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The Influence of Ski Width on Perceptual Characteristics in Young Ski Racers

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Introduction

Wide skis (WS) have become popular to ski on all types of terrain. In fact, WS have become the most popular ski type sold in the USA (SIA, 2017). However, significant ski technique differences occur between WS and a narrow ski (NS; Seifert et al., 2018). Psychological attributes play a major role in sport performance. Martin & Gill (1991) reported that confidence in an activity is a predictor of performance. Performance in young athletes, especially, can be affected by levels of self-confidence and aggressiveness. Perceptions of performance and effort are factors that can add, or detract, from learning a movement. What is not known how training with skis of different widths affects perceptual responses in young, developing ski racers. The purpose of this study was to assess the influence of ski width on perceptions of young ski racers when skiing around racing gates.

Methods

The MSU IRB approved this study and informed consent was collected. Five males (mean (SD) age: 12.9 (0.7) yr old) and eight females (12.8 (0.5) yr old) participated in a crossover design. Data was collected on a groomed run with an intermediate pitch. Skiers used their own NS and WS (NS: 64 mm and WS: 98 mm underfoot ski widths). Two-13 gate courses were completed with distances of 10m diagonal by 4m offset and 18m diagonal by 6m offset between gates. The courses approximated the turning radius of each ski. Skiers completed a questionnaire that utilized a 10 pt scale at the end of each run. The scale ran from 1 (not at all) to 10 (most favorable). A 9-channel motion sensor was used for edge angle and turn time. Data are listed as mean (SD).

Results and Discussion

Confidence was greater for NS than WS on both courses ($p < 0.001$; 10m: 7.8 (2.2) vs. 4.5 (1.8) and 18m: 8.0 (2.3) vs. 6.0 (1.9)), aggressiveness was greater for NS than WS ($p = 0.01$; 10m: 6.0 (1.9) vs. 4.1 (1.4) and 18 m: 6.7 (1.6) vs. 5.5 (1.9)), perceived racing line was greater with NS than WS ($p < 0.001$; 10 m: 6.3 (2.4) vs. 3.9 (2.3) and 18 m: 8.1 (0.9) vs. 5.8 (2.2)). NS resulted in faster turn times than WS ($p = 0.04$; 1.29 (0.22) vs. 1.34 (0.25) sec), edge angle was greater for NS than WS ($p = 0.05$; 51 (4) vs. 47 (14) degrees). Although it makes sense that WS would ski differently than NS, differences could also be representative of a feedback mechanism of motor activity patterns. This difference could create a change in the learning of a skill. The feeling of task completion with competence has been shown to increase motor learning of sport skills. Feeling confident, being aggressive, and skiing on line can make a positive impact on the timing and tactics of the run, perhaps by decreasing inhibition and creating more effective movements. Young racers and coaches need to be aware of the implications of skiing WS while the athlete is still developing.

References

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