

## DIFFERENCES BETWEEN WINNING AND LOSING TEAMS IN MEN'S EUROPEAN TOP-LEVEL VOLLEYBALL

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Top-level volleyball matches are often very even and the purpose of this study was to examine which skills have the biggest effects on winning in men's international top-level volleyball.

In total ten men's European top-level volleyball matches (seven matches from the Men's European Olympic Qualification Tournament in 2004 and three matches from Men's European Championships in 2003), 39 sets were analyzed by Data Volley - game analysis software. The teams that played in these matches were RUS (1 match), NED (3 matches), FRA (2 matches), GER (3 matches), BUL (2 matches), ESP (4 matches), POL (2 matches) and FIN (3 matches). Serve, reception and attack were analysed using a six level scale. Attacks were divided to attacks after reception and attacks after dig. Also the number of successful blocks and the number of opponent's errors were analysed. The success and error percentages were calculated for each team in each match and in each set. The t-test for independent samples was used to compare the means and standard deviations of the winning and losing teams in every match and set.

When analyzing the whole match, the winning teams were significantly better in overall attacking (success% 55.6 % vs. 50.0 %\*, error% 14.9 % vs. 19.4 %\*), attacking after reception (success% 59.3 % vs. 52.0 %\*, error% 12.6 % vs. 18.1 %\*) and blocking (3.0 blocks/set vs. 1.9 blocks/set\*). The success and error percentages for serve (success% 27.1 % vs. 26.5 %, error% 17.0 % vs. 18.3 %), reception (success% 67.3 % vs. 67.3 %; error% 8,7 % vs. 10,1 %) and the number of opponent's errors did not differ significantly (Figure 1).

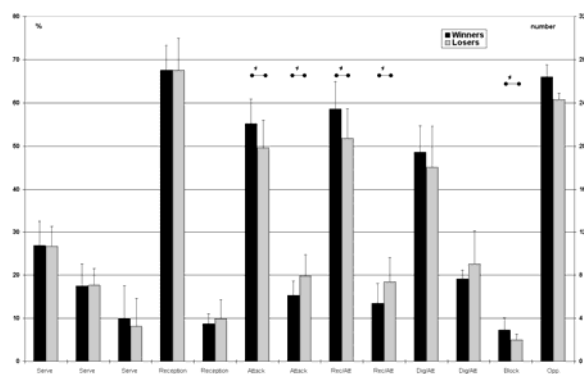


Fig. 1. Match winners and losers success and error percentages in serving, receiving and attacking, the number of successful block actions and the number of opponent's errors (\* =  $p < 0.05$ ).

In comparing the winning and losing teams of the sets separately, the winners were found to be significantly better in serving efficacy (success% - error%; 11,6 % vs. 5,7 %\*), overall attacking (success% 56,8 % vs. 49,4 %\*\*\*, error% 13,5 % vs. 20,9 %\*\*\*), attacking after reception (success% 60,6 % vs. 50,6 %\*\*\*, error% 11,2 % vs. 19,5 %\*\*\*) and blocking (3,1 blocks/set vs. 1,8 blocks/set\*\*\*). The set winners had a smaller error percentage in reception (7,6 % vs. 10,6 %\*). Also the number of opponent's errors was significantly higher for winning teams (7,3 errors/set vs. 5,7 errors/set\*\*). The success and error percentages for serve (success% 28,2 % vs. 24,9 %, error% 16,7 % vs. 19,1 %) and the success percentages for reception (success% 68,8 % vs. 65,9 %) did not differ significantly (Figure 2).

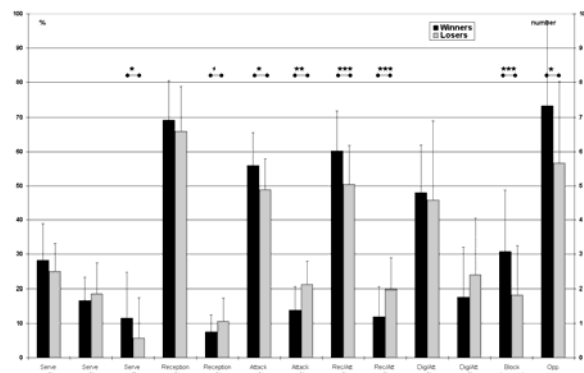


Fig. 2. Set winners and losers success and error percentages in serving, receiving and attacking and the number of successful block actions and the number of opponent's errors (\* =  $p < 0.05$ , \*\* =  $p < 0.01$ , \*\*\* =  $p < 0.001$ ).

The results of this study suggest that attacking and blocking were the most important skills concerning winning a match or a set in international top-level men's volleyball. Especially succeeding in attacking after reception was found to be important. Also serving efficacy and the number of opponent's errors had an effect on winning a set.