

# MATCH ANALYSIS OF ELITE LEVEL GOALBALL IN MEN AND WOMEN

Lehto, H.<sup>1</sup>, Häyrynen, M.<sup>1</sup>, Blomqvist, M.<sup>1</sup>, Juntunen, R.<sup>2</sup>,  
Laitinen, T.<sup>2</sup>, Karhunen, K.<sup>2</sup> & Collet, K.<sup>2</sup>

<sup>1</sup>KIHU – Research Institute for Olympic Sports

<sup>2</sup>Finnish Sports Association of Persons with Disabilities



## INTRODUCTION

Goalball is a sport for persons with visual impairment (VI), played by two teams of three players and with a bell ball. The objective is to throw the ball to the opponent's goal at the other end of the court while the other team tries to prevent scoring. Match analysis aims at advancing understanding and providing objective information and feedback of the game to the coaches and athletes.



Figure 1. Goalball game situation.

## PURPOSE

In this study match analysis was used to

- investigate the key aspects of elite level goalball
- detect differences between men's and women's game.

## METHODS

Six men's goalball games from the 2008 Beijing Paralympics and six women's games from the 2009 European Championships were recorded and analyzed. The Data Volley –software which is commonly used statistical and scouting software for volleyball, was modified for this purpose.

### Analyzed variables

- throws (all/normal/penalty)
- goals (all/from normal throws/from penalties)
- fouls (leading to penalty throws)
- conceded goals (hands/torso/legs)

The means and SDs of the analyzed variables were calculated separately for men and women and the differences between genders were analyzed using t-test for independent samples.

## RESULTS

The total number of throws per team was  $79.8 \pm 4.4$  in men's matches and  $76.0 \pm 4.8$  in women's matches (borderline significance,  $p=0.06$ ). From these,  $96.6 \pm 2.0$  % and  $98.4 \pm 1.8$  % ( $p<0.05$ ) were normal throws and  $3.4 \pm 2.0$  % and  $1.6 \pm 1.8$  % ( $p<0.05$ ) penalty throws, respectively. (Table 1).

Table 1. The mean values and SDs for throws in men and women.

Group	Tot. no of throws	Normal throws	% of all	Penalty throws	% of all
Men	79.8 (4.4)	77.0 (4.5)	96.6 (2.0)	2.8 (1.6)	3.4 (2.0)
Women	76.0 (4.8)	74.8 (4.4)	98.4 (1.8)	1.3 (1.4)	1.6 (1.8)
sig.	#		*	*	*

\* The mean difference is significant at the 0.05 level

# The mean difference is at borderline ( $p=0.06$ )

During the match, one team scored on average  $5.5 \pm 1.9$  goals in men and  $4.2 \pm 3.1$  goals in women (ns.). From the total number of goals  $73.6 \pm 27.8$  % in men and  $85.2 \pm 19.1$  % in women were scored from normal throws and  $26.4 \pm 27.8$  % and  $14.8 \pm 19.1$  % from penalty throws, respectively (ns.). (Table 2).

Table 2. The mean values and SDs for goals in men and women.

Group	Tot. no of goals	% with normal throws	% with penalty throws
Men	5.5 (1.9)	73.6 (27.8)	26.4 (27.8)
Women	4.2 (3.1)	85.2 (19.1)	14.8 (19.1)

From all throws,  $6.9 \pm 2.3$  % in men and  $5.4 \pm 3.9$  % in women led to a goal (ns.). From the penalty throws,  $45.9 \pm 31.3$  % in men and  $46.4 \pm 37.8$  % in women led to a goal, respectively (ns.). (Figure 2).

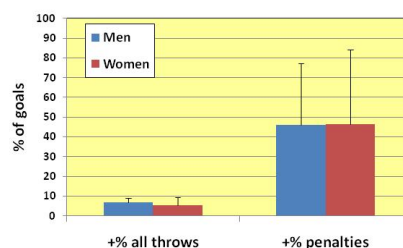


Figure 2. The scoring percentages (+%) for all throws and penalties in men and women.

Men conceded more goals from their legs when compared to women ( $53.4 \pm 21.4$  % vs.  $35.8 \pm 30.8$  %, ns.) but less from hands ( $41.2 \pm 23.9$  % vs.  $47.9 \pm 37.1$  %, ns.) and from torso ( $5.5 \pm 8.3$  % vs.  $16.2 \pm 31.0$  %, ns.), respectively. (Figure 3).

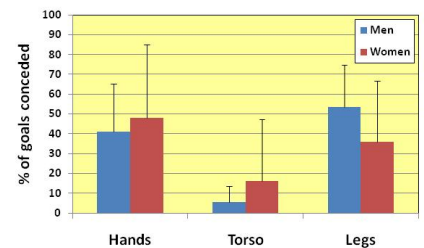


Figure 3. The percentage of goals conceded from hands, torso and legs in men and women.

## CONCLUSION

Based on the results, the only statistically significant difference between men and women in elite level goalball matches was detected in the number of fouls and thus in the number of penalty throws which was higher in the men's matches.

Even though the time, which one player has for throwing the ball is regulated by the rules to 10 seconds a borderline significance was observed between men and women in the total number of throws. This might indicate that the tempo of the game is higher in the men's matches.

When compared to women, in the men's matches a higher proportion of goals were scored from the penalty throws and more goals conceded from legs.

Less than half of the penalty throws led to a goal. This certainly is one area which should be improved as the chance to score is higher in the penalty situations.

More research is needed to gather objective and accurate data to advance understanding of the technical and tactical aspects of goalball and to enhance future game performance.

E-mail: [henri.lehto@kihu.fi](mailto:henri.lehto@kihu.fi)