Effects of trait anxiety and direction of pre-competitive arousal on performance in the equestrian disciplines of dressage, showjumping and eventing

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Abstract

Recent research has shown that more successful performers interpret pre-competitive symptoms of anxiety as more facilitative than less successful performers. The aim of the study was to examine the effect of both trait anxiety and pre-competitive arousal intensity and direction on intermediate riding performance in the disciplines of dressage, showjumping and eventing, including whether differences exist between male and female riders.

Sixty-two German equestrian riders competing in the equestrian disciplines of dressage (N = 21), showjumping (N = 25) and eventing (N = 16) were asked to complete a revised version of the ‘Wettkampf–Angst-Inventar–State’, which included directional scales for all items and the ‘Wettkampf–Angst-Inventar–Trait’ prior to competing. Final placings were used as performance indicators. Most important findings revealed that the correlation between direction of somatic state arousal and competitive placing was nearing significance (r_s = 0.23, P = 0.07) and loss of focus was positively correlated to competitive placing (r_s = 0.26, P < 0.05). Conclusions may be drawn that in equestrian sports positive interpretation of physical symptoms of arousal as well as the ability to remain focused on the task at hand may lead to more successful ridden performance.

Keywords: pre-competitive arousal; performance; equestrian

Introduction

Numerous studies have investigated the relationship between anxiety and performance in various sports settings. Theoretical models, such as the multidimensional anxiety theory model, the catastrophe model and the control model have been proposed, but empirical findings have been inconsistent in explaining the impact of anxiety on performance. This may be, in part, due to conflicting interpretations of anxiety in previous research. The idea that pre-competitive anxiety, or ‘arousal’, may not always be negative and detrimental to performance subsequently emerged. Jones et al. introduced the notion of ‘arousal direction’, as it became clear that intensity did not suffice to explain the relationship between arousal and performance. In order to investigate potential moderating variables, Jones et al. required athletes to indicate how confident they were of their own abilities. Performers who showed confidence in their ability to control both themselves and their immediate environment experienced their symptoms of anxiety as facilitative, while those who felt unable to control themselves or their environment interpreted anxiety symptoms as debilitating. The notion that confidence presents an important moderating variable in the experience of anxiety symptoms has been supported by a number of studies. Not surprisingly, a number of research studies have shown that elite and better skilled performers interpret their anxiety symptoms as more facilitative than do non-elite and inferior skilled performers. It may be reasoned that the higher level of self-confidence, which was also seen in the superior group of athletes, may be an
important moderator in determining the direction of arousal.

When investigating the effects of sport psychological principles on performance, it is important to consider the context of a particular sporting discipline. In particular, equestrian sports are unique in more ways than one. Performance does not merely depend on human ability and skill, but equally on that of the equine partner and, most importantly, the quality of the interaction between horse and rider\textsuperscript{11,12}. Seeing that riders, unlike horses, are able to reflect on their own behaviour, it remains their responsibility to work towards achieving an effective cooperation with their equine partners, including an understanding of the effects of rider moods and emotions on horses. Yet, highly effective horse–rider interactions are difficult to establish because both rider and horse are accustomed to quite different modes of social interactions and communication channels. Humans mainly depend on verbal communications whereas, according to Dierendonck and Goodwin\textsuperscript{13}, there is a greater dependence among horses on non-verbal communication expressed through body language because of the danger associated with vocal communication of attracting the attention of predators. As a herd and prey animal, its survival in the wild depends on its ability to react to subtle cues of communication from the herd leader while also being able to take flight at a moment’s notice\textsuperscript{14}. Any signal indicating anxiety from the rider, such as increased muscle tonus, respiratory or heart rates, may thus be interpreted as imminent danger by the horse, which is likely to react with a flight response. Even if riders are able to contain their horses’ urge to flee, subsequent performance will nevertheless be marred by tension on the horse’s part, and probably also from the rider, and lead to actual faults (in jumping competitions) or a loss of marks (in dressage competition).

Regarding the fact that the relationship between horse and rider is such a close one, it seems plausible that moods and emotions of the two interact in some way. It appears therefore vitally important that equestrian athletes not only need to understand the potential effects of human emotions on equine behaviour, but also, as a consequence, should learn to be in control of their own body and mind. To summarise, the ability to remain calm and focused, yet alert and positive, at all times throughout training and competition to communicate effectively with their equine partner becomes one of the fundamental strategies that all equestrian athletes must master\textsuperscript{15}.

To date, only a limited body of research exists investigating the effects of anxiety on horse–rider performance\textsuperscript{10}. A study by Trotter and Endler\textsuperscript{17} examined the validity of the multidimensional interaction model of anxiety\textsuperscript{18} by measuring trait and state anxiety in adolescent female competitive riders. The authors found a significant interaction between trait anxiety and situational stress components to induce state anxiety. The authors conclude that competitive equestrian sports may lead to increased levels of state anxiety due to stressors involved in social evaluation.

Findings from previous research investigating levels of arousal in equestrian riders showed that, compared with non-elite riders, elite equestrians experience lower levels of somatic arousal and higher levels of self-confidence, enabling them to communicate more effectively with their horses\textsuperscript{19}. The question that presents itself is whether increased levels of self-confidence in the rider may in fact lead to more positive interpretations of existing arousal levels, which in turn may result in improved performance, potentially irrespective of rider competence.

The aim of the study subsequently was to examine the effect of both trait anxiety and pre-competitive arousal intensity and direction on intermediate riding performance in the disciplines of dressage, showjumping and eventing, including whether differences exist between male and female riders. In light of existing findings in other sports relating to the effect of directional interpretation of arousal symptoms on performance, it is hypothesized that in equestrian sports facilitative interpretations of symptoms of arousal would lead to improved performance. Furthermore, the interpretation of arousal symptoms is likely to be influenced by levels of self-confidence as well as relevant components of trait anxiety. Specifically, we hypothesized that positive interpretation of somatic arousal would be correlated to better performance, considering that communication between horse and rider occurs primarily through the giving of physical aids.

**Method**

**Participants**

Sixty-two German equestrian riders (13 males, mean age 29 ± 4.2 years; 49 females, mean age 27 ± 5.4 years) competing in the equestrian disciplines of dressage (\(N = 21\)), showjumping (\(N = 25\)) and eventing (\(N = 16\)) were recruited from a total of 11 competitive events across the German regions of Lower Saxony and Westphalia for the purpose of the study. Participants were informed that all data would be used confidentially and that they could withdraw their participation at any given moment. All procedures used were approved by the University of Essex ethics committee. All riders were non-professionals, competing at the German ‘leicht’ (‘\(L\)’) standard. In the discipline of dressage, \(L\)-level horse and rider combinations are required to perform a series of movements in collected, medium and extended walk, trot and canter. Simple lateral movements such as shoulder-in and travers are also required,
as are simple changes of leg in canter, whereby the horse canter, performs a direct transition to walk and canter on again on the other leg. In showjumping, L-level riders are required to jump a course of fences between 1.10 and 1.20 m in height. L-level eventing requires horse–rider combinations to perform a ‘triathlon’ of equestrian disciplines starting with a dressage test, followed by a showjumping course of c. 1.10 m and a cross-country course, composed of solid, natural fences of 1.00–1.10 m in height.

Procedure
Data collection took place in the months of May and June 2009. In regard to the fact that participating riders were all German with little knowledge of the English language, it was decided to use revised versions of the ‘Wettkampf–Angst–Inventar–Trait’ (WAI-T; Competitive Trait Anxiety Inventory20) and the ‘Wettkampf–Angst–Inventar–State’ (WAI-S; Competitive State Anxiety Inventory (CSAI))21.

Participating riders were asked to complete a revised version of the WAI-T and the WAI-S c. 1 h prior to competing, so as to not to interfere with warming-up routines of horse–rider combinations. Competitive results including scores and final placings were collected at the end of the competition.

Performance scoring
All competitions were observed and rated by independent judges according to the rules laid down by the German National Federation and the International Equestrian Federation. In a dressage test, all movements were judged on a scale from 0 (= not executed) to 10 (= excellent). Riders were finally placed according to their average score composed of all the movements. In showjumping, riders received faults for either poles knocked down or refusals from the horse. Three refusals resulted in the elimination of the horse–rider combination. Horse–rider combinations were also given a style score from 0 (= not executed) to 10 (= excellent) for technique and ability in which the course was jumped. The time taken to complete the course was also taken into account for final placings. In eventing, scores in dressage and showjumping were calculated in the same way as in the ‘pure’ disciplines. During the cross-country course, riders were charged with penalties for refusals and taking longer than the optimum time to complete. Falling of either horse or rider resulted in immediate elimination from the competition. Placings in the eventing competition were calculated taking all three scores together. Due to incomparability of the scoring systems of the three disciplines, final placings were used as the performance data of choice (ordinal data) when all three disciplines were considered together.

Where disciplines were considered individually, relevant continuous scoring systems were used.

Modified WAI-S
The WAI-S21, a 12-item German-language questionnaire, measures perceived levels of cognitive and somatic state anxiety as well as self-confidence in athletes prior to competition. Items are rated on a four-point Likert scale ranging from 1 = ‘not at all’ to 4 = ‘very much’. Factor reliability for the WAI-S was of acceptable standards with Cronbach-α values for somatic anxiety 0.83, for cognitive anxiety 0.75 and self-confidence 0.82. In addition, a ‘direction’ scale developed by Jones and Swain22 was included for all items. Riders were asked to rate each of the CSAI-2R items on a scale from −3 (very unhelpful) to +3 (very helpful), depending on how helpful they felt each item was to performance with regard to its intensity. For example, riders may choose to rate item 2 ‘Mein Herz pocht (‘my heart is beating’) with an intensity of 3 = moderately so. If riders felt that this tension was very unhelpful to their performance, they would rate the direction of item 2 as 3. If, on the other hand, such tension was ‘somewhat helpful’ to their upcoming performance, they would rate it as 1. To determine the final direction score, intensity and raw direction scores were multiplied for each individual item. Somatic arousal, cognitive arousal and self-confidence direction scores were then calculated following the original guidelines provided by Ehrlenspiel et al.21.

Modified WAI-T
The WAI-T20, a 12-item German-language questionnaire, measures perceived levels of three components of trait anxiety, the tendency to experience cognitive anxiety (worry), the tendency to experience physical symptoms of anxiety (somatic anxiety - state) and loss of focus. All items are rated on a four-point Likert scale ranging from 1 = ‘not at all’ to 4 = ‘very much’. Two additional items at the end of the questionnaire investigated directional interpretations of cognitive and somatic components of trait anxiety symptoms on a five-point Likert scale ranging from 1 = ‘dehibilitative to performance’ to 5 = ‘facilitative to performance’. The Sport Anxiety Scale23 served as a guideline for construction of the WAI-T. Factor reliability for the WAI-T was of acceptable standards, with Cronbach-α values for somatic anxiety - trait 0.77, for cognitive anxiety - worry 0.78 and loss of focus 0.72. Scores determining somatic trait anxiety, cognitive trait anxiety and loss of focus were calculated following the original guidelines provided by Brand et al.20.

Data analysis
A multivariate analysis of variance was conducted to investigate the main effects for gender and discipline,
including gender-discipline interactions for trait and state (direction and intensity) anxiety measures. State and trait anxiety feature three dependent variables each, e.g. somatic arousal, cognitive arousal and self-confidence and the tendency to experience physical tension, the tendency to experience worry and loss of focus. Independent variables were gender and discipline. Additionally, interpretation of whether pre-competitive arousal was considered facilitative or debilitative was tested. Preliminary assumption testing was conducted to check for normality, linearity, univariate and multivariate outliers, homogeneity of variance-covariance matrices, and multicollinearity, with no serious violations noted.

To determine whether there exists a difference in arousal and self-confidence scores (intensity and direction) between lower and higher rankings, riders were divided into successful and unsuccessful groups. The cut-off point for performance was chosen to be third place, in line with traditional prize-giving ceremonies. Initial exploratory statistics using independent-sample t-tests were conducted, with a follow-up analysis of covariances. Spearman’s rank order correlations were conducted to investigate the relationship between competition placings of all riders and state and trait anxiety measures.

Results

Trait anxiety: gender and discipline interactive effects
A main effect was noted for gender with $F_{5,54} = 3.44$, $P = 0.023$, partial $\varepsilon^2 = 0.16$, and discipline $F_{6,108} = 4.67$, $P < 0.001$, partial $\varepsilon^2 = 0.21$. No significant gender-discipline interaction was found. When the results for the dependent variables were considered separately, significant differences were found between male and female riders for loss of focus ($F_{1,63} = 8.81$, $P < 0.005$, partial $\varepsilon^2 = 0.14$) with scores of $7.89 \pm 2.4$ vs. $7 \pm 1.9$ for male and female riders, respectively. A statistically significant result was further found for loss of focus between different disciplines ($F_{2,63} = 9.2$, $P < 0.001$, partial $\varepsilon^2 = 0.25$). Additional post hoc Scheffe tests showed a significant difference between showjumping ($6.12 \pm 1.2$) and eventing ($7.69 \pm 2.3$) m with $P < 0.05$, and dressage ($7.62 \pm 2.29$) and showjumping ($6.12 \pm 1.2$), with $P < 0.5$. See Table 1 for an overview of all WAI-T scores.

State anxiety direction and intensity: gender and discipline main effects
A main effect was noted for gender, with $F_{5,54} = 3.89$, $P < 0.05$, partial $\varepsilon^2 = 0.18$. When the results for the dependent variables were considered separately, no further significant differences were found. No significant main effects were noted for discipline or gender-discipline interaction.

No main effects were found for gender or discipline in direction of pre-competitive arousal or self-confidence. See Table 2 for an overview of all WAI-S scores.

Correlations between performance and anxiety
Spearman’s rank order correlations were conducted to investigate the relationship between competition placings of all riders and state and trait anxiety measures. A weak negative correlation between direction of somatic state arousal and competitive placing was nearing significance ($r_s = -0.23$, $P = 0.07$). A weak positive correlation was found between loss of focus and competitive placing ($r_s = 0.26$, $P < 0.05$).

Separate correlation analyses of each of the three disciplines and state and trait anxiety measures revealed no correlations between anxiety measures and the competitive placings in the disciplines of dressage and showjumping. For the discipline of eventing, correlation analysis revealed a significant positive correlation between state cognitive arousal (intensity) and competitive placing ($r_s = 0.53$, $P < 0.05$). Negative correlations between placings and directional scores for somatic and cognitive state anxiety were nearing significance ($r_s = -0.46$, $P = 0.07$; $r_s = -0.47$, $P = 0.06$).

Differences between successful and unsuccessful riders
Initial exploratory statistical analysis showed the difference for riders in the top three (successful) and below (unsuccessful) in loss of focus to be nearing significance with $P = 0.058$. Further analysis of covariance with trait cognitive anxiety as the covariable showed a significant difference between the groups for loss of focus ($F_{1,59} = 4.24$, $P < 0.05$, partial $\varepsilon^2 = 0.067$). There was a weak relationship between trait cognitive anxiety and loss of focus, indicated by a partial $\varepsilon^2$ value of 0.037.

Differences between male and female performance scores
No significant differences were found in performance between male and female riders.

<table>
<thead>
<tr>
<th>WAI-T components</th>
<th>Male riders</th>
<th>Female riders</th>
<th>Dressage</th>
<th>Showjumping</th>
<th>Eventing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Somatic anxiety</td>
<td>8.31 ± 2.25</td>
<td>9.08 ± 2.55</td>
<td>9 ± 2.1</td>
<td>8.44 ± 2.79</td>
<td>9.56 ± 2.48</td>
</tr>
<tr>
<td>Cognitive anxiety</td>
<td>8.08 ± 1.98</td>
<td>8.53 ± 2.36</td>
<td>9.1 ± 2.7</td>
<td>8.56 ± 2.1</td>
<td>7.38 ± 1.59</td>
</tr>
<tr>
<td>Loss of focus</td>
<td>7.46 ± 2.26</td>
<td>6.92 ± 1.99</td>
<td>7.62 ± 2.29</td>
<td>6.12 ± 1.2</td>
<td>7.69 ± 2.3</td>
</tr>
</tbody>
</table>
Arousal is defined by Martens et al. as the ‘physiological and affective elements of the anxiety experience that develop directly from autonomic arousal’. Kerr further points out that such a physiological response will usually be accompanied by other cognitive interpretations, leading to emotions such as excitement, anger or fear. Jones suggested that athletes with a positive belief in their ability to cope with the situation at hand will interpret their symptoms as facilitative. Regarding the fact that equestrian sports are primarily dependent on effective non-verbal communication between horse and rider, riders’ interpretation and perception of their bodily symptoms necessarily play a vital role in achieving optimal performance. In a study examining the role of the horse in psychotherapy, Karol surmises: ‘The quality of the communication (with the horse) depends largely on the rider’s ability to control and feel his or her own body and to understand the horse’s response’. If a rider experiences his/her own physiological symptoms as debilitating, one of the most important ‘tools’ of communicating with the horse has been inhibited. On the other hand, riders who have learned to channel symptoms of physiological arousal in their riding by, for example, applying more muscular tension in moments that correspond with greater exertion of the horse, are likely to perceive somatic arousal as facilitative, and achieve better performance. Previous research investigating differences in symptoms of pre-competitive arousal in elite and non-elite riders indicated that at elite level, riders experience lower levels of somatic arousal, possibly because they have learned to control physiological symptoms associated with somatic anxiety or arousal, depending on the directional interpretation. The riders in the current study all compete at an intermediate level. It could be argued that those riders who achieve better performances potentially facilitated by their positive interpretations of somatic arousal will also be more likely to progress through the ranks towards a higher competitive level more quickly.

Research into other sporting disciplines has shown that better-performing athletes are able to view symptoms of arousal as a sign that they are ready to compete. Current results indicate that riders may benefit from mental skills training to help them interpret symptoms of arousal in a positive light. Previous studies indicate that increasing levels of confidence is an important prerequisite to facilitative interpretation of arousal. Hanton et al. note that an important confidence management strategy is the visualization of previous or forthcoming successful performance. Equally, the authors also suggest that cognitive strategies, such as positive self-talk and cognitive restructuring to shape thoughts in a solution-focused manner, can assist in bolstering athletes’ levels of confidence.

Table 2. WAI-S intensity and direction scores for gender and discipline (± SD)

<table>
<thead>
<tr>
<th>WAI-S components</th>
<th>Male riders</th>
<th>Female riders</th>
<th>Dressage</th>
<th>Showjumping</th>
<th>Eventing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Somatic anxiety</td>
<td>6.15 ± 1.99</td>
<td>7.92 ± 2.73</td>
<td>8.1 ± 2.54</td>
<td>6.6 ± 2.39</td>
<td>8.31 ± 2.96</td>
</tr>
<tr>
<td>Direction</td>
<td>2 ± 3.02</td>
<td>-0.65 ± 3.55</td>
<td>-0.81 ± 3.74</td>
<td>-0.32 ± 3.31</td>
<td>-2.06 ± 2.52</td>
</tr>
<tr>
<td>Cognitive anxiety</td>
<td>7.62 ± 2.06</td>
<td>7.24 ± 1.94</td>
<td>7.14 ± 1.87</td>
<td>7.36 ± 2.21</td>
<td>7.5 ± 1.71</td>
</tr>
<tr>
<td>Direction</td>
<td>-3.46 ± 3.46</td>
<td>-2.04 ± 3.65</td>
<td>-2.10 ± 3.39</td>
<td>-2.64 ± 3.96</td>
<td>-2.19 ± 3.58</td>
</tr>
<tr>
<td>Self-confidence</td>
<td>10.85 ± 1.77</td>
<td>9.67 ± 2.07</td>
<td>9.71 ± 2.17</td>
<td>9.84 ± 2.17</td>
<td>10.31 ± 1.74</td>
</tr>
<tr>
<td>Direction</td>
<td>5.15 ± 3.83</td>
<td>3.37 ± 4.19</td>
<td>3.1 ± 3.91</td>
<td>3.64 ± 4.8</td>
<td>4.75 ± 3.33</td>
</tr>
</tbody>
</table>

Discussion

The current study aimed to investigate the effect of trait anxiety components and pre-competitive arousal intensity and arousal in equestrian competitions at intermediate level in the disciplines of dressage, showjumping and eventing. Furthermore, the study also looked to determine whether differences exist between male and female riders.

Results indicate that riders who perform better in competition across the three Olympic disciplines, and particularly in the discipline of eventing, show more positive interpretations of somatic arousal. Somatic arousal is defined by Martens et al. as the ‘physiological and affective elements of the anxiety experience that develop directly from autonomic arousal’. Kerr further points out that such a physiological response will usually be accompanied by other cognitive interpretations, leading to emotions such as excitement, anger or fear. Jones suggested that athletes with a positive belief in their ability to cope with the situation at hand will interpret their symptoms as facilitative. Regarding the fact that equestrian sports are primarily dependent on effective non-verbal communication between horse and rider, riders’ interpretation and perception of their bodily symptoms necessarily play a vital role in achieving optimal performance. In a study examining the role of the horse in psychotherapy, Karol surmises: ‘The quality of the communication (with the horse) depends largely on the rider’s ability to control and feel his or her own body and to understand the horse’s response’. If a rider experiences his/her own physiological symptoms as debilitating, one of the most important ‘tools’ of communicating with the horse has been inhibited. On the other hand, riders who have learned to channel symptoms of physiological arousal in their riding by, for example, applying more muscular tension in moments that correspond with greater exertion of the horse, are likely to perceive somatic arousal as facilitative, and achieve better performance. Previous research investigating differences in symptoms of pre-competitive arousal in elite and non-elite riders indicated that at elite level, riders experience lower levels of somatic arousal, possibly because they have learned to control physiological symptoms associated with somatic anxiety or arousal, depending on the directional interpretation. The riders in the current study all compete at an intermediate level. It could be argued that those riders who achieve better performances potentially facilitated by their positive interpretations of somatic arousal will also be more likely to progress through the ranks towards a higher competitive level more quickly.

Research into other sporting disciplines has shown that better-performing athletes are able to view symptoms of arousal as a sign that they are ready to compete. Current results indicate that riders may benefit from mental skills training to help them interpret symptoms of arousal in a positive light. Previous studies indicate that increasing levels of confidence is an important prerequisite to facilitative interpretation of arousal. Hanton et al. note that an important confidence management strategy is the visualization of previous or forthcoming successful performance. Equally, the authors also suggest that cognitive strategies, such as positive self-talk and cognitive restructuring to shape thoughts in a solution-focused manner, can assist in bolstering athletes’ levels of confidence.

Implications for equestrians are that prior to competing, they should visualize themselves successfully performing a dressage test, showjumping or cross-country course. Even in moments of adversity, riders should use short, positive statements such as ‘we can do this’ and try and develop strategies to solve communication problems with their horses rather than remain fixated on a particular problem. Applied consistently, these strategies will lead to improved levels of self-confidence, which in turn are likely to ensure more positive interpretations of pre-competitive arousal.

Results further suggest that in the discipline of eventing, greater intensities of cognitive arousal were associated with lower performance (Table 1). These findings are directly in line with multidimensional anxiety theories, wherein cognitive anxiety is thought to have a negative linear relationship with performance. Jerome and Williams suggested that in sports with high memory demand, the increased worrying associated with higher levels of cognitive anxiety is thought to put a drain on athletes’ resources and thus limit their attentional capacity available for the task at hand. Indeed, the discipline of eventing, in particular, requires considerable attentional focus from the rider. When galloping at speeds of 500 m min⁻¹, tackling solid obstacles along the way, the wrong type of aid given at
the wrong moment may result in a refusal or a fall, which quite often can have serious implications for the health of both horse and/or rider. As opposed to other sports, where anxiety might ‘merely’ cause a decrement in performance, consequences of rider anxiety in equestrian sports can be considerably more severe. The eventing rider must therefore be able to remain ‘sharp’ and alert throughout the entire competition, reacting within split seconds to any moment from the horse. As such, any drain on the rider’s attentional capacity is likely to decrease the performance potential.

Male riders exhibited greater tendencies to become distracted than their female counterparts (Table 1). At this point, further interpretation of current results is of a speculative nature, yet may shed some light on different gender-related variables in equestrian performance. While results in the current study show only tendencies of male riders displaying higher levels of self-confidence, previous studies investigating psychological components in equestrian sports have shown male riders to exhibit significantly higher levels of confidence and more facilitative interpretation of arousal. It may therefore be argued that the potentially debilitating effects of loss of focus are controlled by increased levels of self-confidence in male riders. Catastrophe models of anxiety argue that self-confidence can act as a moderator to levels of arousal. The self-confident performer will be able to deal with higher levels of arousal before experiencing a decrement in performance, probably because he/she will interpret symptoms as more facilitative. In view of the current findings it is plausible that the male rider, while more easily distracted by the surroundings of a competitive environment, is nevertheless able to offset the negative effects of loss of focus as he is more certain and more confident of his own coping resources. Confidence in his abilities helps him deal more decisively with most situations arising during competition. While the male may still get distracted, he is able to execute without any hesitation that what he must, instead of using these distractions as a ‘cue’ to worry about the task at hand. The fact that self-confidence and loss of focus seem to be offsetting each other may explain the fact that no difference could be found between performance scores of male and female riders.

Findings further showed that loss of focus was correlated with final placings, and there was a tendency that this may segregate more successful (top three placings) and less successful riders. It has been suggested that many top performers fail at an event because of an inability to hold their concentration. At a competitive event, many different elements may claim the focus of an athlete: surroundings, other competitors, environmental factors and, in the case of equestrian sports, the behaviour of the horse: should it react differently than at home? Instead of concentrating on themselves, athletes invariably stray to these external factors outwith their own control. Results have shown that trait cognitive anxiety may act as a covariate with regards to how loss of focus affects performance. Riders with a tendency to worry seem likely to ponder the potentially negative effects of distracting elements, and thus may find it difficult to return their focus back to their horse. In a sport with high memory demands such as equestrianism, processing efficiency theory stipulates that too much additional strain on an athlete’s attentional capacity is likely to result in performance decrements. The inability to remain focused in the face of distraction, coupled with a tendency to interpret changing situations in a negative light, may easily be defined as attentional strain and may thus have debilitating effects on horse–rider performance. Only the rider who is able to focus on the task at hand, namely on the effective communication between him/herself and the horse, will be able to apply the correct aids and cues, which are more likely to result in the correct response from the horse.

The current study contributes considerably towards gaining a better understanding of the impact of different intensities and directional interpretations of anxiety on equestrian performance in different disciplines. Nevertheless, the research design presents a number of limitations that should be taken into account. As with many applied research studies, the number of subjects is somewhat low. This is due to the fact that many riders object to participating in a research study prior to competing, as it may interfere with their own warm-up times of and those of their horses. Furthermore, scoring systems of the three disciplines are not necessarily comparable, leading to the dependence on final placings to draw conclusions, rather than potentially more objective performance scores. As a correlational study, results cannot reflect causality, and therefore should be interpreted with due caution. Furthermore, results should not be generalized to individual athletes, but should only be used as an indicator of how more facilitative emotions can assist in improving equestrian performance.

**Conclusion**

The current study provides further evidence on the importance of levels of pre-competitive arousal and their interpretation in regard to equestrian performance. Furthermore, in a sport with high memory demands such as equestrianism, the ability not to become distracted, either by external factors or indeed cognitive components of worry, is strongly related to performance results.

Findings demonstrated that riders who experience more facilitative interpretations of somatic arousal...
also performed better in competition. In equestrian sports, riders communicate with their horses through a series of physical cues, such as aids of the legs, seat and hands. It may be argued that debilitating interpretations of somatic symptoms may result in muscular tension counterproductive to effective horse-rider communication. More facilitative interpretation of somatic arousal, on the other hand, may assist riders particularly in competition, allowing them to give the correct aids, while at the same time remaining alert and quick to react.

The current study provides an additional support to the notion that psychological components play an important role in equestrian performance\(^{16,31}\). Future research should continue to investigate psychological factors to gain a better understanding of the different dynamics that underlie horse-rider interaction and, ultimately, performance.

References