93 \pm 0.47$  hours per day while students in second group did not exercise or attended the gym for less than 1 hour per week. The mean age of participants was  $22.3 \pm 1.77$  years and the mean age of non-athletes (group 2) was  $19.75 \pm 1.13$  years ( $p=0.064$ ). Body composition assessment was performed using bioimpedance analysis. The analysis focused on specific basal metabolism, body mass index, fat mass, lean mass, skeletal muscle mass, active cellular mass, basal metabolic rate, total body fluid, and bone mineral density. Statistical analysis was performed using independent sample comparison methods, and significance was set at  $p < 0.05$ .

### Results

The research demonstrated significantly higher skeletal muscle mass ( $27.94 \pm 3.04$  kg vs  $17.99 \pm 4.41$  kg,  $p < 0.001$ ), lean mass ( $53.37 \pm 6.35$  kg vs  $40.14 \pm 7.55$  kg,  $p < 0.001$ ), and active cellular mass ( $31.95 \pm 5.36$  kg vs  $20.99 \pm 4.33$  kg,  $p < 0.001$ ) compared to the physically inactive group. Indicators of metabolic intensity were also significantly elevated among sportsmen, including specific basal metabolism ( $880.51 \pm 102.49$  vs  $776.21 \pm 58.31$  kcal/m<sup>2</sup>/day,  $p < 0.01$ ) and basal metabolic rate ( $1625.43 \pm 169.37$  vs  $1279.25 \pm 136.82$  kcal/day,  $p < 0.001$ ). Total body fluid levels were significantly higher in the physically active group ( $39.07 \pm 4.65$  kg vs  $29.25 \pm 5.44$  kg,  $p < 0.001$ ). In contrast, fat mass was significantly greater in the group of non-athletes ( $25.28 \pm 13.93$  kg vs  $19.69 \pm 10.20$  kg,  $p < 0.05$ ). Bone mineral density averaged  $2.71 \pm 2.86$  kg in sportsmen and  $1.96 \pm 0.42$  kg in controls; however, this difference did not reach statistical significance ( $p > 0.05$ ).

### Conclusion

The result indicate that regular participation in sports is associated with more favourable structural and metabolic body parameters. The findings confirm the protective and preventive role of systematic physical activity in maintaining musculoskeletal integrity and metabolic health among young adults.