

# IDEAL DIVE TECHNIQUE IN HIGH ONE-HANDED SAVES: TOP HAND VERSUS BOTTOM HAND

Smith, N. 1) & Shay, R. 1)

1) Chichester Centre for Applied Sport and Exercise Sciences, Chichester, UK

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## **Introduction**

Modern athletic soccer goalkeeping has left coaching manuals missing many of the saves seen regularly within the top leagues. One of the commonly seen saves, the 'one handed, aerial save,' has two variations, 'The Bottom Hand Technique' (BHT) and the 'The Top Hand Technique' (THT). This study quantified the effectiveness of each technique from the goalkeeper centre of mass (CoM) and relative hand position during high, diving saves.

## **Method**

Pre-test analysis recorded the frequency of saves across goalkeeping areas [GA] from the English Premier League. Subsequently, a 2D analysis of 8 semi professional goalkeepers, aged 22 ( $\pm$  4 years) was conducted from kicked serves into two of the designated GA, with three successful saves for both BHT and THT. Footage was sampled at 50Hz outdoors on natural turf with a full body 14 segment model. Trials were processed (Vicon Motus) with a quintic spline and CoM values computed. The two techniques were compared using paired samples T-test's.

## **Results**

Within the top outer GA: Using BHT, the CoM attained greater horizontal hand ( $p=0.005$ ), horizontal CoM ( $p=0.05$ ), and horizontal distance from CoM to hand ( $p=0.002$ ), in addition to greater height between Toe-off and ball contact ( $p=0.07$ ). Greater vertical hand ( $p=0.03$ ) and vertical CoM distance ( $p<0.001$ ) came with THT.

At the top middle GA: BHT showed greater horizontal hand ( $p=0.03$ ), and horizontal CoM to hand position ( $p=0.01$ ). THT gave greater vertical CoM to hand distance ( $p=0.03$ ).

## **Conclusion**

BHT corresponds best to the principles of good diving technique, and is recommended by the authors especially where the goalkeeper must cover large horizontal distances. However, THT can be used when the initial dive occurs either too early, or at too low a trajectory for the more technically sound BHT save.