RUNNING PERFORMANCE DURING A COMPETITIVE MATCH OF THE GERMAN NATIONAL RINK HOCKEY TEAM

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Introduction

Rink hockey is an indoor team sport played with roller skates, hockey sticks made of wood and a hard rubber ball between two goals. The playing field has a size of 20x40 m and is surrounded by bounds. A rink hockey team consists of four field players and one goalkeeper. At the present, there is no study which has assessed the running performance during rink hockey matches. The knowledge of distance and speed will be useful to design training programs and to evaluate players' performance during matches (Carling et al., 2008).

Figure 1. Playing scene during a rink hockey match

Methods

Eight field players of the German national team (mean ± sd: age 24.1 ± 5.0 years, body mass index 24.3 ± 1.8 kg/m²) were analyzed during a 2x20 min match against the actual European Champion (Spain) with the help of a two 25 Hz video cameras (720x480 pixel). Each camera covered approximately one half of the playing field and was calibrated using the field dimensions (9 points). Players were tracked by the same person manually. The running speeds of the players were calculated with the coordinates given by the video system. The following parameters were analyzed: total distance, mean and maximum speed as well as relative time and distance in seven speed categories (<5, <9, <13, <17, <21, <25, ≥25 km/h).

Results

Elite rink hockey players cover a total distance between 1252-5970 m with a playing time between 469-2322 s during a competitive match. The calculated mean and maximum speed values of all players were 9.2 ± 0.68 km/h and 29.2 ± 2.0 km/h, respectively.

Table 1. Running performance parameters

Player	Number of substitutions	Total playing time [s]	Total distance [m]	Mean speed [km/h]	Mean speed [m/min]	Max speed [km/h]
1	5	2321	5970	9,26	154,3	33,1
2	4	2120	4796	8,14	135,7	29,6
3	4	1668	4345	9,38	156,3	28,8
4	4	1596	3728	8,41	140,1	27,8
5	4	1329	3503	9,49	158,1	30,8
6	4	1280	3197	8,99	149,8	28,3
7	4	1115	3190	10,30	171,6	28,6
8	2	469	1252	9,62	160,3	26,6
Min	2	468,7	1252,2	8,14	135,7	26,55
Max	5	2321,5	5969,9	10,30	171,6	33,09
Mean	3,9	1487,4	3747,5	9,20	153,3	29,20
sd	0,83	583,7	1378,2	0,68	11,4	2,00

The relative playing time and the relative running distance which were spent in each speed category are shown in Figure 2. Furthermore, the mean duration which was spent in the defined speed categories ranged from 0.87 to 1.9 s.

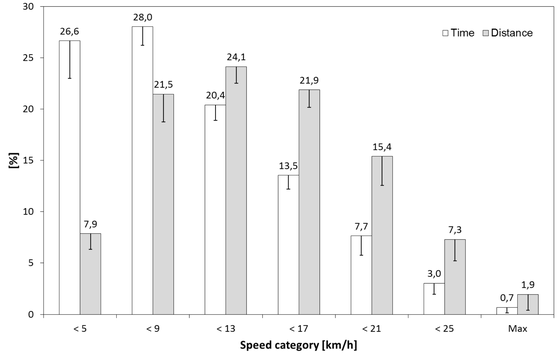

Figure 2. Relative playing time and relative running distance (mean and sd) for each speed category

Discussion

The results of the present study revealed that the running performance of elite rink hockey players during a competitive match is highly intermittent similar to other team sports (Carling et al., 2008; Ziv et al., 2009).

However, it should be noted that the total running distance of a player depends on the match playing time, which is normally 2x25 min, and his number of substitutions. Therefore, on the basis of the assessed mean speed of all players a total running distance of 7,7 km seems to be possible.

For practical purposes, the knowledge of both, running performance parameters during competitive matches and the physical characteristics (Hoppe et al. 2012) of rink hockey players are helpful to appraise this few investigated sport as well as to plan specific training programs. Also rink hockey specific performance tests can be designed on the basis of the present findings.

References

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17th Annual Congress of the European College of Sport Science (ECSS) – 4.-7. July 2012 – Bruges (Belgium)