

# Comparison of strength and speed characteristic between two young ice hockey team with similar sport level

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## Introduction

Ice hockey is a physically demanding, high-intensity skating efforts in which technical and tactical skill play an important role [1]. Players must have excellent physical conditioning and also a high level of muscle strength, which has an impact on the player's performance during the game [2]. Also maximum strength has a strong influence on speed-strength performances such as sprints [2]. However, little research has been conducted on young age hockey players to analyze relevant key performance indicators.

**The aim of the study was to determine the differences in the level of strength and speed on-ice and of-ice in two male hockey teams.**

## Material and methods

The study involved 60 young male ice hockey players (two hockey teams playing in the MHL – Młodzieżowa Hokej Liga). SMS PZHL Katowice had mean age  $18.7 \pm 0.9$ ; height  $183.2 \pm 4.9$  [cm] and weight  $81.9 \pm 9.2$  [kg]. UHT Sabers Oświęcim team had mean age  $17 \pm 0.7$ ; height  $180.5 \pm 4.1$  [cm] and weight  $75 \pm 5.4$  [kg]. To assess strength and speed potential, were used off-ice tests: back squat, deadlift, bench press and countermovement jump (CMJ), and on-ice tests: 30-meter sprint and slap shot speed. The t-Student test for independent samples was used to assess differences in selected variables.

**Tabele 1. Comparison of key performance indicators.**

| Variable         | SMS PZHL Katowice (n = 30) |               | UHT Sabers Oświęcim (n = 30) |               | Differences between group |      |
|------------------|----------------------------|---------------|------------------------------|---------------|---------------------------|------|
|                  | Mean $\pm$ SD              | (95% CI)      | Mean $\pm$ SD                | (95% CI)      | p-value                   | ES   |
| Back squat [kg]  | 131.3 $\pm$ 20.1           | 123.8 - 138.8 | 137.8 $\pm$ 26.2             | 128.0 - 147.6 | 0.29                      | 0.32 |
| Bench press [kg] | 75.9 $\pm$ 9.8             | 72.2 - 79.5   | 94.8 $\pm$ 13.9              | 89.6 - 99.9   | < 0.01                    | 1.92 |
| Deadlift [kg]    | 143 $\pm$ 16.5             | 136.8 - 149.2 | 130.3 $\pm$ 23.7             | 121.5 - 139.1 | < 0.05                    | 0.77 |
| CMJ [cm]         | 43.7 $\pm$ 5               | 41.9 - 45.6   | 41.6 $\pm$ 6.4               | 39.2 - 44.0   | 0.15                      | 0.44 |
| Slap shot [km/h] | 111.2 $\pm$ 6.5            | 108.8 - 113.6 | 124.4 $\pm$ 9.3              | 121.0 - 127.9 | < 0.01                    | 2.04 |
| 30 m sprint [s]  | 4.5 $\pm$ 0.2              | 4.4 - 4.6     | 4.4 $\pm$ 0.3                | 4.3 - 4.5     | 0.32                      | 0.29 |

## Results

The off-ice results were as follows: maximum strength in the bench press test differed statistically significantly between teams ( $p < 0.01$ ,  $t = -6.09$ ), the same situation occurred in the deadlift test ( $p < 0.05$ ,  $t = 2.41$ ). At the same time, there were no significant differences between the teams in the back squat test ( $p = 0.29$ ,  $t = -1.07$ ). The CMJ jumping test also showed no significant differences between the teams ( $p = 0.15$ ,  $t = 1.47$ ). The on-ice results were as follows: slap shot speed differed significantly between teams ( $p < 0.01$ ,  $t = -6.39$ ), while there were no differences in the 30m sprint test ( $p = 0.32$ ,  $t = 0.99$ ).

## Conclusions

Statistically significant differences were found between the teams in the bench press, deadlift and in the slap shot. The reason for this may be the different training approach at the two clubs in the strength and conditioning training of the players.

## References

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