

Differences in motives for running and perceived importance of app functionalities between fast and slow runners

Author(s)

Baart de la Faille Deutekom, M. ; Dallinga, J.M.; Vervoorn, C.; Mennes, M.; Bijwaard, H.

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more, the lift force was measured while rotating the single-seam cylinder from 0° to 150°. The largest force (-14.1 N) was observed when the position of the seam was at 75°. Thus, the PIV measurements showed that the boundary separation varies depending on its orientation. Therefore, the positions of the seams on the surface of a soccer ball are considered to have a significant impact on the aerodynamic characteristics and flight trajectory. Discussion The change in the air flow on the surface of the ball, caused by the shape of the panel, has an impact on the aerodynamic characteristics and flight trajectory of the ball, which supports the findings from previous studies (Goff et al., 2014; Hong and Asai, 2014). It is believed that from these results the aerodynamic characteristics and flight trajectory of a ball could be predicted based on the shapes of the panels. Furthermore, the observed effect of the surface shapes (numbers and orientations of the panels) on the flight characteristics is beneficial for practical soccer coaching and the design of new soccer balls. References Goff E, Asai T, Hong S. (2014) *J Sports Eng and Tech*, 228, 188-194. Hong S, Asai T. (2014) *Sci. Rep.* 4, 5068.

Oral presentations

OP-PM35 Sport Technology: Mixed session

COMPARISON OF THE RELIABILITY OF TWO ELECTRONIC CHEST PROTECTOR AND SCORING SYSTEMS IN OLYMPIC TAEKWONDO

O'Sullivan, D.M.1, Lee, Y.L.2, Fife, G.P.3

Pusan National University

Introduction In Taekwondo, the most frequent area to score points is on the chest protector (O'Sullivan et al., 2009). As taekwondo kicking is very fast and competitions have had issues with the unfairness of judging in sparring competition (Chi et al., 2004; Moon, 2003), the electronic protector and scoring system was introduced in 2010 (Ko et al, 2011). The aim of this study was to investigate the reliability of the electronic chest protector and scoring system using a mechanical system. **Methods** Two World Taekwondo Federation (WTF) recognized electronic chest gear size 1 and size 4 (same company) were selected for testing. Each of the chest gears were hung upside down and secured to a 30kg sandbag. An aluminium tube striker (weight 4.5 kg; length 500mm; diameter 80mm) mounted to a ball bearing pivot point rotating about a solid aluminium pipe which was connected to a drop weight of 100kg. Each of the electronic chest protectors were subjected to 60 impacts by the striker at various velocities, between 4.1 m/s and 8.5 m/s, which was verified by a photoelectric light sensor (Autonics, USA). The outputted variables were the striker's velocity just before impact and the electronic chest protector and scoring system score. Results The striker's velocities ranged from 4.14 to 8.42 m/s, while the electronic chest protector and scoring system registered scores from 11 to 52 (units are unknown). The Pearson's correlation coefficient R2 for the chest gear size 1 was 0.41 and for the size 4 was 0.31. **Discussion** The results show a weak (0.3 – 0.39) to moderate positive (0.4-0.69) relationship for the electronic chest protector and scoring system (Dancey and Reidy, 2004). These low correlations indicate that the scoring system may not be reliable between measurements and maybe a cause of concern when used in competition. With the expense of the electronic chest protector and scoring systems our research was limited to the data collection for only two chest protector's size 1 and 4. Future research should investigate the reliability of all the different sizes of electronic chest protectors for the companies that are currently WTF recognized. References Chi EH, Song J, Corbin G. (2004). Proceedings of the 17th annual ACM symposium on User interface software and technology, ACM, New York, USA., 277-285. Dancey C, Reidy J. (2004). *Statistics Without Maths for Psychology: Using SPSS for Windows*. London: Prentice Hall Ko, YJ, Cattani, K., Chang, Y. Hur, Y. (2011). *Int. J. Sport Management and Marketing*, Vol. 9(3/4), 238–253. Moon WJ. (2003) *Int J Appl Sport Sci* 2003;15(2):85-94. O'Sullivan D, Chung CS, Lee KK, Kim EH., Kang SC, Kim TH, Shin IS. (2009) *JSSM* 8 (CSSI III), 13.16. Contact [davidosullivan@pusan.ac.kr]

DIFFERENCES IN MOTIVES FOR RUNNING AND PERCEIVED IMPORTANCE OF APP FUNCTIONALITIES BETWEEN FAST AND SLOW RUNNERS

Baart de la Faille, M., Dallinga, J.M., Vervoorn, C., Mennes, M., Bijwaard, H.

University of Applied Science Amsterdam (Amsterdam, The Netherlands), Inholland University of Applied Sciences (Haarlem, The Netherlands), UMCG.RUG (Groningen, The Netherlands)

Differences in motives for running and perceived importance of app functionalities between fast and slow runners **Introduction** Use of mobile applications (apps) is emerging in individual sports and may have the potential to stimulate physically activity (Stephens and Allan, 2013; Glyn et al., 2014). The question is which motives and app functionalities are important for less trained athletes to engage in running. The purpose was to examine differences in motives for running and perceived importance of app functionalities between fast and slow runners. **Methods** A random selection of 15,000 runners (of 54,000 participants) of a 4 and 10 EM recreational run (Dam tot Damloop) in the Netherlands was invited to participate in an online survey two days after the run. The following issues were addressed: age, gender, experience with running, time to complete distance, motives for running and importance of app functionalities. Based on their performance, runners were divided into four groups. For males and females, the fastest and slowest group were compared by using Mann-Whitney tests. Results There were 4307 respondents (28%), of which 1341 were 4 EM runners. Compared to fastest runners, the slowest males (n=32) and females (n=195) were older (45.49±11.96 y and 37.88±10.50 y respectively), more often overweight (BMI>25) (68.8% and 69.9% respectively) and performed sports less often (88.27±56.63 n/year and 85.88±58.78 n/year respectively). For slower males, losing weight was a more important motive, while for faster male runners competition was more important (p<0.05). For slower females, losing weight and status were more important reasons (p<0.05). Competition, improving own performance, relaxation and being outside were more important reasons for faster female runners (p<0.05). Faster males found monitoring speed, heart rate, progression and personal records more important functionalities (p<0.05). Also, monitoring speed was more important for faster females (p=0.005). Slower females valued training suggestions more as well as following a training schedule, suggestions for running technique, suggestions for development of training and stimulus to hold on (p<0.05). **Conclusion** Losing weight was a more important reason to participate in running for slowest runners. Additionally, slower females valued functionalities that provide information about how to train and thought a stimulus to complete a training was more important. These results can be used to develop an app for stimulating physical activity in inactive individuals. References Glynn LG, Hayes PS, Casey M, et al. (2014). *Br J Gen Pract*, 64(624):e384-91. Stephens J, Allen J. (2013). *J Cardiovasc Nurs*, 28(4):320-9. Contact: marije.baartdelafailledeutekom@inholland.nl