



The effect of competition location on individual athlete performance and psychological states

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Abstract

Objective. To examine the performance and pre-competition psychological states of individual sport athletes in relation to competition location. It was hypothesized that skiers would perform better when competing at home. Self-reports of state anxiety were expected to be lower and self-confidence higher prior to home races compared to away.

Design. Within-subjects design to examine athletes' performance and pre-competition psychological states at home and away competitions.

Methods. Junior alpine skiers ($N=26$) completed the Competitive State Anxiety Inventory-2 approximately one-half hour prior to competitions that were held at home and away. Objective (race points) and subjective (coach ratings) measures of performance were also obtained.

Results. Contrary to hypotheses, no differences between home and away performances were observed (i.e. no home advantage). Athletes reported no differences in pre-competition state anxiety or self-confidence at home compared to away.

Conclusions. Results bring into question the reliability of the home advantage when examined from the perspective of individual athletes competing in individual sports and highlight the need for further research on the association between game location and competitors' psychological states.

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Introduction

The home advantage has been examined in sport contests for over 20 years. Results have consistently demonstrated that among major professional and collegiate leagues (Courneya & Carron, 1992), individual teams (Bray, 1999; Clarke & Norman, 1995), and even individual sport athletes (Bray & Carron, 1993), there tends to be a performance advantage associated with competing at home. Researchers have suggested factors that may be responsible for the home advantage (Courneya & Carron, 1992). These factors include characteristics associated with game location — such as the crowd, travel, familiarity with the venue, and rules that might favour the home team (e.g. batting last in baseball) — as well as the psychological and behavioural states of athletes, coaches, and officials. Of these, the influence of the crowd on home team performance has received the most support as an explanation for the home advantage (Nevill & Holder, 1999).

Little is known, however, about the role that psychological states may play in the home advantage. One study found no differences in pre-performance anxiety reported by professional soccer players competing at home versus away (Duffy & Hinwood, 1997). Yet more comprehensive studies have found differences in psychological states as a function of game location (Terry, Walrond, & Carron, 1998; Thuot, Kavouras, & Kenefick, 1998). For example, although there was only a slight home advantage for performance (58% of home games were won) across a small number of games (i.e. 6 home games and 6 away games), Terry et al. (1998) found that rugby union players had more positive mood profiles, lower state anxiety, and higher self-confidence prior to their home games versus their away games. Similarly, Thuot et al. (1998) found lower levels of state somatic anxiety and higher levels of self-confidence when high school basketball players competed at home.

Taken together, the limited available evidence suggests that athletes experience more positive psychological states when competing at home versus away, thus resulting in superior home performance. However, these findings must be interpreted cautiously because in these studies, *individual* psychological states were examined in relation to *team* performance. Thus, it is impossible to determine whether those athletes who had a better psychological profile at home also performed better at home. Given the problems associated with studying team sport athletes in this context, the present study examined psychological states and performance of individual sport athletes prior to competition at home and away. Specifically, we examined anxiety, confidence, and performance at home versus away in a sample of junior alpine ski racers.

Although the research question is directed at individual sport athletes in general, it was considered advantageous to focus on athletes from junior alpine ski racing for three reasons. First, because skiers compete as individuals, performance data can be analyzed to determine whether a home advantage exists at the individual level. Second, although the home advantage has rarely been examined in individual sports, it has been documented in elite-level alpine skiing (Bray & Carron, 1993), so if psychological states are a factor in the home advantage, we should see evidence of them among skiers. Third, because junior alpine skiing is conducted in a circuit format (a common format in club-level individual sports), the same field of competitors face each other at successive meets. Thus, unlike previous research in which athletes encountered different opponents as well as differing game locations (Terry et al., 1998), in the present study, the field of opponents was constant both at home and away.

Based on the results of previous research in elite alpine skiing (Bray & Carron, 1993), it was

hypothesized that athletes would perform better at home compared to away. Although previous findings regarding competitors' psychological states and game location have been inconsistent, based on moderate effect sizes obtained in the Terry et al. (1998) study, it was also hypothesized that skiers would report less pre-competitive anxiety and higher self-confidence prior to competing at home compared to away.

Method

Participants

Fourteen male and 12 female competitive ski racers ($N=26$) with an average age of 13.77 years ($SD=0.43$) were voluntary participants in the study. Skiers represented four ski clubs within a highly competitive regional ski division with the most successful skiers advancing to a national age-group (i.e. under 15 years) championship. Participants had been involved in alpine skiing for an average of 10.38 years ($SD=1.33$) and had an average of 6.12 years ($SD=2.42$) of competitive ski racing experience.

Measures

National race points

National race points are based on an identical formula to the Fédération International de Ski (F.I.S.) points that were the measure of skier performance in Bray and Carron's (1993) study. F.I.S. race points are calculated using F.I.S. normative tables and a formula that "permit the translation into points of the time difference between the winner and all other classified competitors" (Fédération International de Ski, 2000, p. 93). Thus, national race points provide an objective indication of home and away performance.

Subjective performance ratings

Subjective performance ratings were used as a secondary measure of performance. Athletes' coaches were asked to rate their skiers' technical performance (i.e. regardless of race outcome) compared to 'how well she or he normally skis'. Coaches rated performance on a single-item 9-point Likert-type scale anchored by 1 (far worse than average performance), 5 (average performance), and 9 (far better than average performance).

Competitive State Anxiety and Self-confidence (CSAI-2)

The CSAI-2 (Martens, Burton, Vealey, Bump, & Smith, 1990) was used to measure skiers' cognitive and somatic state anxiety and state self-confidence levels. Although the CSAI-2 has recently been criticized on conceptual and psychometric grounds (Lane, Sewell, Terry, Bartram, & Nesti, 1999), in order to compare/contrast results with previous research (Terry et al., 1998; Thuot et al., 1998) it was the measure of choice. The CSAI-2 has demonstrated a high degree of internal consistency (alphas ranged from 0.79 to 0.90) and construct validity (Martens Burton et al., 1990). It has been widely used by researchers as a measure of athletes' pre-competitive state anxiety and state self-confidence levels (Jones, Swain, & Cale, 1991).

Procedure

Ski club coaches were contacted by one of the researchers who explained that he was conducting a study examining athletes' feelings about sport competition. The experimenter then met with the skiers and coaches to explain the study and to request their participation. Parental consent was obtained for all study participants. Data were collected over a four-week period which started three weeks after the beginning of the competitive season. One of the investigators or an adult ski club representative who was trained in CSAI-2 administration procedures distributed the CSAI-2 to athletes approximately one-half hour prior to one home and one away competition. Athletes from two clubs completed the CSAI-2 at away races that were held one week after their respective home races. Athletes from the other two clubs completed the away questionnaires one week before their home races. Thus, data were obtained prior to one away race and one home race for each participant and the order of home and away assessments was balanced across the sample. Upon completing the questionnaires, participants placed them in a sealed envelope that was collected by one of the investigators or returned to the researchers by an adult ski club representative. In order to match home and away questionnaires, participants were asked to write their date of birth on each form. Date of birth was also used to trace race points and subjective performance data. Once all data were analysed, participants were debriefed by circulating a summary of the study findings in a regional ski-racing newsletter.

Results

Effect of competition location on performance and psychological measures

Descriptive statistics for performance measures, state anxiety, and self-confidence are presented in Table 1. The effect of game location on performance was examined using one-way repeated measures analyses of variance (ANOVA). Separate ANOVAs were computed for each perform-

Table 1

Comparison of performance, pre-competition state anxiety and self-confidence scores for home and away races (Note. For race points: $n=17$, for all other measures, $N=26$. Scores for race points can range from 0 to 999, subjective performance scores can range from 1 to 9, all CSAI-2 scores can range from 9 to 36. ES=effect size.)

Measure	Home		Away		<i>F</i>	<i>p</i>	ES	Power
	<i>M</i>	SD	<i>M</i>	SD				
Performance								
Race points	299.00	35.19	300.69	36.60	0.07	0.80	0.00	0.06
Subjective performance	7.00	2.06	7.39	1.67	0.56	0.46	0.02	0.11
CSAI-2								
Cognitive	17.73	4.88	18.85	5.11	1.52	0.23	0.06	0.22
Somatic	18.42	5.17	18.92	4.21	0.25	0.63	0.01	0.08
Self-confidence	22.96	5.63	22.42	4.64	0.68	0.42	0.03	0.12

ance measure (i.e. as opposed to conducting a MANOVA on the two performance measures) because of differences in the number of observations recorded for each performance index. Specifically, as is common in alpine ski racing, some competitors failed to finish one of the races (e.g. because they fell or failed to navigate the course correctly) and to record an objective race point result ($n=17$ skiers completed both races). In contrast, coaches provided subjective performance ratings for all 26 skiers at both races.

Contrary to our hypothesis, analyses indicated no differences ($p>0.05$) in either the objective or subjective performance measures between home and away locations. Skiers scored an average of 299.00 (SD=35.19) race points at home and 300.69 (SD=36.60) away. Coaches ratings, which gave some measure of comparison to ‘average’ performances, placed athletes’ performances at home ($M=7.00$, SD=2.06) and away ($M=7.36$, SD=1.67) slightly above average. However, ratings did not differ as a function of competition location. Thus, according to two measures of performance, there was no home advantage in this sample of junior skiers.

A one-way repeated measures MANOVA was computed to examine differences in somatic anxiety, cognitive anxiety, and self-confidence between the home and away races. The results of the omnibus analysis revealed no differences ($p>0.10$) in competitors’ psychological states prior to home and away races. In recognition of the small sample size and its associated lack of power, standardized differences between home and away psychological states were calculated and are also reported in Table 1. Effect sizes (eta squared) based on univariate results (Table 1) indicated that the effect of competition location on the CSAI-2 variables was small (Cohen, 1992).

Discussion

The purpose of the present study was to examine the performances and psychological states of individual sport athletes when they performed at home and away. Contrary to expectations, a home performance advantage was not observed in this sample of junior athletes. In addition, findings showed no differences in pre-competition state anxiety or self-confidence as a function of home and away competitions.

One explanation for the absence of a home advantage in the present study is that unlike previous research, our study operationalized the home advantage as a comparison between athletes’ home performances versus the *same* athletes’ away performances (i.e. using a repeated measures, within-subjects design). In contrast, most studies have looked for home advantage by determining whether the percentage of home games won was greater than chance (i.e. 50%). For example, the majority of studies reviewed by Courneya and Carron (1992) examined league average home-winning percentages compared to a 50% standard that would be expected if results had been attributable to chance alone for a balanced home/away schedule. Bray (1999) has argued that expanding our understanding of the home advantage from an applied perspective requires a comparison of each athlete’s or team’s performances at home relative to their performances away. The finding that skiers did not experience superior performance at home versus away stands out in relation to findings based on group data and attests to the need for further study of game location variables using repeated measures designs.

Another plausible explanation for our failure to find differences is that while it is generally assumed that the home environment is more hospitable than away (e.g. greater familiarity, support-

ive crowd), some home environment factors could undermine the potential for advantage. For example, athletes' self-presentational concerns could have been raised when performing in front of a familiar crowd. Indeed, increased self-presentational concerns about performing in the presence of family and friends are associated with higher levels of competitive state anxiety (Bray, Martin, & Widmeyer, 2000). Thus, factors associated with competing at home could have increased skiers' anxiety to a level comparable to that experienced when competing away, which interfered with their performance at home, and ultimately negated the possibility of a better home performance. This argument is consistent with the findings of Baumeister and Steinhilber (1984) who documented a home *disadvantage* in championship basketball and baseball. In their analyses, the sub-standard performances of individual athletes during decisive championship games played at home were speculated to have been brought on by a supportive audience. Likewise, in the present study, when athletes competed at home, they would have experienced an audience that was supportive and comprised predominantly of people that they knew from their home ski club. Although they were not involved in championship competition, because only six inter-club competitions were scheduled over the entire season, the outcome of each race was extremely important for participants. Under such conditions, self-presentational concerns about impressing a supportive home audience could have led to increased anxiety and poorer performance (Baumeister & Steinhilber, 1984).

We recognize that the small sample size in the present study reduces the generalizability of the results. Yet, despite the study being under-powered, the small effect sizes indicate very slight associations between competition location and performance/psychological states. Thus, while a larger sample would have been preferable, the effect sizes show it was not a realistic limitation to the results (i.e. several hundred observations would be required). One strength of the present within-subjects design was that participants served as their own controls (i.e. the ultimate blocking variable; Hallahan & Rosenthal, 1996) which enhanced the power of the analysis.

The present results should also be interpreted in light of Bray and Carron's (1993) findings from elite alpine ski competitions. Interestingly, those results also showed a small home advantage effect. Considered together, the present findings, and those of Bray and Carron, suggest that alpine skiing is a sport in which home advantage may be of questionable practical relevance. In addition, when contrasted with Terry et al.'s (1998) moderate effect sizes for psychological states, small effect sizes in the present study suggest that individual and team sport athletes may differ in their psychological responses to game location. Martens, Vealey, and Burton (1990) hypothesized that due to a diffusion of responsibility for performance, team sport athletes may experience less state anxiety than individual sport athletes. It is possible that sport type (i.e. team versus individual) and game location may have an interactive effect on competitors' psychological states. Future research should examine this issue.

Further prospective examinations of psychological states and behavioural mechanisms represent an important step in home advantage research from both basic and applied research perspectives. From a basic research standpoint, Courneya and Carron's (1992) model would benefit from research identifying psychological states that are most strongly associated with game location in order to validate components of their model. Applied practitioners should also gain from prospective research in this area. For example, an athlete who is relaxed and confident when competing at home but who is consistently extremely nervous when competing away would require different interventions depending on game location.

In summary, the present findings suggest that competing at home is not always associated with better performance or more favourable psychological states. Our failure to reproduce earlier findings of a home advantage attests to the complexity of the home advantage phenomenon. Discrepancies between our results and previous findings may reflect differences in the samples studied, the performance measures used, or study designs employed. We hope that by drawing attention to these discrepancies, future investigators will be compelled to conduct additional tests of Courneya and Carron's (1992) model of the home advantage, using study designs that are appropriate for determining the effects of game location on athletes' psychological states and performance.

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