

**COMPETITIVE PERFORMANCE EXPERIENCES OF SHOW JUMPING  
RIDERS, RIDER-HORSE INTERACTION, AND TEMPORAL DYNAMICS OF  
RIDERS' PSYCHOBIOSOCIAL STATES**

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## **ABSTRACT**

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The aims of this qualitative research were to explore performance-related experiences of show jumping riders in the most successful/unsuccessful performances, their perception of the horse and rider-horse interaction, and temporal dynamics of their states in an actual competition. Six experienced females show jumping riders were interviewed about their previous most successful and unsuccessful performances. Based on the interviews, profiles with the individually generated states and their intensity were created for each rider. Subsequently, participants assessed dimensions of the profiles during an actual competition. Through an inductive content analysis of interviews, a hierarchical coding scheme describing the riders' experiences and perception of the rider-horse interaction was identified. Furthermore, potentially important factors related to the performance were highlighted. The higher-order themes from the scheme were related to the context, riders' feelings and thoughts, and riders' perception of the horse and rider-horse interaction. Furthermore, a deductive content analysis of the participants' descriptors from the best and worst performances profiles revealed all eight modalities of psychobiosocial states. The analysis of states intensity across cognitive, motivational, volitional, bodily, motor-behavior, operational, communicative, and pleasant modalities showed the higher intensity of functional descriptors and lower intensity for the dysfunctional descriptors before the successful performances. In contrast, across these modalities, high intensities for dysfunctional descriptors and low for functional descriptors were observed before poor performances. The states from affective unpleasant modality (both functional and dysfunctional) indicated lower intensity before the best performances and higher intensity in the worst performances. The temporal dynamics of states in a current contest showed interindividual and intraindividual variability in intensity dimension and content of the states. Analysis of intensity changes of the states before, during, and after the actual good performances indicated an increase in the intensity of the affective pleasant-helpful states before the performances. During the performances, cognitive pleasant-helpful feelings intensity was decreased. Finally, after the performances, a decrease in intensity for the affective unpleasant-unhelpful, cognitive pleasant-helpful, cognitive unpleasant-unhelpful, and motivational and volitional modalities were more frequent. Results of the study offer a deeper insight into the equestrian athletes' experiences in the competitions and may help practitioners working with the riders to better understand them and develop more tailored interventions.

Keywords: performance-related experiences, show jumping sport, temporal dynamics of psychobiosocial states

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## 1 INTRODUCTION

Equestrian sports are unique in the constitution of the team between humans and animals. Compared with other sports, the training process and the performance outcomes are highly dependent on effective rider-horse interactions. A good equestrian partnership is difficult to establish because both the rider and the horse are different in modes of thinking, social interactions, and communication channels (Pretty & Bridgeman, 2006; Wolframm & Micklewright, 2011). In a competition, setting not only the rider-horse technical, tactical, physical, and psychological skills are inevitable for a good performance but also the working partnership between the team members.

The competition context of show jumping discipline is introduced to readers, which allows them to obtain a better understanding and a more holistic picture of the research topic. Show jumping is one of the Olympic equestrian disciplines with a high popularity among athletes and spectators in which both females and males athletes compete together in the same category. Jumping competitions rules are governed by national bodies or International Federation of Equestrian Sports (FEI from the French *Fédération Équestre Internationale*, 2017). The goal for the show jumping competitions is to ride a clear course built of different verticals, spreads, and double and triple obstacles combinations in the allotted time. The winner is a couple with no or lowest number of penalty points and the fastest time. Penalty points are obtained for refusing and knocking down of any jumps as well as for pre-set time limit violation. Usually, there are two rounds in a competition. The first or basic round consists of approximately ten to thirteen obstacles. Riders are allowed to walk the course before the competition without horses to be able to learn the course and plane the distances, pace of the horse, and appropriate angles for overcoming of each fence. Athletes who complete the first round without penalty points (clear round) or when there are riders with the equal number of penalty points the second round (jump off) is taking place on the chosen jumps from the first round. Although, before the jump off the riders are not allowed to walk the course again. Before the start of the competition and entering the arena with the show jumping course, the riders and horses warm up in schooling area with at least two practice obstacles. The FEI listed different types of jumping competitions with their specific rules and difficulty levels. The highest level of show jumping competitions is

Grand Prix with complex courses and technical challenges e.g. obstacles with heights up to 160 centimeters and spreads up to 200 centimeters.

Different challenges might appear in the equestrian team and one of the important ones is an appropriate combination of human and animal athletes. To understand a horse, the unique member of the equestrian dyad plays a crucial role for equestrians and researchers or practitioners working in this specific field. Horses are prey and herd animals whose survival in the wild depends on their ability to react to subtle non-verbal cues of communication from the herd leader and being able to take flight at a moment's notice (McGreevy, 2004). Therefore, many unpredictable situations are common in the equestrian sports. Horses' sensitivity to body language enables them to detect and react any changes in body position, muscular tension, respiration and even heart rate of humans (Wolframm & Micklewright, 2009). Hama, Yogo, and Matsuyama (1996) conducted a study on changes in horses' behavior affected by human emotional cues. People with negative feelings towards animals were stroking a horse, which induces an increase in heart rate of the horse in the first few minutes. Neutral and positive persons' attitudes towards a horse do not have such an influence. A more recent study by Keeling, Jonare, and Lanneborn, 2009, investigated the human and horse's heart rate during the riding and handling conditions. In the study, it was showed that increase in rider's heart rate and level of anxiety increased the horse's heart rate. These two studies provide empirical evidence that horses respond to the physiological symptoms of people. With this in mind, the importance of riders' understanding of the potential effect of their moods, emotions, a tone of voice, body language, and feelings on equine behavior is strengthened. Indeed, riders' understanding and awareness of horses' natural reactions as a prey animal might be helpful for an anticipation of horses' behaviors in different situations, for instance training, competitions, or horse riding in nature.

In addition, horses are trained through classical and operant conditioning to respond to riders' stimuli e.g. given through muscular contractions of their body (e.g. hand, legs, and seat) for desired changes in tempo or direction (McGreevy, 2007). With increasing level of the equestrian sport, demands on the effective rider-horse communication and cooperation become more challenging and demanding for a good motor control and a better differentiation between different types of aids (Wolframm & Micklewright, 2009). Riding at an advanced level requires riders to be able to communicate their aids in a clear, relaxed, confident manner so that the horse can also respond appropriately.

Even though the importance of emotions in equestrian sport is evident, there are few scientific resources related to this research area. The overview of the relevant research studies is given in the next chapter.

### **1.1 Emotions in equestrian sports**

Examination of emotions in equestrian sports may add more insight into the processes beneficial to riders' improvement of performance and overall effective functioning with their equine partner. In the field of equestrian sports psychology, the focus has been on the anxiety emotion, which is not surprising. In general, an increase in anxiety could influence athletic performance in at least two ways. First, an increase in anxiety causes an increase in muscle tension, fatigue, and coordination difficulties. Second, it causes changes in attention, concentration, and visual search patterns (Weinberg & Gould, 2011). Considering show jumping discipline, all these effects would have detrimental consequences for rider's ability to communicate information effectively through riding aids to a horse, which might consequently influence their performance.

One of the first studies inquired emotions in equestrian sports was conducted by Meyers, Bourgeois, LeUnes, and Murray (1999). The aim of the study was to quantify mood and psychological skills of 54 elite and sub-elite equestrian athletes for describing a competitive mindset relevant for equestrians. Participants filled up the Profile of Mood States and Psychological Skills Inventory for Sports. Findings revealed that elite competitor possessed higher anxiety management and concentration than sub-elite riders. Moreover, some gender differences were observed through descriptive comparison. Female riders tended to experience lower vigor and higher tension, depression, fatigue, confusion and total mood disturbance than males. Furthermore, females exhibit higher motivation than male riders and male athletes scored higher in anxiety management and confidence. No differences were found across participants from dressage and show jumping disciplines. Overall, riders compare to athletes from other sports showed significantly different mood and psychological skills profiles. They were employing more psychological strategies and scored higher in psychological skills responses. Finally, the ability to remain calm and focused, yet alert and positive, at all times throughout training and competition were considered as one of the fundamental skills any rider must master.

A few years later, Wolframm and Micklewright (2009) conducted research for investigating the pre-competitive level of anxiety and self-confidence in 40 equestrian riders. The Competitive State Anxiety Inventory 2 (Cox, Martens, & Russell, 2003) was used to measure self-confidence and somatic (related to physiological symptoms) and cognitive (related to thinking processes) anxiety. The study showed that elite equestrians experienced lower levels of somatic anxiety and higher levels of self-confidence compared to non-elite riders, which might have enabled them to communicate more effectively with their horses. More specifically, the study showed a non-verbal communication between equestrian dyad particularly depends on fine motor signals and accuracy that rider emits them to a horse. Thus, non-elite riders might be more susceptible to the adverse physiological effects of somatic anxiety and increase in muscular tension, respiratory rate, and heart rate. Such influence on a non-elite rider also affected the transmission of rider's signals to a horse. In sports where the fine motor control is needed, researchers have suggested that low levels of anxiety are more likely advantageous. On the other hand, in relatively explosive motor skilled sports, athletes reported their higher competitive anxiety-related symptoms as more facilitative to performance (Mellalieu, Hanton, & O'Brien, 2004). Moreover, a negative correlation between cognitive anxiety and self-confidence among equestrians was found. No differences across gender and riders from different disciplines were found and no differences among riders in cognitive anxiety were observed (Wolframm & Micklewright, 2009).

Continuing the previous research, the same authors engaged in examining the effects of anxiety and its perceived direction in 62 riders from various equestrian disciplines. Results suggested that riders, who performed better in an equestrian competition, also showed a more positive interpretations of somatic anxiety and higher ability to remain focus on the task (Wolframm & Micklewright, 2011).

More extensive approach to study emotions in equestrian sports was adopted by Wolframm, Shearman, and Micklewright (2010). In the study, the authors compared pre-competitive mood states in 26 equestrian riders among novice and advanced riders. According to the findings, more advanced riders manifested more effective information processing and task-specific concentration as well as lower level of confusion. The confusion was associated with mood states of tension, depression, fatigue, and anger. Overall, elite riders experienced more facilitative pre-competitive mood states than the



less experienced riders. Although, results were only nearing the significance, the authors assumed that there might be a difference between mood states and performance experiences.

The importance of the relationship between riders' perception of a horse and performance was indicated in a study by Wolframm and Micklewright (2010). They found out that dressage performance scores were negatively correlated with pre-competitive anxiety intensity and positively correlated with self-confidence. In show jumping riders, the direction of somatic anxiety negatively correlated with the number of penalty points. Furthermore, results showed the association between riders' anxiety intensity and their perception of horses' temperament. It seems, that riders' perception of their equine partner has an important mediating role in the relationship between anxiety and performance. Another research presented the results, which gave a support to this assumption and indicated the relation between riders' self-efficacy (perceptions of their abilities) and other-efficacy (perception of their horses' abilities) with the riding performance especially in dressage discipline (Beauchamp & Whinton, 2005).

Along similar lines of previously mentioned research, Bridgeman, Pretty, and Terry (2013) explored the relationship between anxiety and heart rate of 17 riders and horses' temperament, misbehavior, and heart rate. During the dressage test performance, the synchronicity between rider's and horse's heart rate was noticed in the 13 riders. Besides, riders' perception of the horse's misbehavior and a higher horse's temperament was positively correlated with their somatic anxiety. On the other hand, increased cognitive anxiety was positively correlated with horse's heart rate. However, no relationship between all examined variables and performance outcomes was found in the dressage riders. These findings shed more lights on the relationship between riders' anxiety, their perception of the horse and performance. In addition, this study suggests that anxiety and perception of the horse are related, although might not have a significant effect on the performance.

Considering the motivation of riders, Blakeslee and Goff (2007) examined a goal orientation among 17 riders. Results revealed that all participants have the highest score in mastery goal orientation (motivation to improve the skills and keep a focus on learning as a process). The second highest number was observed for the performance approach goal (motivation to perform better than others). This research showed only

descriptive findings of the goal orientation among a small sample of riders, although interestingly, the whole group showed the highest score for the same goal orientation.

To summarize, it might be beneficial to have an anxiety management for equestrian riders, which result in reducing pre-competitive anxiety, especially somatic anxiety and they should be able to interpret their anxiety in a positive way. Concentration was another important factor for riders, which mainly influenced the ability to remain focus on the task. In elite riders, a lower level of confusion was observed, which was related to tension, depression, and anger and higher self-confidence. Moreover, the ability to process the information effectively was better in more experienced riders. Finally, the relationship between anxiety and riders' performance as well as riders' perception of their equine partner were emphasized.

In general, all reviewed studies integrated nomothetic quantitative approach to study emotions in equestrian sports. Besides, the focus was predominantly on the pre-competitive anxiety. The existing studies neglected the importance of other emotions. Therefore, in this study, an idiographic qualitative approach is adopted to study emotions in show jumping equestrian sport by using the conceptualization of Hanin in the individual zones of optimal functioning (IZOF) model (Hanin, 2000). An introduction to the IZOF model conceptualization is detailed in the next chapter.

## **1.2 Competitive states conceptualization**

The Individual Zone of Optimal Functioning model (Hanin, 2000) is a useful tool and approach for describing individual performance-related experiences in a sport context, which distinguishes psychological, biological and social components of a state. Application of the IZOF model for studying performance-related experiences in qualitative and quantitative research had an increasing trend during recent years (Ruiz, Raglin, & Hanin, 2017). In the literature (Hanin, 2000, 2003, 2007), performance-related experiences are defined as a situational, multimodal, and dynamic manifestation of the total human functioning. These experiences can arise within the interaction between a person and the environment. The interactions in sports context are best described by the relationship between person's resources and the task requirements (Hanin, 2007). Basically, three interrelated types of the performance-related experiences can be observed (Hanin, 2000, 2007): 1) state like experiences, which are easily subject to changes in environment, 2) trait like experiences, which are quite stable, and 3) meta-

experiences, which are developed through reflections of the performances and represent the knowledge or awareness of states impact on performance. The IZOF model provides an opportunity to gain more holistic perspective about individuals' experiences, which can be described through five interrelated dimensions. These dimensions are form, content, intensity, time, and context. The first three (form, content, intensity) are related to the structure and functioning of subjective experiences and the last two (time and context) are related to the dynamics of these experiences (Hanin, 2000, 2003, 2007).

The first dimension, form is usually represented by eight modalities of psychobiosocial states through which one's entire performance can be described (Hanin & Ekkekakis, 2014; Ruiz, Hanin, & Robazza, 2016). First, the psychological component includes cognitive, affective, motivational and volitional modalities. Cognitive modality involves attention processing and ability to concentrate. The motivational and volitional modalities differ in the stage of decision making. The motivational modality includes purposes, goals, desires, drives, motivations, and commitments, which are in the pre-decisional state. This pre-decisional state represents people's intentions while the volitional modality represents the post-decisional state, which aims to mobilize the mental and physical abilities of an individual. Affective modality is the main modality in the psychological component and is comprised of subjective pleasant and unpleasant feeling states. Second, the biological component incorporates bodily-somatic (bodily) and motor-behavioral modalities. Feelings included in bodily modality are related to psychophysiological symptoms evoked by the states and they can be manifested as a feeling in a specific body part. The motor-behavioral modality involves items describing the perception of the movements characteristics or motor coordination. Third, the social component consists of operational and communicative modalities. The communicative modality involves a verbal and nonverbal exchange of information among individuals participating in a task execution and the operational modality relates to a perception of the effectiveness of action or task execution (Ruiz et al., 2016).

Content dimension refers to the qualitative description of each feeling from the form dimension in terms of hedonic tone (pleasant - unpleasant) and its functionality (functional - dysfunctional) perceived by an athlete. Consequently, the items can be classified according to four global emotion categories as functional optimal pleasant (P+) and unpleasant (N+) emotions and dysfunctional unpleasant (N-) and pleasant (P-) emotions (Hanin, 2000, 2003, 2007; Ruiz et al., 2016). Optimal pleasant and unpleasant

(P+ and N+) emotions are related to more successful performances while dysfunctional pleasant and unpleasant (P- and N-) emotions accompany poorer performances (Hanin, 2007). Functional impact of emotions can be understood through energy mobilization-demobilization and energy utilization – misuse (Hanin, 2000, 2007). Functional pleasant emotions help the athlete to sustain and use the energy effectively while functional unpleasant emotions help to mobilize the energy production. On the other hand, dysfunctional emotions (both pleasant and unpleasant) cause a decrease in attention, ineffective use of energy, resources recruitment, and information processing.

The intensity dimension expresses the intensity or strength of each item in the psychobiosocial states quantitatively and qualitatively in the meaning of the expressions used for the specific items. Distinct level of intensity and the quality of the content dimensions produce a different functional impact on performance (Hanin, 2003, 2007). The time dimension refers to the past, present, or future of the performance execution as well as to the duration of the states' observation. Short-term dynamics in the performance is observed before, during, and after the task execution e.g. in a single competition or practice. In the sports psychology literature, the short-term dynamics has been mostly examined (Ruiz et al., 2017). On the other hand, temporal dynamics, which refers to the longer period of time and captures development and cycles or phases of the psychobiosocial states during a competitive season/s, athlete's career or four years cycle for Olympic preparation have not received much attention in the research.

The context dimension reflects on athletes' emotional reactions triggered by situational, interpersonal, and intra-group environmental characteristics. Situational characteristics are related, for example, to the difficulty level of the competition, whereas, the interpersonal and intra-group characteristics describe an athlete's experiences in interactions with a partner or team members.

The emotions-performance relationship within the IZOF model can be described through several fundamental assumptions (Hanin, 2007; Robazza, 2006; Ruiz et al., 2017). The first assumption discusses the origin of people's emotions, which is based on their appraisals of the probability of accomplishing relevant goals. The second assumption relates to emotional patterns observed in performances because of repetitive nature of sports activities (e.g., Bertollo et al., 2012). These patterns are specific for person, task, and setting. Moreover, the IZOF's individualized approach allows

researchers to study individual patterns and structures of athlete's emotional experiences. High inter-individual variability in intensity and content of the psychobiosocial states was described for athletes during their optimal and poor performances. The third assumption reflects a bi-directional relationship between the emotion and the performance. Particularly, emotions can influence the performance while performance and its outcomes can influence the intensity and content of the emotions. The fourth assumption of the model is based on the "in-out of the zone" notion, which discusses the optimal, neutral, and dysfunctional impact of the emotions' intensity range on the performance. The optimal zone is associated with "in zone" experiences related to more successful performances and intensity range "out of the zone" is usually associated with unsuccessful performances. The fifth assumption refers to the interactive effect of emotions impairing or enhancing performance. Indicators for a good performance for an athlete's potential are intensity level within the optimal zone and outside the dysfunctional zone and items combination with minimum impairing and maximum enhancing effect (Ruiz & Hanin, 2014). Furthermore, meta-experiences (awareness of states impact on the performance) are developed through the athlete's reflection about their past performances. According to Hanin (2000, 2007), highly skillful and experienced athletes were able to report their relevant personal experiences and meta-experiences related to their performances better than less skillful and experienced athletes.

### **1.3 Assessment of psychobiosocial states**

The most recent tool for assessing the performance-related experiences was developed by Ruiz et al. (2016) called Individualized profiling of psychobiosocial states (IPPS). This tool consists of a stimulus list of emotional and non-emotional adjectives for describing athletes' performance-related experiences. Each line of the stimulus list represents one of the eight modalities of psychobiosocial states and its functionality. In addition, the affective modality is divided into pleasant and unpleasant. The unpleasant modality is further split into anxiety- or anger-related category. Overall, the IPPS has cognitive, motivational, volitional, pleasant, anxiety, anger, bodily, motor-behavioral, operational, communicative modalities and each modality has both functional and dysfunctional descriptors. A modified CR-10 scale is used to evaluate the intensity of each descriptor. In this, athletes choose one adjective from each row (modality category) to describe their states before a good performance and the same procedure

follows for a bad performance. Moreover, the athletes can add any descriptors for their feelings, which are not presented in the stimulus list. Accordingly, the profiles with the chosen adjectives and evaluated intensities are created.

A similar step-by-step procedure was described by Hanin (2000). First, an athlete recalls the best ever performance in the past and chooses the relevant adjectives from the stimulus lists related to helpful-positive emotions (P+) and helpful-negative emotions (N+). Afterward, the worst ever performance from the past is recalled and the adjectives are chosen from the harmful-negative emotions (N-) and harmful-positive emotions (P-). In comparison with the above mentioned IPPS tool, the adjectives of this Individualized emotional profiling are not specifically separated in the modalities of psychobiosocial states. Furthermore, in this procedure athletes can also use their own idiosyncratic words to describe the performance-related emotions. Consequently, the intensity of the selected emotions is evaluated and a profile is created with the optimal emotions (N+ and P+) in the middle of the profile and dysfunctional emotions (N- and P-) on the left and right tail.

#### **1.4 IZOF based research on equestrian sports**

As per a recent review by Ruiz et al. (2017), there is only one study (Tenenbaum, Lloyd, Pretty, & Hanin, 2002) which included IZOF model approach in equestrian sports. The aim of the study was to examine 40 dressage riders' ability to precisely report their emotions and thoughts they had before the competition retrospectively in three to 14 days delay. Emotions, thoughts, and horse-related items were examined through questionnaires designed by researchers. In terms of emotions, the cognitive anxiety, somatic anxiety, self-confidence, hedonic tone, and functionality were taken into considerations. The important horse's items for the performance were identified by the researchers and included rider's evaluation of horse's relaxation, obedience, and impulsiveness before the competition. Riders' thoughts were coded into four categories: 1) the rider, 2) the horse, 3) the test (the dressage competition), and 4) the circumstances surrounding the competition. Finally, the results of the retrospective reports showed a quite high stability in pre-competition emotions intensity. Similarly, the evaluations of the horse-related items remained accurate across all measures. The content analysis revealed that in the free reports many emotions and thoughts were not mentioned or were added by riders.

### **1.5 Temporal dynamics of the competitive states**

A critical review article related to the temporal patterning of competitive emotions by Cerin, Szabo, Hunt, and Williams (2000) showed predominantly narrow focus of research on pre-competitive anxiety in the past. The first line of the studies perceived anxiety as a single emotion. The two types of anxiety trait and state were distinguished. In general, findings from the research about unidimensional anxiety showed a gradual increase of the state anxiety over one-week pre-competitive period. The state anxiety peaked immediately before a competition. As soon as the competition started, a decrease in anxiety was observed and after the contest was finished the anxiety intensity was reduced. A contradictory result across studies was reported and different personal and situational moderators were recognized.

The second line of the research followed a multidimensional conceptualization of the competitive anxiety which consisted of three factors: somatic anxiety, cognitive anxiety, and self-confidence. The temporal patterns of somatic-anxiety showed a rapid increase close to the start of a competition and in some cases, it was not present when the competition was over. Diverse findings led to a discussion in which the components captured by somatic anxiety were questioned. It was hypothesized that somatic anxiety could measure anger, attention, deep interest, excitement or combination of two or more emotions rather than anxiety. On the other hand, cognitive-anxiety was more stable over the time compare to somatic anxiety. Although, the results across studies were not congruent. Indeed, athletes' perception of the anxiety, both somatic and cognitive, as facilitative or debilitating for performance were taken into consideration. The assumption that anxiety is a variable pattern of emotions was adopted, and therefore, individuals may experience different patterns of anxiety which could lead to a distinct impact on the performance.

Furthermore, Cerin et al. (2000) continued with reviewing two lines of research focused on the description of athlete's emotional states reflecting idiosyncratic emotional experiences. One line of research was represented mainly by Hanin's early studies. Another line of the studies was focused on the investigation of a profile of the basic emotions occurred throughout the competition and examining the possible influential factors. Nomothetic and idiographic approaches have been implemented in these studies. In nomothetic approach, standardized scales were used and results were based on group averages and inter-individual and inter-group comparisons. The idiographic

approach was represented by the IZOF model conceptualization. According to the previous performance experiences, athletes generated their individual items for a profile which was further examined. One of the first research which used the nomothetic approach to study other pre-competitive emotional states rather than anxiety was conducted by Prapavessis and Grove (1994). The results showed significant changes in all mood states sub-scales as the time of the competition was getting nearer. Tension and vigor were decreasing during the pre-competitive period however, they increased rapidly just before the contest. Esteem-related affects were decreasing during the whole time of the pre-competitive period. Fatigue was fluctuating between the measurements times. Depression was increasing during the whole time of data collection and decreased right before the start. The last sub-scales related to anger and confusion were quite stable during the pre-competitive time but just before the contest, the confusion was decreased and the anger was increased. Finally, the competitive emotional states could be influenced by subjective appraisals and they could be moderated by situational and personal factors. An example of situational factors could be a type of sport or standard of competition and personal factors such as gender, personality, and motivation. For more details see Cerin et al., 2000.

In the study by Pellizzari, Bertollo, & Robazza (2011), intensity, functionality, and hedonic tone of emotional and bodily states were examined before and after the competitions in ten gymnasts. The IZOF model framework and directional perception approach were implied for creating and evaluating the idiosyncratic emotional states, performance self-evaluation, and interviews. In accordance with the IZOF model, optimal-pleasant states were often occurred in a successful performance while dysfunctional-unpleasant states were more related to a poor performance. A mixture of states from both global emotional categories were present in average performances. The results showed that the gymnasts experienced optimal-pleasant emotions and optimal-pleasant or dysfunctional-unpleasant bodily states before and after good performances, respectively. On the other hand, the dysfunctional-unpleasant emotions and bodily states were observed both before and after poor performances. The intensity of the optimal-pleasant emotional states was close to the intensity of recalled optimal states, while the intensity of dysfunctional-unpleasant emotional states was closer to the intensity of previously identified dysfunctional emotions which supported the in-out of the zone prediction. According to the IZOF model, a good performance can also result in



dysfunctional states and poor performance can induce functional states. However, the results of this study did not provide a support for this assumption. A similar result to the above-mentioned study were found among youth tennis players (Lewis, Knight, & Mellalieu, 2017) and among adolescent golfers (Nicholls, Hemmings, & Clough, 2010). Specifically, the youth athletes experienced more positive toned emotions after good performances while bad performances led to more negatively toned emotions. However, both studies reported cases where youth athletes experienced negatively toned emotions after a good performance and positively toned emotions after a bad performance to some extent.

From the studies, in which self-generated metaphors assessment tool was used to examine emotional states (Hanin & Stambulova, 2002; Ruiz & Hanin, 2004), the findings showed a high action readiness in best-ever competition and low action readiness in worst-ever competition. Indeed, different metaphors were generated to describe athletes' states before, during, and after the performance which might reflect three interrelated stages of performance - preparation, execution, and evaluation.

Cerin and Barnett (2006) inquired temporal patterns of intensity and frequency of basic emotions before and after a competition and the frequency of concerns across time. Twelve basic emotions (interest, enjoyment, surprise, sadness, anger, disgust, contempt, fear, guilt, shame, shyness, and self-hostility) and concerns were assessed over the week before the competition, one hour before the competition, immediately after and three days after the competition in 39 male elite martial artists. Results for the pre-competition period showed higher intensities and frequencies of positive emotions compared to negative emotions. Fear was the most reactive emotion in terms of the time closeness to the competition. Furthermore, interest, enjoyment, and fear were the most intense and frequent emotions one hour before the competition. A significant increase was also exhibited for negative emotions of shyness and shame directly before the competition, while the others remained stable and low in intensity and frequency. The measures taken directly after the competition showed the highest scores in intensity and frequency for the negative emotions, although positive emotions were still dominant. Higher variability in the frequency of negative emotions after the competition was recorded and for the positive emotions, more changes were observed in intensity. Moreover, positive emotions reached their pre-competitive rates sooner and remained stable during the post-competition measurements, while scores for negative emotions

were gradually decreased during the observed three days after the competition. Overall, the post-competition emotions and concerns manifested that participants disengaged from the contest soon after it was over. Particularly, it was observed through a sudden decrease in fear and interest. Furthermore, in line with previously mentioned research, athletes experienced a high intensity of enjoyment after a successful performance. However, perceived failure evoked negative emotions like sadness, guilt, anger, and self-hostility. Interestingly, the profiles of athletes were even more positive three days after the competition than during the pre-competitive period.

Martinet, Campo, Ferrand (2012) conducted research focusing on nature, frequency, co-occurrence, duration, and direction of emotions experienced by 11 table-tennis players during their performance in a higher number of matches. Using a qualitative video-assisted case study they found 12 discrete emotions (anger oriented to self, others, or things, discouragement, anxiety, disappointment, disgust, serenity, joy, pride, hope, and relief). Fluctuation in nature and frequency of the emotion were observed during the match. Furthermore, the most often reported emotions, which lasted only for a single point in table-tennis match were self-oriented anger, joy, relief, and anxiety. The emotions lasted for several consecutive points were anxiety, discouragement, serenity, and self-oriented anger. Inquiry of co-occurrence of emotions revealed that the players experienced two or more emotions during a competition. Specifically, the single point emotions were experienced alone most of the time, while multiple-point emotions were more often experienced with another emotion/s. Indeed, simultaneously experienced emotions had often the same valence (pleasant or unpleasant). Concerning of emotional direction in the single-point emotions, most of them were regulated emotions, which means they lasted only between the two points and were managed by a player before the start of a new set in the competition. Multiple-points emotions were perceived more often as debilitating for the performance rather than facilitative, whereas the single-point emotions were perceived more as facilitative than debilitating. Moreover, certain multiple-points were perceived mainly as debilitating (e.g., discouragement) or facilitative (e.g., joy, hope). Certain emotions did not influence the performance and some were perceived as both facilitative or debilitating depending on the characteristics of the situation. Interestingly, more than three-quarters of the single-point emotions were perceived as neutral for the performance. On the other hand, only around five

percent of multiple-points emotions were seen as not affecting the performance by the table-tennis players.

To summarize, the findings related to the temporal patterns of the performance-related states revealed that most research focused mainly on studying the pre-competitive states. The states after the competition have received also some attention although less than the pre-competitive states. Studies examining the time during the performance and feelings experienced by athletes in this period of time occurred rarely. The perceived direction of the states, subjective appraisals, situational and personal factors were identified as mediators in the process of states development. Overall, there are differences between the states experienced by athletes before, during, and after a competition. To gain more consistent and coherent knowledge, a further research is needed.

## **2 STUDY PURPOSE**

The first purpose of the research was to explore performance-related experiences of show jumping riders and their perception of a horse and rider-horse interaction in their recalled best and poorest performances. The second aim was to examine and assess the psychobiosocial states experienced by riders before their most successful and unsuccessful performances. Lastly, the third objective was to investigate the temporal dynamics of the states in the actual competition.

### 3 METHODS

#### 3.1 Participants

In the present work, the participants were experienced female show jumping riders ( $n=6$ ) from Slovakia who were competing actively at national and international levels with a height of fences of 130-140 cm ( $M_{\text{age}} = 21$ ,  $SD = 2.9$ , range = 18-25 years). All riders were doing horse riding for 9-15 years ( $M = 10.83$ ,  $SD = 2.3$ ). They were trained between 6.5-21 hours a week ( $M = 11.92$ ,  $SD = 5.5$ ). Each participant was currently competing with one to three horses.

#### 3.2 Instruments

##### *Semi-structured interview guide*

A semi-structured interview guide was developed based on the conceptualization of the psychobiosocial states (Hanin, 2000; Ruiz et al., 2016). The semi-structured interview consisted of three parts. The first part inquired about demographic information (age, gender, the number of years of active horse riding, current level of show jumping competitions, and the number of horses with whom participants were competed at that time) and the importance and expectations for upcoming competition, where the participants would be filling up a profile with their states. The importance of the upcoming competition was evaluated on a scale from 0 (not important) to 10 (very, very important). After the evaluation, the rider was asked about the meaning of the number (between 0 and 10) for her.

The second part inquired about rider's best performance. Each participant was asked to think about her best performance in a competition. The time frame for recalling experiences of riders was approximately within the last five years. Furthermore, there were structured questions to elaborate more about the participant's experiences, which primarily considered form, time, and context dimensions. The interview guide focused on the time prior to the performance and the context was a show jumping competition. The form dimension was assessed through questions related to riders' feelings and riders' perception of the horse. Finally, the interview guide contained questions such as: How important was the competition for you (the scale from zero to ten was used)? Could you describe the performance? What did make this performance the best one for you? How did you feel before the performance? How did the feelings contribute to your

performance? How did you perceive your horse before the performance? How would you describe your interaction with the horse? How did that (perception of the horse and rider-horse interaction) affect your performance? What were your thoughts before the performance? How did the thoughts affect your performance? How did you as a rider contribute to the performance? How did the horse contribute to the performance? Who else did contribute to the performance and how?

The third and last part explored the poorest performance of each rider in a competition. The set of questions described in the second part was modified to inquire about this performance.

#### *Profiles of performance states*

Three profile forms were created according to assessments of psychobiosocial states from IZOF model conceptualization (Hanin, 2000; Ruiz et al., 2016). The profiles served for recording riders' states and their intensity. The first profile was designed for the semi-structured interview to note down riders' recalled states and their intensity in the most successful and unsuccessful performances. The profile included four feelings categories – the rider's feelings related to competition, the rider's feelings related to the horse, descriptors of rider-horse interaction, and the rider's thoughts before the performance. The intensity was evaluated on the scale from 0 to 10 and the verbal anchors of the scale for intensity evaluations were: 0 (nothing at all) – 1 (very, very little) – 5 (much) – 9 (very, very much) – 10 (maximal possible) and for the evaluation of the items related to rider-horse interaction the verbal anchors were: 0 (the worst) – 10 (the best).

The second and third profiles were developed for collecting data about the temporal dynamics of the psychobiosocial states during a show jumping competition. The second profile (i.e. the competition profile) had the same four categories for the feelings as the first profile. The intensity of the states was recorded by the rider for the times prior, during, and after each competition. Indeed, a part of the second competition profile was information about the performance related to difficulty level, time of the competition's start, result, and evaluation. In the evaluation of the performance, the rider described the performance in her own words. The third profile (i.e. the competition-day profile) had three feelings categories - rider's feelings, rider's perception of the horse, and thoughts

related to performance. Rider reported the intensity level for the states in this profile every day in the morning, at noon, and in the evening.

### **3.3 Procedure and data collection**

Convenient sampling was applied in this work. The primary source for participants selection was the Slovak Riding Federation's online evidence of riders, clubs, and horses. Riders fulfilling the criteria (actively competing in show jumping and an experience of at least level 130 cm in height of fences) were contacted via social media.

Data collection took place from July to October 2017. In July, a pilot study was conducted with one female rider, who met the inclusion criterion for the research. Afterward, the questions were slightly adjusted to make them clearer for participants. However, the changes did not influence the content of the participant's answers, so the researcher decided to include the rider from the pilot study into the research group. Besides, four personal interviews and one Skype interview were conducted. Prior to the interview meeting, the written consent form was sent to participating riders. They were informed about the all necessary research details, confidentiality issues and their right to withdraw from the study at any given moment. Participants were interviewed mostly in a private setting (e.g. club rooms in stables or their houses) or in a quiet corner at a coffee house and the interview was recorded on the sound capturing device. At the beginning of the meeting, participants signed the written informed consent form. Afterward, the semi-structured interview was conducted which lasted around 30 minutes.

Strategic notes were written by the researcher during the interviews. Accordingly, rider's feelings were filled in the first profile immediately after the last question. Afterward, participants were asked to revise and comment about the states and thoughts written in the profile and evaluate the intensity of the states before the best and the poorest performances. As soon as the first individual profile was completed and approved by the participant, an explanation was provided to fill up the competition and competition-day profiles. Specifically, the participants used the second and third profile during the show jumping competition event. Each day of the competition they had to fill up both profiles. Mainly, they had to record the intensity into the competition profiles, which contained participants' feelings identified during the interview. The phase for creating rider's profile and explaining the competition and competition-day profiles

lasted on average of 30 minutes, therefore, the whole meeting with a rider took approximately an hour.

After each meeting, the rider's individual competition profiles with the feelings were created and sent back to the participant. Note that, only the intensity of the feelings was written down. However, in case the participant noticed a feeling, which was missing in the profile, she added this feeling into the profile and when a feeling was not present the intensity was marked as zero. After a competition event, the participant sent finalized profiles with states and intensities. All six riders participated in the interview and five of them were able to fill up the profiles during a competition.

### **3.4 Data analysis**

#### *Semi-structured interview analysis*

Firstly, all interviews were transcribed verbatim. The length of the transcripts was 26 single-spaced pages long with Times New Roman font (size 12). Secondly, an inductive content analysis was done with transcribed interviews. Through multiple readings, 238 meaningful text units were identified from the interviews which were consequently grouped according to the similarities into the developed themes and hierarchical coding schemes. Thirdly, identities of people and horses were changed in the transcripts to maintain confidentiality and to be sent to a second coder. The second coder read the transcripts and reviewed all meaningful text units identified and added eight new units. Afterward, the second coder obtained the complete list of the text units with the coding scheme. Both the second coder and researcher independently categorized all 246 meaningful text units into the coding scheme.

Reliability was assessed through reproducibility across coders. First, an inter-coder reliability and inter-coder agreement were calculated (Campbell, Quincy, Osseman, and Pedersen, 2013). The number of all created text units (246) was divided by the number of agreed text units (231). Hence, the inter-coder agreement was 93.9 percent. Further discussion continued and codes were re-organized until consensus was reached.

#### *Profiles of performance states analysis*

First, all profiles were transcribed to a digital form. A content dimension of the states from the first riders' profiles was analyzed and the functionality (functional/helpful-dysfunctional/unhelpful) and hedonic tone (pleasant-unpleasant) of each item was identified according to the interviews. Items, which the researcher was not able to



identify on the content dimensions were put into the neutral category. Furthermore, graphs for the best and poorest performance with form, content, and intensity dimensions were created for each rider.

Second, a content of the feelings from rider's perception of a horse and rider-horse interaction profile's categories were described. Furthermore, the states from all profiles were deductively analyzed according to the eight modalities of a psychobiosocial state (Ruiz et al., 2016). The mean of feelings intensity for each modality was calculated.

Third, a temporal dynamics of states intensity was analyzed for each rider throughout the competition days. The intensity of every single state was separately given on a daytime continuum according to the records of riders (morning, noon, evening, and before, during, after a competition). The analysis was conducted in groups of feelings from the same psychobiosocial modality. Also, similarities and differences in the intensity dynamics for the states were described. For each rider, the researcher created graphs with form, content, and intensity dimensions representing each recording time separated by a day. This type of graph allowed a comparison of the performance of a rider before the competition and during the best and the worst performances.

### **3.5 Ethical issues and trustworthiness of the data**

The study followed the ethical research guidelines of the University of Jyväskylä, Finland. At the beginning of the study, the participants signed an informed consent form where they confirmed of their voluntary participation. The researcher took care of participants' anonymity and confidentiality of the collected data.

Patton (2002) suggested three main elements of the qualitative inquiry, which need to be taken into consideration when the credibility and the quality of the study is to be evaluated. These are rigorous methods, the credibility of the researcher, and philosophical belief in value of the qualitative inquiry. With this in mind, the researcher implemented content analysis as a well-established method in the qualitative research approach.

Multiple data collection strategies were used. The first source of information came out of the interviews. The time frame for the interviews was created by the riders' recall memories from the past about their performances. Second, the profiles for the data recording were used. Considering the time frame of the profiles, the riders were

recording their actual feelings during the competition days. Riders actively participated in the process of their profiles development. They provided a feedback and were able to add more details to those. Furthermore, each verbatim transcription of the interview was sent to the participant to for reviewing their answers and checking other details. During the data analysis and quotes translation, a second coder was involved to reduce the researcher's possible biases. As the study was a part of the researcher's master degree educations, therefore the whole process of the data collection and analysis were discussed in the study groups and supervised by guarantors of the Sport and Exercise Psychology Program.

### **3.6 Researcher's background and roles**

As a researcher, I am a female from Slovakia same as the participants of the study. To mention a relevant information for the study about my background, I have a master degree in psychology and a training in an integrative coaching. Moreover, I gained experience in qualitative research methods while I was conducting my first master thesis research in psychology. All my mentioned skills and experiences contributed to my ability to actively listen to participants' experiences and allow them to express themselves freely with a full respect from my side. Furthermore, I am a horse rider and I have experience from show jumping competitions as an athlete, as well as a member of an organizing committee of the show jumping competitions. Considering the participants in this study, I was familiar with equestrian language which strengthens the mutual understanding during the interviews. The topic of the research is personally related to me as a researcher and also all the participants were my acquaintances before conducting this research. On one hand, it may have been beneficial for establishing trust and openness of participants during the interviews. On the other hand, it may be seen as a limitation too as it could result in some bias. Therefore, the participants were included in to the process of profile development and reviewing their own transcript of the interview. Furthermore, the second coder was also involved in the data analysis. Finally, the process of the data collection and analysis was sincerely described in details in this chapter. Thus, the transferability and dependability of the study are achievable.

## **4 RESULTS**

Collected data from the participants consisted of interviews about the best and the worst performances and filled up profiles from interviews and competitions. At the beginning of this chapter, performance-related experiences of riders during their most successful and unsuccessful performances are presented through the hierarchical coding scheme. Results present a holistic picture of the show jumping riders' experiences and describe factors relevant for performance including the rider-horse interaction. Further in the chapter, the focus shifts to examine the idiosyncratically generated psychobiosocial states of riders and their descriptors of the horses and rider-horse interaction. A general description of all states across the three feelings categories (riders' feelings, riders' perception of the horse, and rider-horse interaction) is presented and the analysis of content dimension is included. Subsequently, the intensity dimension analysis of the generated states from the successful and less successful performances is outlined and results from the deductive analysis of the states with their intensities are shown. The last part of the chapter is dedicated to the temporal dynamics of the states in an actual competition, which is presented as a group of single case studies.

### **4.1 Riders' performance-related experiences during their most successful and unsuccessful performances**

The results of riders' performance-related experiences are presented through the hierarchical coding scheme as shown in Table 1. Eleven themes were identified and two of them were further split into three more detailed subcategories. Out of the 11 themes, the three higher-order categories were created. The final coding scheme had three hierarchical levels with three higher order categories (Context, Riders' perception of the horse and rider-horse interaction, and Riders' feelings and thoughts), 11 themes, and six subthemes. All three higher order categories are related to each other. Context is an umbrella category which surrounds a rider and a horse who are interacting in this specific and dynamic environment. Overall, through 19 quotes, the voice of each participant is equally expressed in the examples for each theme. These quotes were translated by the researcher and the translations were edited by the second coder.

## Context

Context is one of the higher order categories emerged from the interviews analysis, which describes the factors related to the performance and the background of the show jumping competitions. This category includes three themes: preparation for the competition, competitions' environment, and social interaction. The last theme, social interaction, was split into three subthemes: beneficial for the performance, detrimental to the performance, and neutral for the performance.

**Table 1 Hierarchical coding scheme**

Higher-order categories	Themes	Subthemes
Context	<ul style="list-style-type: none"> <li>•Preparation for the competition</li> <li>•Competitions' environment</li> <li>•Social interactions</li> </ul>	<ul style="list-style-type: none"> <li>•Beneficial for the performance</li> <li>•Detrimental for the performance</li> <li>•Neutral for the performance</li> </ul>
Riders' feelings and thoughts	<ul style="list-style-type: none"> <li>•Thoughts and performance</li> <li>•Expectations and goals for a competition</li> <li>•Evaluation after the best and worst performance</li> <li>•Feelings and performance</li> </ul>	
Riders' perception of the horse and rider-horse interaction	<ul style="list-style-type: none"> <li>•Finding a suitable approach for a horse by the rider</li> <li>•Riders perception of horses' behavioral responses and performance</li> <li>•Riders perception of horses' "states" and performance</li> <li>•Dynamics between the horse and rider</li> </ul>	<ul style="list-style-type: none"> <li>•One-way dynamics - rider's impact on the horse</li> <li>•One-way dynamics - horse's influence on the rider</li> <li>•Both way dynamics between the rider and horse</li> </ul>

### *Preparation for the competition*

In this, riders were talking about the long-term preparation for a specific competition in show jumping e.g. challenges of high-level competition. It included a proper and careful planning of the starts in the competitions during the season and training at home.

Following quote exemplifies the long-term preparation: *“We had been sort of preparing for the competition for two years... well, two years... basically, this year and we were planning for it since the last year...”* (Rider B). Both rider’s and horse’s readiness for the competition was considered in a performance evaluation. A short-term preparation was done right before the competition. While riders were walking the show jumping course, they usually plan the strategy for their riding. A quote from riders D is an example of the short-term preparation for the competition: *“... when I’m going through the jumping course I just focus on riding – what distance there is towards the jumps and the plan made up while walking the show jumping course...”*.

### ***Competitions' environment***

Additional value or importance of a performance for some riders was strengthened by the prestige of the competition. For example, the riders perceived differently the environment at an important championship or challenging international competition, which had a higher value for them, and described its effect on their experiences. Rider’s D quote exemplified this:

*“...still it is Slovak national championship, it will be recorded somewhere, although, on the other hand, I think that the difficulty level isn’t that high in Slovakia and I would prefer...I think that I consider it a bigger success when I complete a better round in a two or three stars international competition than let’s say in the Slovak national championship...”*.

In comparison, when the competition was, for example, part of a training preparation it also influenced riders’ experiences as demonstrated in the following quote from rider E:

*“...it was an ordinary international competition, even though it was international it wasn’t very high. It was a two stars competition and we did it during the winter preparation. It didn’t matter to me much, but I wanted to show the mare and do a good job and it worked out well...”*.

Another interesting factor from the environment, which was mentioned by riders when they were talking about their most successful and unsuccessful performances was the placement of the competition in the season. For example, an important competition took place at the end of the season, which was negatively evaluated by riders. Furthermore, the weather during the competition and the surface in the riding arenas were also pointed out by riders as influential for a performance. The rider’s evaluation of the jumping course itself evoked different feelings in them. Some of the riders described their tendency to identify the hardest or the most challenging part of the course for them

and their horses which later had an impact on riders' states and consequently on their performances. Moreover, situational influence on riders' experiences might be seen throughout the description of differences in states during the competition's main jumping course and jump off, where the pressure on the rider and horse was different. Rider's C quote is provided to illustrate the factors related to the competitive environment.

*“Overall, the weather was suddenly bad, it rained pretty heavily. The show jumping course was very high and it was one of qualifying rounds for the Czech show jumping cup, so it was also a technically demanding course. Because sometimes it's (the jumps in a course) high but not really technically demanding, but this one was also technically demanding. There was a lot of passages to remember ... and it was exhausting for me to remember the course and to keep required focus... I had to think while jumping. And I remember that he refused to jump during the warm-up because he was in such mood and the weather had changed as well. And indeed, even as we entered the show jumping course, it was raining quite a lot, and already on the first obstacle that wasn't too high, he rebounded badly as if he didn't even want to get off the ground because it was also a bit soaked.” (Rider C).*

The participants had the horse riding as a profession or a hobby. Riders who did horse riding and who were riding their own horse had different perspectives of their experiences compared to those who did horse riding as a profession and did not ride their own horse. These conditions shaped the riders' performance-related experiences during a competition as shown for instance in a quote from rider E.

*“...it doesn't matter, life isn't at stake, I got paid for that anyway, so it's like if it's your job, then it's different... I thought the boss will pay me so I will work hard, I'll give it a try at least, but it doesn't matter much, it was kind of a resignation little bit...” (Rider E).*

### ***Social interactions***

Mapping social interactions of riders with their surroundings in the interviews showed that supportive team of people contributed to riders' good experiences and performances. Coaches' presence during the competition and their appropriate coaching styles for the riders' needs was pointed out by the participants the most. All these factors were described beneficial for the performance. On the other hand, inappropriate coaching style, doubts from the team or people around the equestrian dyad and perceived pressure from outside by rider had a detrimental influence on the riders' states. Although, not all social interactions were perceived as influential for the

performance by riders, therefore, they were kept into a neutral category. The following quote from rider F is one of the examples of the situational interactions and rider's meta-experiences.

*"...because there we used to be stressed out and I know, afterward it was like I was used to the fact that someone was screaming at me constantly when I made a mistake, so I was stressed and my performance got even worse..." (Rider F).*

### **Riders' feelings and thoughts**

A higher order category called Riders' feelings and thoughts represented a brief introduction to the riders' feelings, thoughts, expectations, goals related to the performance, and evaluations of the performance. A detailed description of the states through the profile analysis is described later in this section.

### ***Thoughts and performance***

This theme grouped together riders' description of their thoughts and their impact on performance. The riders' ability to predict and estimate horse reactions was considered important factor for the performance. Riders described a clear mind and focus on the task as one the key skills during their best performances. They felt an adverse effect on their performances when they lost the focus and were overthinking when riding. To demonstrate thoughts and performance theme rider's A quote is given below.

*"Usually, when I remember something and I start thinking about it, it never ends well. When my head is empty and I focus at the moment, but without pushing myself to do so, to be focused, then it's the best. As soon as a thought comes to my mind, or something disturbs me and I start focusing, for example, on like "God somebody is looking at me here", or "this will be a difficult jump", or "here and there something", then... no, like this, when I focus on riding by chance, when I tell myself that "here the horse isn't bent enough" and "here I will straighten the horse", that's still ok, but if the thought is focused on something like "only the last jump left" or "someone is taking a picture of me there", then it is the worst. And when I am in that present moment then it is the best." (Rider A).*

Throughout the analysis, the researcher found interesting riders' reactions to a mistake. In a relationship to thoughts, riders reported the appearance of the dysfunctional thoughts and loss of the focus after a mistake. Moreover, focusing on a part of the jumping course which evoked, for example, a fear in a rider and keeping this in mind led to a tension and inappropriate riding and consequently to a mistake as presented in rider's B quote.

*“well of course I was nervous, but I have to say, on the other hand, in the warm-up arena I didn’t think about that, about what was going to happen in the show jumping course and also when I was galloping towards the first jump my mind was clear, until a problem occurred in the course or something I wasn’t quite sure about, then I started to think about the nervousness... then when I was galloping on the third jump (after a problem) I thought why did I even go for this course, but then after the third and fourth jump...then I didn’t think about that at all, luckily...” (Rider B).*

### ***Expectations and goals for a competition***

The theme related to expectations and goals came out of the interview because of the specific question related to this topic. Quotes included in this theme involved riders’ motivation and their goals for an upcoming competition, expectations, and the evaluation of competition importance for the rider. Most of the times, riders had both process and outcome goals for the competition. Process goals were related to the rider-horse team as a whole and focused primarily on the horse’s good experiences from the competition. To illustrate riders’ expectation and goals a quote from rider C is added: *“...I had expectations about the result of the competition, I wanted to finish the course. I think it had two phases and I wanted to complete at least the first one...”*.

The importance of the best and poorest competitions was assessed on the scale from one to ten, where one was labeled as not important competition and ten was labeled as very, very important competition. The mean for the importance of the best competition was 7.42 with SD of 2.11 and the mean for the importance of the poorest performance was exactly the same with standard deviation of 0.8. This might suggest that the importance of the competition was not one of the main influential factors for the best or poorest performances even though it sometimes changed the perception of the competition and consequently the experiences of riders.

### ***Evaluation after the best and poorest performances***

The question - why was the performance the most successful or unsuccessful for the rider is incorporated in all answers and quotes included in this theme. Riders mentioned their technical riding skills as a factor influencing the result. Moreover, they talked about the overall good or bad feelings from the performance and its outcome, which made them choose the specific performance for the interview. Interestingly, most of the times, the performance was evaluated as the best or worst regardless of the results as for example in given quotes from rider F: *“... (about the best performance) and then on*



*Sunday, even though we received around 12 penalty points, it was an absolutely great performance in the show jumping course, I had a great feeling afterward...”.*

### ***Feelings and performance***

This theme grouped the experiences and feelings, which were further analyzed through the profiles in the idiosyncratic descriptors of riders’ feelings category. Most of the riders were aware and had knowledge about the effect of their states on the performance which represented their meta-experiences. Rider’s feelings of control and synchronization between the rider and horse were more frequently related to the successful performances. In contrast, these feelings were not mentioned by participants after their poor performances. Moreover, one of the important skills of riders, identified by the researcher, was riders’ flexibility which was mostly mentioned in a relationship with good performances. Riders expressed their feelings for instance like in rider’s A quote.

*“... (what made the show jumping course a great one?) basically it depends on the feeling during the show jumping course, because sometimes those moments come—for me, hesitation at the next to last obstacle, that I tell to myself – Jesus only two obstacles left and I’m having a clear round so far, I have to keep it clear – or I’m too over-motivated or I hit few snags... but this time, also because of the mistake in the beginning, my mind was calm, it didn’t matter anymore, I was only riding with one goal, to ride the course nicely, so that’s it, I rode calmly and I have a feeling that it was nearly ideal and I don’t know if I would change anything (of the performance)...” (Rider A)*

Riders described their changes in the feelings after a mistake. A helpful coping strategy to learn from the mistake was described by one rider. Few different reactions occurred after a mistake in riders. One of them was calming down and release of the pressure from riders after the mistake (for example, as is written in the quote from the rider A above). Another one was related to an increase in motivation or feelings of disappointment.

### **Riders’ perception of the horse and rider-horse interaction**

The second higher order category was related to rider-horse interaction. Themes which were part of this group were finding a suitable approach for a horse by the rider, riders’ perception of horse’s behavioral responses and performance, riders’ perception of horses’ “states” and performance, and dynamics between the horse and rider. The last theme, the dynamics between horse and rider, were further divided into three

subcategories: both way dynamics and one-way dynamics with two directions - horses' influence on riders and riders influence on horses.

### ***Finding a suitable approach for a horse by the rider***

Quotes included in this theme were related to riders' ability to get to know and accept the horse and adjust their riding style to establish an appropriate cooperation for the performance. Most of the participants were riding complicated horses and all of them mentioned that they had to learn how to deal with the horse. When they knew the horse and horse's reactions, it was easier for them to establish working communication. In terms of adjustment, the riders adapted their riding style and the way of using aids for the horse's specific needs. As an example, the quote from the rider E is presented below.

*"... I'd been approaching her really gently and she then gained the certainty, she wasn't afraid, the riding style I'd been doing with her for a long time gave her some self-confidence, that nothing bad is going to happen to her and she didn't need to be afraid... You know, so it made me very happy, so I think it most probably influenced it (the performance) because, in fact, it really turned out well..." (Rider E).*

### ***Riders perception of horses' behavioral responses and performance***

This theme represents riders' perception and evaluation of horses' obedience, cooperation, attentiveness, calmness, willingness, and the possibility to rely on a horse. When all these characteristics were evaluated as very good, the horse was appreciated by a rider and the performance was also evaluated as a more successful. For instance, through a rider's A words the theme is described nicely.

*"...well it depends, she is a very self-sacrificing horse, she always does everything I want from her, she would jump to the middle of the obstacle if that was what I'd asked her to do, she jumps with her heart, always wants to do her best and therefore I can never actually get angry with her. She is such a hardworking horse..." (Rider A).*

### ***Riders perception of horses' "states" and performance***

While riders were asked about their best and poorest performances and their own feelings, they also described horse's "states" which were recognized mostly through the behavior, reaction, and actions. They talked about the importance to know a functional/optimal "states" of the horse for a good performance and how to get the horse into the "states" as, for instance, in rider's D quote:

*“... She (the horse) always jumps the best on the third day and this was the third day, so I knew that and also in the warm-up arena she was great because I already know how to tune her in...in a way she is more careful in the show jumping course, but not too much, then she would be too careful, so I would say, (she was) probably her usual self during the third day, she was in the mood, rested and fired up a bit... so I just needed to keep her in it and drive her...” (Rider D)*

On the other hand, riders were also talking about recognizing horse's non-optimal or dysfunctional states and its consequences for the performance and rider-horse cooperation. An example from rider C exemplifies the riders' expressions of the horse's states: *“... but when I entered (show jumping course arena), he stiffened up and I knew that it was going to be bad...”*

### ***Dynamics between the horse and rider***

The theme related to the dynamics between the horse and rider was divided according to the direction of the impact of one's behavior to another team member's states. Either horse impacted on the rider or the rider impacted on the horse. In both ways, the dynamics between a rider and horse was described by the rider throughout the mutual trust between each other, knowing each other, and mutual synchronization in movement and communication. In this theme knowing each other represented both sides of the riding couple. It was not about riders riding skills and knowing what kind of approach was appropriate for the particular horse, but it was mutual knowing and adjustment to each other. So, a horse was able to read and react to riders' specific aids or signals, which was represented by riders as horse's ability to know the rider likes for instance in the rider's A quote.

*“... as well coordinated already, both of us are already quite coordinated, basically we know how we react to each other in different situations and when we are going without my or her hesitation, like in this case, when we were both performing with confidence and in the same rhythm, then cooperation is fluent and coordinated...” (Rider A).*

In one-way dynamics, the riders described the impact of their states or behavior on their horses and also the impact of horse's behavior on their performance. A quote from rider F represents the direction from the horse to rider, where horse's “states” which is recognized through its behavior had an impact on rider's psychobiosocial states:

*“...because he was so sleepy, it was discouraging for me quite a lot, like omg I had to push him all the time and he didn't react to that, well he was*

*jumping, but as I said only as much as he had to, so mainly because he didn't want to, it was totally terrible..." (Rider F).*

A quote from rider B shows how a rider might influence a horse in the mutual performance:

*"...she (the horse) reacted to my aids and everything, but I think that she kind of knew that I'm not very sure, I didn't give her support when I should have and therefore she was even more attentive and she is not that certain on her own anymore." (Rider B).*

## **4.2 Riders' psychobiosocial states, their perception of the horse and rider-horse interaction – reflection through the profiles**

In this chapter, the focus is on the idiosyncratically generated states included in the riders' profiles by continuing from the previous chapter, which provided a glance of a holistic picture of show jumping riders performance-related experiences.

### **General description of riders' idiosyncratically generated items**

Overall, riders created 139 items to describe their emotional and non-emotional performance-related feelings for their best and the poorest performances and also the competition profiles. The hedonic tone and functionality of the items generated for rider's feelings and rider's perception of the horse were put into the five categories – pleasant-helpful feelings (P+), pleasant-unhelpful feelings (P-), unpleasant-helpful feelings (U+), unpleasant-unhelpful feelings (U-), and feelings, which were not identified as helpful, harmful, or pleasant, unpleasant for a rider (neutral category - N). The descriptors of the rider-horse interaction were not categorized according to the hedonic tone and functionality.

The general descriptions from the riders' profiles are summarized in Table 2. The riders' feelings category consisted of 71 items. The second category was consisted of 46 riders generated items for their perception of the horses' behavior and characteristics. Through the inductive content analysis of the descriptors related to the horses the five themes were identified – 1) horse's attention and concentration (e.g., attentive, concentrated), 2) horse's motivation to perform (e.g., willing, sedulous), 3) horse's energy level (e.g., energetic, sluggish), 4) horse's level of relaxation (e.g., calm, stiff, relaxed), and 5) trust. The theme of trust was strongly related to the last category of the

riders' generated descriptors because it reflected a mutual trust or horse's trust to the rider and vice-versa.

The third category consisted of 22 items related to rider-horse interaction during a performance. The themes from the inductive content analysis, which appeared in the third category were related to a horse's obedience (e.g., cooperation, willing to be guided), balance, rhythm and fluency in movements, leading of the horse and finding appropriate distances between the obstacles, rider's feelings of control, and the overall simplicity in riding. Moreover, a closer look at the ratio between riders' feelings and horse-related descriptors (riders' perception of the horse and rider-horse interaction) showed "71 out of 139 (51.08%) to 68 out of 139 (48.92%)" which might reflect a balanced contribution of the rider and horse to performance in terms of the psychobiosocial states.

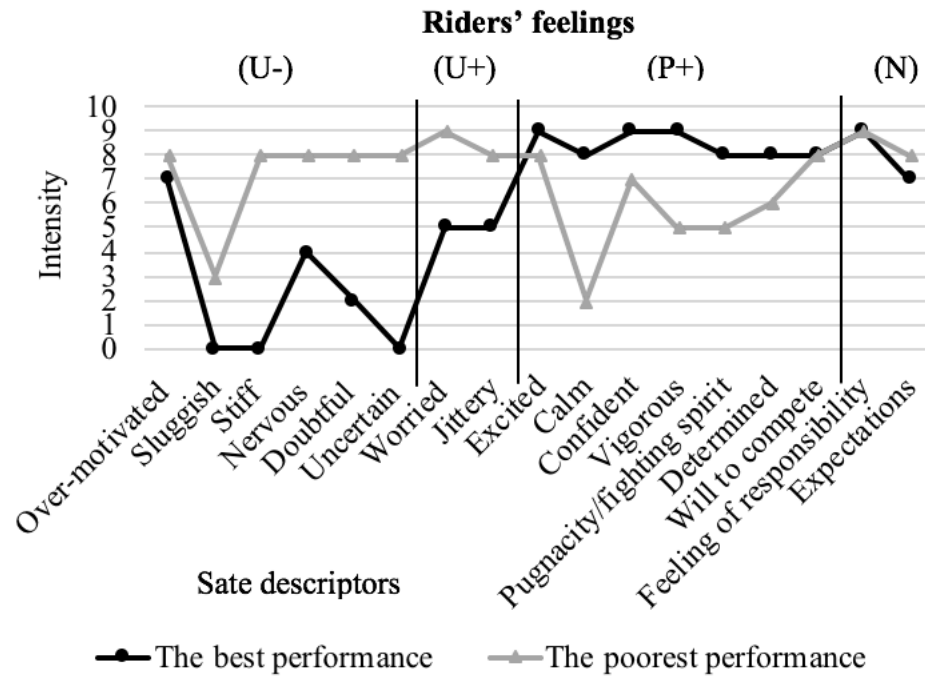
**Table 2 General description of riders' idiosyncratic states**

<b>Categories</b>	<b>All idiosyncratic descriptors</b>	<b>Riders' feelings</b>	<b>Riders' perception of the horse</b>	<b>Rider-horse interaction</b>
<b>Sum</b>	139 (100%)	71 (51.08%)	46 (33.09%)	22 (15.83%)
<b>(U-)</b>	44	32	12	
<b>(U+)</b>	4	4	0	
<b>(P+)</b>	63	29	34	
<b>(P-)</b>	3	3	0	
<b>(N)</b>	3	3	0	

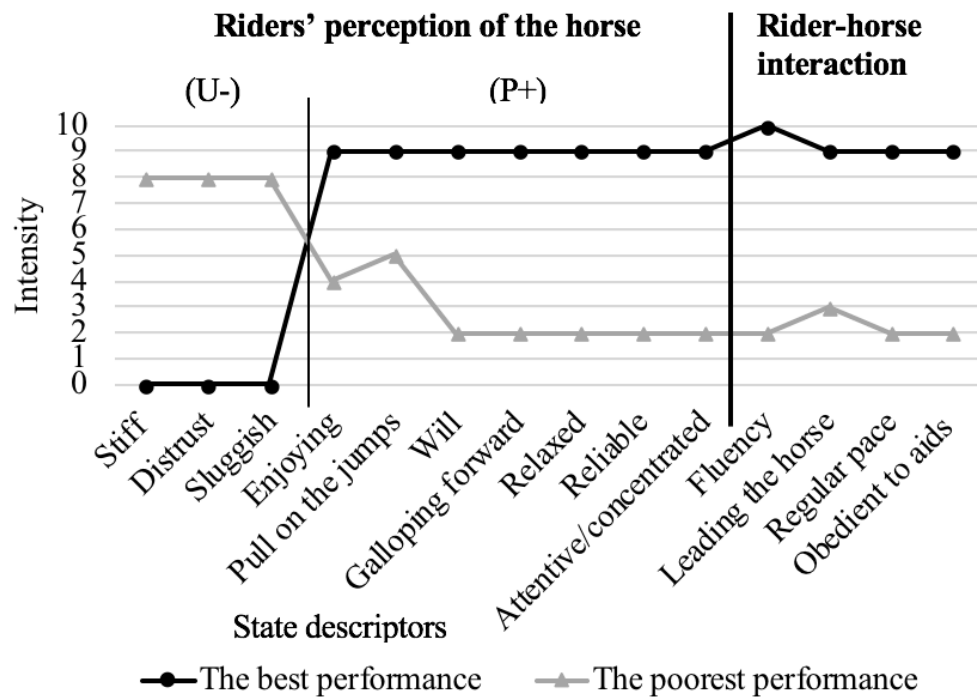
Note. (U-) = unpleasant-unhelpful states; (U+) = unpleasant-helpful states; (P+) = pleasant-helpful states; (P-) = pleasant-unhelpful states; (N) = neutral category.

### **The states profiles before the best and worst performances**

According to the generated descriptors, the individual profiles for each equestrian dyad were created. As an example, a profile for the rider C is described and depicted in Figure 1 and Figure 2. During the interview, rider C generated 31 idiosyncratic feelings related to the best and the worst performances. She created 17 descriptors related to rider's feelings category, 10 descriptors related to a rider's perception of the horse behavior and characteristics and four items related to a rider interaction. The intensity curves for the best (black line) and the poorest (grey line) performances showed higher intensity for the helpful feelings and lower intensity for the unhelpful feelings in the best performance and vice versa across all three categories of the generated items. For



**Figure 1** – Rider’s C profile for the best and poorest performances for Riders’ feelings category.



**Figure 2** – Rider’s C profile for the best and poorest performances for the Riders’ perception of the horse and Rider-horse interaction categories.

the rider's feelings category, the rider C generated six items for unpleasant-unhelpful (U-) category. In this category, the highest variability in intensity was reported for items stiff (range 0-8) and uncertain (range 0-8) and the lowest variability for the item over-motivated (range 7-8). Only two items were reported for the unpleasant-helpful (U+) category. These were items worried (range 5-9) and jittery (range 5-8).

In the category pleasant-helpful (P+) feelings, rider C reported seven items, from which the highest variability in intensity was found for the item calm (range 8-2) and the lowest variability in intensity for the item will to compete (range 8-8). There were no items generated for the category pleasant-unhelpful (P-) by the rider C. In the descriptors related to rider's perception of a horse, the rider C generated unpleasant-unhelpful (U-) and pleasant-helpful (P+) feelings. From the unpleasant-unhelpful (U-) feelings (e.g., sluggish horse) the variability in intensity was the same for all three recorded items (range 0-8). The pleasant-helpful category consisted of seven items, from which the highest variability was recorded for feelings (e.g., attentive, relaxed; range 9-2) and the lowest variability was recorded for item pull on the jumps (range 9-5). Two items were given into neutral category (N) – feeling of responsibility and expectations. All items related to a rider-horse interaction showed a high variability in intensity between the best and worst performances for the rider C. The highest variability in intensity was for item fluency (range 10-2) and the lowest variability in intensity was for the item leading the horse (range 9-3).

Profiles for the riders A, C, E, and F showed two different curves for the best and worst performances for rider-related feelings as well as for rider's perception of the horse and rider-horse interaction. In the best performances, the lower intensity for unhelpful feelings and higher intensity for helpful feelings was reported. On the other hand, for the poorest performances, the higher intensity for unhelpful and lower intensity for helpful feelings was recorded. Rider's B profile showed different curves for the best and worst performances in items related to rider's feelings. However, the items related to rider's perception of the horse and rider-horse interaction had almost the same intensity level before both performances. Furthermore, rider's D profile did not show any differences in intensity among items related to the rider's feelings between the best and the worst performances. However, the different curves for the performances were observed for the items related to rider's perception of the rider-horse interaction.

High interindividual variability was found in the content of descriptors and intensity dimension among riders. Individual differences in intensity were found not only for the descriptors of riders' feelings but also for the descriptors related to riders' perception of the horse and rider-horse interaction. The descriptors related to rider-horse interaction also showed a higher intensity for the best performances than for the worst performances, especially when they were formulated in a positive way (e.g., cooperation - positive; fighting against the rider - negative). In addition, a reversal effect in functional impact of the states was noticed among riders for items worry, doubtful, and confident. Regarding the situation and intensity level, some riders perceived these states as helpful and others perceived them as not helpful for the performance.

### **The eight modalities of psychobiosocial states in rider's profiles**

First, to demonstrate layout of the items, an example of the rider C was used. Table 3 depicts all feelings generated for the best and the worst performances categorized into the basic modalities of psychobiosocial states for the rider C and their intensity. Seven modalities were present in the profile. The anger modality was missing. Comparison of the intensity means for functional and dysfunctional items between the performances across the modalities for the rider C showed a higher intensity in functional items for the best performance compared to the poorest performance. The exception was anxiety modality, where the intensity during the best performance was lower compared to the worst performance. On the other hand, the intensity for the dysfunctional items was lower or not present during the best performance and higher during the worst performance.

Furthermore, all items from all participants generated during the interviews were entered into the scheme for psychobiosocial states (Table 4). A higher number of functional descriptors were generated compared to dysfunctional descriptors. All eight modalities were represented throughout the functional descriptors. For the dysfunctional descriptors, pleasant, anger, volitional, and motor-behavioral modalities were not identified. From the intensity perspective and functionality of the feelings, the results showed a higher intensity of functional feelings in cognitive, pleasant, motivational, volitional, bodily, motor-behavioral, operational, and communicative modalities in the best performances and vice versa for the worst performances. The dysfunctional items intensity scores were lower before the best performances and higher before the worst performances in cognitive, anxiety, motivational, bodily, operational, and



communicative modalities. However, for the functional anxiety and anger modalities, the numbers showed a lower intensity in the best performances than in the worst performances.

**Table 3 Example of the rider C – Intensity across modalities of psychobiosocial states**

	Functional					Dysfunctional				
	ni	BP		PP		ni	BP		PP	
		M	SD	M	SD		M	SD	M	SD
<b>Cognitive</b>	2	8.00	1.41	5.00	4.24	2	3.50	2.12	8.50	0.71
<b>Pleasant</b>	3	9.00	0.00	6.33	2.08	0				
<b>Anxiety</b>	2	4.50	0.71	8.00	0.00	1	0.00	0.00	8.00	0.00
<b>Motivational</b>	2	8.50	0.71	5.00	4.24	1	7.00	0.00	8.00	0.00
<b>Volitional</b>	2	8.00	0.00	5.50	0.71	0				
<b>Bodily</b>	3	8.67	0.58	3.00	1.73	4	0.00	0.00	6.75	2.50
<b>Motor-behavioral</b>	5	9.20	0.45	3.00	1.41	0				
<b>Operational</b>	1	9.00	0.00	3.00	0.00	0				
<b>Communicative</b>	2	9.00	0.00	2.00	0.00	1	0.00	0.00	8.00	0.00

Note. BP = the best performance; PP = the poorest performance; ni = the number of items in the modality.

Content analysis for each of the eight modalities of psychobiosocial states showed that all descriptors from the dysfunctional psychological states were related to the riders' feelings only. For the functional feelings of psychological states, most of them were also related to the riders' feelings and only few were related to the riders' perception of the horse and rider-horse interaction. Overall, in the psychological states, the riders' feelings dominated over the feelings related to the horse. In the biological states, bodily functional and dysfunctional feelings were related to the riders' feelings and riders perception of the horse. The motor-behavioral modality was described through items related to the horse and rider-horse interaction. To put it briefly, in the biological and also social states the number of descriptors related to rider's perception of the horse and rider-horse interaction dominated over the descriptors for the rider's feelings regardless of their functionality.



### **4.3 Temporal dynamics of the psychobiosocial states in an actual competition**

The analysis of the temporal dynamics showed interindividual and also intraindividual differences in intensity dimension and content of the states among riders. Therefore, the following part of the thesis is written as a single case studies and describes temporal dynamics of the states for each rider individually during a competition event. In the end, a summary of all cases is provided.

#### **Rider A**

Rider A competed in a three-day event and recorded the temporal dynamics of the states during all three days. Each day, the rider competed in one competition. The jumps were 130 cm and 135 cm high in the first and the second competition, respectively. In the third competition, the obstacles were 140 cm in height. All competitions were evaluated as a good performance by the rider A.

During the initial interview related to the best and poorest performances, the rider generated 14 descriptors for the performances and did not add any new descriptors during the competition event. The most of the rider-related feelings belonged to psychological component of the psychobiosocial states. The feelings for the affective, motivational, and bodily modalities were also present. The intensity of the items was stable during the days. The changes started occurring during and after the performance.

During the first day, the affective unpleasant anxiety feelings had the same level of the intensity since morning. During the competition, they increased and after the competition, they remained the same until evening or decreased slightly. The affective pleasant feeling had high intensity during the first half of the day. During the competition, it was decreased and after the competition, it was increased and remained the same. The motivational feeling had higher intensity during the first day. During the competition, it was increased slightly and after the competition, it fell down. Bodily items both pleasant-helpful and unpleasant-unhelpful were low in intensity at the beginning of the day. During the competition, they were increased and remained the same until the end of the day.

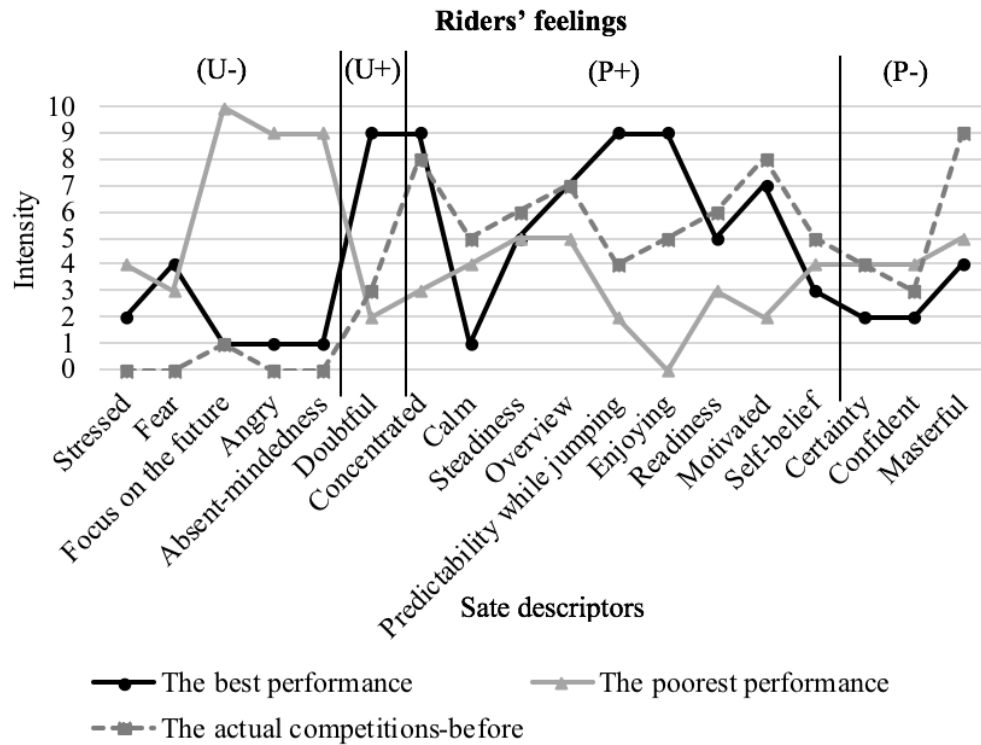
During the second day, the intensity of the items was the most stable compared to the first and third days. The pleasant-helpful feelings had a higher intensity than the unpleasant-unhelpful feelings. The affective unpleasant anxiety items were decreased after the competition and kept stable intensity until the end of the day. Compare to the

first day, they were less intense than during the first day. Affective pleasant feeling was increased after the competition and again remained the same. Motivational item was decreased after the performance as in the first day and stayed stable without a further change. The pleasant-helpful bodily item had a higher intensity than the day before and was stable throughout the whole day. On the other hand, the unpleasant-unhelpful bodily item had similar intensity in the previous day and was decreased during the competition.

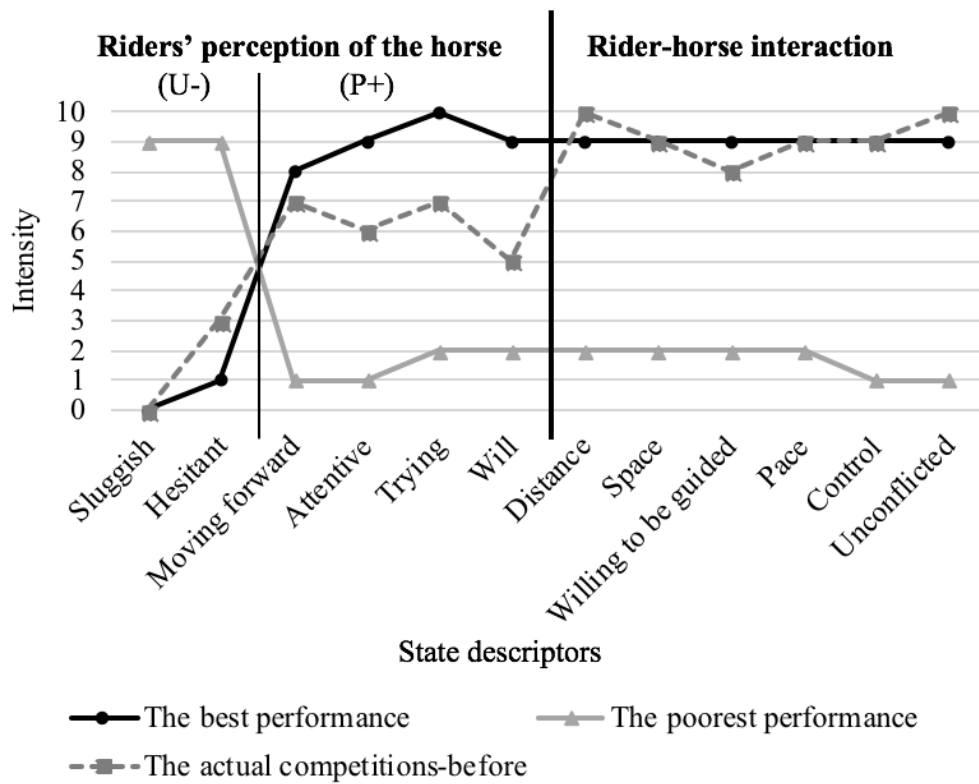
The profile showed the highest variability in the intensity of the rider's states during the third day. This day the affective anxiety feelings did not have similar curves. The hesitant item had a lower intensity than stress and it was increased during the performance and was decreased gradually after it and remained stable. The stress descriptor showed a sharp decline during the performance and was decreased after it and stayed without a change. Affective pleasant descriptor was increased during the performance and stayed at the same level until the end of the day. Descriptor from the motivational modality was increased during the performance and then the profile's curve showed a sharp fall and remained the same. Bodily pleasant-helpful feeling was increased after the performance, while the unpleasant-unhelpful item was increased on the same intensity as the pleasant-helpful feeling during the performance and was decreased after it.

Descriptors for the rider's perception of the horse and their interaction were very stable in the intensity level throughout all three days. All pleasant-helpful descriptors and favorable descriptors of the interaction scored high in intensity level during the whole competition event. Unpleasant-unhelpful descriptor was horse's tiredness, which showed a steady increase from the first to the last day.

Results from the comparison of the curves from the best and the worst performances and all curves before the competitions showed that the intensity level of most of the items related to riders was in between the curves for the best and worst performances. The intensity of almost all items related to rider's perception of the horse and rider-horse interaction had a very high intensity which scored above the best performance. An example of the comparison of the curves before the best and poorest performances with the states before an actual competition is showed in Figure 3 and Figure 4.



**Figure 3** – Rider’s E profile for the comparison of the states before the best and poorest performances with the actual competitions for Riders’ feelings category.



**Figure 4** – Rider’s E profile for the comparison of the states before the best and poorest performances with the actual competitions for Riders’ perception of the horse and Rider-horse interaction categories.

## **Rider B**

Rider B reported dynamics for the first day of a three-day competition. In this day, the rider competed in one competition, where the height of the obstacles was 130 cm and the rider evaluated the performance as a good one.

The rider generated 17 items to describe her states during the best and the worst performances and added seven new descriptors during the competition event. The most of the rider-related feelings belonged to psychological component of the states. Feelings from the motivational and volitional modalities were also present. Unpleasant-unhelpful motivational feelings were present only during the performance in a very low intensity. Pleasant-helpful motivational and pleasant-helpful volitional feelings were present during the whole day and their intensity ranged from 4 to 9. They were slightly increasing since morning and during or after the performance they were decreasing until the evening. Three feelings out of the cognitive and affective modalities were present during the whole day. First was confident (self-belief), which was quite stable during the whole day and in the evening, it increased. The second was nervous and it started in the morning with a low intensity and at the end of the performance it decreased to zero. At the noon and evening it appeared again. The third item worry was steadily decreasing from morning until the end of the performance. At the noon, the worry raised up and declined in the evening.

Before, during, and after the performance, the affective unpleasant anxiety feelings were present in the low intensity. Affective anger feelings occurred after the performance in a higher intensity. The feeling of pressure occurred before, during, and after the competition. A medium scale intensity was perceived before the performance by the rider. During the competition, it climbed up and after the competition decreased sharply. The pleasant-helpful items related to the horse and the items describing the rider-horse interactions were in the high intensity and remained stable before and during the performance. Unpleasant-unhelpful horse items had lower intensity and the bodily horse-related items were increasing steadily from the beginning of the performance until its end.

Comparison of the curves for the best and the worst performances showed that the curve for the competition (130 cm in height) was close to the curve for the best performance for almost all items related to rider's feelings. Intensity for all items related to rider's

perception of the horse and rider-horse interaction before the competition showed a similar pattern as during the best and the worst performances, where no differences between the intensity for the best and poorest performances were observed.

### **Rider C**

Rider C was competing in an international two-day event and was recording the dynamics of the states on both days. During the first day, she competed in two competitions. First had obstacles of 110 cm in height and she evaluated the performance as quite good. The second had obstacles of 115cm in height and was evaluated by her as not very well performance. During the second day, she competed in two competitions too. The obstacles in the first competition were 120 cm high and in the second one, they were 130 cm in height and both competitions were evaluated as good and the performances were perceived better than from the first day.

The rider C added five descriptors of horse's states and rider's states related to work around the horse during the competition. Most of the items related to rider's feelings belonged to psychological component and few belonged to biological component – bodily modality. During the whole first day, the affective pleasant feelings had the similar pattern in the dynamics of the intensity. Since morning, they were increased slightly before the competition and were decreased during the first competition. After the first competition, they were increased on the maximal intensity. Before the second competition they were decreased and also during the competition. This performance was not perceived as a good and after the second competition they were declined, but during the noon and the evening, the intensity for the affective pleasant feelings climbed up to the same level as the rider had in the morning. In the next day, these feelings showed similar curve as in the first day in the good performance or were more stable.

The affective anxiety feelings had also similar pattern during the two days. Since mornings and before the time of the first competitions, they were decreased and then during the competitions they were increased slightly or remained stable. After the competitions, they reached zero. During the second competitions, which were at a higher level than the first competitions, the intensity of the feelings were higher than during the easier competitions. Furthermore, after the not very well performance, only the feeling uncertain behaved differently - after the performance, it did not reach zero, but it was increased gradually and kept a high intensity also in the evening.

The pleasant bodily feeling (calm) had a similar pattern as the affective pleasant feelings during the first day. This feeling was decreased when the affective anxiety feelings were increased. And again, the intensity was lower during the second – more difficult competitions than during the first competitions during both days. The feeling vigorous (pleasant bodily feeling) was pretty stable since the morning until the time during the competition. After the first competition, it reached zero and appeared again before and during the second competition. After the competition, it was not present. However, during the noon and the evening, it was present again. In the second day, the feeling vigorous behaved very similarly as the first day.

The first day the unpleasant bodily feelings were present only in the low intensity in the morning and in the second half of the day. During the second day, both unpleasant bodily feelings were present in the morning. The sluggish feeling was then decreased to zero and was not present during the rest of the day. The feeling stiff remained stable since morning, before, and during the competition, although after the first competition it reached zero. It climbed up in the noon and increased again before the competition. During the competition, it was decreased slightly and after the competition, it was not present anymore.

Cognitive unpleasant feelings showed a similar pattern as affective anxiety feelings during all good performances. Although, during the suboptimal performance, these feelings were changed and behaved as the feeling uncertain – since the time before the performance, during and after the performance they showed a graduate increase in intensity. In the noon they declined and, in the evening, raised up a bit again.

During the first day, the pleasant-helpful feelings from motivational and volitional modality showed quite high intensity. The volitional item determined had a high level of intensity during the whole first day and before both competitions, it showed a slight decrease and after them, it showed a graduate increase. The will to compete (motivational modality) was stable and in the highest intensity until the end of the second competition when it decreased to zero and it appeared again during the noon and evening. The pugnacity/fighting spirit item (volitional) was present mostly before and during the performances and the intensity was relatively stable. The unpleasant-unhelpful motivational item had a different intensity dynamics for each day. The first day in the morning, the intensity was high, before and during the first competition it



showed a gradual decline. After the competition and before the second one it was increased sharply and was declined slightly during the second competition and was not present after the competition. In the noon and the evening, the feeling was present again in the middle intensity.

Throughout the second day, the intensity scores in the profile were similar for all pleasant-helpful motivational and volitional feelings. The intensity was high in the morning, then it was declined slightly or remained the same before the competitions. During the first competition, an increase was observed and after the competition, the feelings were not present. In the noon, the intensity climbed up and remained stable before and during the second competition. After the second competition, the feelings were not present in rider's profile anymore. The unpleasant-unhelpful feeling showed different curve in the second day. It was low in the morning, then raised up before the competition, remained quite stable during and after the competition and was declined sharply in the noon. Before the second competition, it was increased gradually and again during the performance. It was declined and reached zero after the competition.

Items describing the horse rider interaction and rider's perception of the horse had a very similar pattern in terms of dynamics of the intensity during both days. Pleasant-helpful feelings and helpful descriptors for rider-horse interaction were high in intensity compared to the low intensity for the unpleasant-unhelpful items. The curves for the pleasant-helpful states had this pattern during the first day. Before the competition, the intensity was above the middle of the scale and was increased gradually during and after the competition. Before the second competition, it was decreased from the maximal level to a lower intensity and was decreased again during the competition. After the competition as well, a decrease was observed. Unpleasant-unhelpful items were not present during the first performance, although the low intensity before and during the second, not very well performance, was recorded in the profile. Through the second day, the unpleasant-unhelpful feelings were not present. The pleasant-helpful feelings were present with a high intensity and remained quite stable before and during both competitions. After the performances they were not present.

Results from the comparison of the curves from the best and the worst performances with the curves of the intensity level of states before all four competitions showed a high variability within the items intensity. The variability in intensity level was higher

for unpleasant items both helpful and unhelpful for the performance than the intensity of pleasant items related to the rider's feelings. Interestingly, the intensity of unpleasant-unhelpful feelings for the last and the highest competition was very close or the same as the intensity from the worst performance. The pleasant helpful items had also a high intensity during this competition which was closer to the intensity of the best performance. Even though there was a high intensity for both functional and dysfunctional states, the performance for the last competition was evaluated as successful. Indeed, in this last competition, the items belonged to the rider's perception of a horse and rider-horse interaction had almost the same pattern and scores in intensity as for the best performance.

### **Rider D**

The rider D competed in a three-day event and filled up the competition profiles for all days. In the first day, the rider participated in a competition with jumps of 130 cm in height. In the second day, it was 135 cm, and the third day it was 140 cm high. She evaluated their performances as optimal during the whole competition.

For the best and the poorest performances, the rider generated 11 items to describe the states during the performances and did not record new items during the competition. In the category of rider-related feelings, she generated descriptors from cognitive (pleasant), bodily, operational, and communicative modalities. Feelings from the cognitive modality had a high intensity during the performances. During the first competition, the focused feeling was decreased and the concentrated feeling was increased. After the performance, the focused item remained almost the same until the evening, while concentrated was decreased sharply and kept the intensity through the rest of the day. The bodily and communicative feelings, both pleasant-helpful, had intensity curves similarly shaped for the first day. During the competition, they were declined and after the competition raised up fast and maintained almost the same intensity until the evening. Item from the operational modality, which was considered as unhelpful in the high intensity had a middle intensity level almost whole day.

The second day, both cognitive items were increased before the performance. During the performance, the focused item declined and remained quite stable until the end of the day. The item concentrated remained the same during the performance and was decreased sharply afterward and then stayed at the same level rest of the day. Pleasant

bodily feeling climbed up before the competition since morning and then dropped down during the performance and slightly increased after it and remained the same. Communicative feeling kept a low intensity in the morning, before and during the competition. Afterward, the intensity curve for this item in the profile showed a graduate increase until the end of the day. The operational item was increased in the second day during the performance and then was decreased and stayed at the same level.

The third day items from the cognitive modality showed a very similar pattern in intensity dynamics as the previous two days and in the evening both of them were decreased slightly. The bodily, operational, and communicative modalities items had a similar pattern in intensity dynamics during the last day. Since morning until the time before the performance, the intensity was steady and at the middle level. During the performance, it declined by one point and afterward it climbed up and in the evening of the last day it was decreased slightly again.

Descriptors for rider-horse interaction and rider's perception of the horse were little different during the first day than the next two days. Most of the items had a high intensity before the performance. During the performance they increased and afterward they decrease. Two exceptions occurred in the horse motivation and rider-horse cooperation which decline during the performance and also afterward. During the second and the third day, most of the items were increased in intensity during the competition and decreased afterward. Only items leading the horse to fences and careful were declined during the performance and then stayed at the same level.

Furthermore, results from the comparison of the intensity curves before the best and the worst performances, and the intensity curves before all performances in the actual competition showed a high variability within the profile's items. Moreover, the items related to rider's perception of the horse and rider-horse interaction also showed a high variability in intensity across the items in the profile. For the rider D, no patterns were observed among the curves related to states before the performances.

### **Rider E**

Rider E participated in the one-day national competition event during which she competed in two competitions which were close to each other timewise. As a result of that, she recorded the intensity of the states during the two competitions together into

her profile. The focus of the competitions was for creating a learning opportunity for a young horse who had been at the beginning of his show jumping career. The height of the jumps during the first competition was 90 cm and in the second one, it was 100 cm. The performance was evaluated as very satisfactory by the rider.

During the interview, the rider recorded 33 items describing her states during the performances. In the competition profiles, she added three more items to describe her feelings, perception of the horse, and mutual interaction during the competition. For this competition, the affective anger and anxiety descriptors were not present and the same for an unpleasant-unhelpful cognitive feeling. Most of the feelings related to rider belonged to psychological component of the psychobiosocial states and only a few belonged to a biological component. Unpleasant-unhelpful feeling from the cognitive modality were present in a very low intensity. The cognitive pleasant-helpful items were gradually increasing since morning until the time before the performance. During the performance they remained stable or decreased. After the competition a sharp decrease was observed.

All affective pleasant feelings showed a similar pattern in the intensity. Most of them were constantly increasing throughout the whole day. Two exceptions were noticed for items masterful and enjoying. The enjoying descriptor had similar pattern as most of the affective pleasant feelings and the masterful descriptor had a high stable intensity until the time after the competition, when both items decreased. Item from motivational modality was present only during the performance in the same intensity. Bodily pleasant-helpful feelings had different intensity, although the pattern of the dynamics was similar. Since the morning, their intensity was decreased before the performance. During the performance, the intensity kept at the same level or was decreased by one point. Afterward, it was increased and was present also in the evening in the same intensity as in the morning.

Pleasant-helpful items belonged to the cognitive and motivational modality from the rider's perception of the horse showed the same shape of the intensity curve. All items were increased during the performance and were decreased afterward. The intensity of an item from motor-behavioral modality was stable before, during, and after the performance. Horse's calmness was slightly decreased during the performance and was sharply increased afterward. Unpleasant-unhelpful descriptor from the affective anxiety

modality was present in the low intensity in the horse. All items describing rider-horse interaction had high intensity and remained stable during the performance.

Comparison of the states from the riders' feeling category before the current competitions with the states before the best and poorest performances showed a curve similar to the curve for the best performance. Most of the items related to rider's perception of the horse were also closer to the intensity before the best performance. Descriptors for the rider-horse interaction were high in intensity and closer to the intensity before the best performance.

### **Summary of all cases**

Overall, through the analysis of changes in intensity of the states from the same psychobiosocial modality before, during and after a performance, the results suggested some similarities. Before a good performance, the affective pleasant-helpful states' intensity increased more often. Furthermore, during a good performance, cognitive pleasant-helpful feelings were decreased. Finally, after a good performance a decrease in intensity for the affective unpleasant-unhelpful, cognitive pleasant-helpful, cognitive unpleasant-unhelpful, and motivational and volitional modalities occurred more frequently. In the affective pleasant modality, an increase was observed immediately after a good performance. On the other hand, before a poor performance, the affective pleasant-helpful feelings were decreased. Moreover, a higher frequency for a decrease in intensity for affective pleasant-helpful items and increased in intensity for affective unpleasant-unhelpful, cognitive unpleasant-unhelpful, and motivational and volitional items were noticed after the performance. However, only one poor performance was reported by the rider, and therefore, the suggested patterns in results have to be considered carefully. The comparison of the states' intensity before the actual competitions with the recalled states from the best and poorest performances showed, that riders' states before a good performance were more often closer to the intensity curve from the best performances. Moreover, the horses' "states" described through the riders' perception, showed similarities to the best performances in all recorded cases. The only exception was rider D, where no patterns in the intensity of feelings before the performances were found.

## 5 DISCUSSION

The main aim of this study was to explore competitive performance-related experiences of show jumping riders. The focus was on a description of a holistic picture of riders' experiences in the most successful/unsuccessful performances, riders' psychobiosocial states, rider-horse interaction in a competition, and temporal dynamics of the states in an actual competition. The present findings were discussed through three sections according to the study purposes - riders' performance-related experiences during their best and worst performances, riders' psychobiosocial states, their perception of the horse and rider-horse interaction, and temporal dynamics of the psychobiosocial states in an actual competition.

### *Riders' performance-related experiences during their best and poorest performances*

A holistic picture of show jumping riders' performance-related experiences was described through the hierarchical coding scheme with three higher order categories – Context, Riders' feelings and thoughts, and Riders' perception of the horse and rider-horse interaction. Context category described situational and intrapersonal environmental characteristics of dynamic context dimension from the IZOF model (Hanin, 2000, 2003, 2007). Three themes related to this category describes factors which could be relevant for the performance-related experiences and subsequently the performance (e.g., preparation before a competition, prestige of a competition, interaction with a coach, weather, rider's perception and evaluation of the environment).

Current social interactions and anticipated social interaction with important others could have an impact on athletes' perception and evaluation of the situation and consequently on their emotions (Tamminen & Bennett, 2016) and our results also supported the importance of social interaction for the riders' competitive states. Riders' perception of the horse and rider-horse interaction category reflected the intra-group characteristics which are part of the IZOF model's context dimension (Hanin, 2000, 2003, 2007). Analysis revealed that riders perceived horses' "states" and their functional impact on a performance. Similar results and importance of both physical and psychological factors for horse's successful performance were highlighted in some studies (e.g. McBride & Mills, 2012; Wipper, 2000). Furthermore, the importance of the riders' perception and their attitude towards the horses' behavior and characteristics was associated with a

performance and riders psychobiosocial states. Correspondingly, Wolframm and Micklewright (2010) found a relationship between the temperament of a horse and riders anxiety and Beauchamp and Whinton (2005) emphasized a connection between the riders' perception of their horse ability and performance.

The dynamics between the rider's and horse's states during a performance was described by the participants as a fluid flow moving between the athletes. Likewise, an anecdotal evidence describing riders' experiences with their horses also suggested that horses were able to recognize the rider's states which could lead to changes in the performance (Pretty, 2001). Two studies from Hama et al. (1996) and Keeling et al. (2009) provided an evidence that changes in humans' heart rate could induce changes in horse's heart rate, although the research findings suggested that the one-way direction of the influence might be opposite from the horse to human. Furthermore, the both-way dynamics was described by riders in this study, which was related to the findings of synchronicity between the heart rate of a horse and human during the performance in a dressage test (Bridgeman et al., 2013).

Finally, the participants as experienced and skillful horse riders were able to describe their relevant performance experiences and meta-experiences through their thoughts, feelings, expectations, and evaluations. They were aware of the effect of these factors on performances similar as more skillful and experienced athletes in Hanin (2000, 2007). Moreover, riders identified the focus on the task and having a clear mind as the most common state of mind for successful performances. This finding was in accordance with studies where the time during a performance was less often associated with an emotional content compare to the attention directed to task-relevant cues (Gould, Dieffenbach, & Moffett, 2002; Uphill, Groom, & Jones, 2014) and where the advanced riders showed higher scores in task-specific concentration than novice riders (Wolframm, Shearman, and Micklewright, 2010).

Some factors mentioned by the riders were controllable (e.g., preparation for a competition, planning a strategy of riding through a jumping course, focus of attention, goals setting) while others were not (e.g., weather, surface, placement of the competition during a season). However, the riders' evaluation and perception of the factors relevant to the performance (e.g., perception of the show jumping course) influenced their experiences. These results were in line with the fundamental

assumptions of the IZOF model (Hanin, 2007; Ruiz et al., 2017) about the emotion-performance relationship which postulated that emotions were induced in people according to their appraisals of a situation and probability to achieve relevant objectives. In addition, a bidirectional relationship between emotions and performance was noticed as well as the specificity of the emotions across different situations and individuals. In conclusion, results from the interview analysis could serve for sport psychology practitioners in helping riders to distinguish between controllable and uncontrollable factors and teach them different ways of managing controllable factors effectively and accepting uncontrollable factors in a functional way.

*Riders' psychobiosocial states, their perception of the horse and rider-horse interaction – reflection through the profiles*

In this study, the number of riders' descriptors and descriptors related to horses was almost equal while in the study by Tenenbaum et al. (2002) the number of rides descriptors dominated over the horse-related items. In the same study, the horses were evaluated across three deductively chosen items by researchers in a dressage performance (relaxed, obedience, and impulsion). On the other hand, from the inductive analysis, the important items for a horse's performance in a show jumping by riders were obedience, balance, rhythm, fluency in movements, and horse's concentration, motivation, energy level, and relaxation. Considering the four global emotion categories (Hanin, 2000, 2003, 2007) most of the horse-riders' items belonged to the unpleasant-unhelpful and pleasant-helpful categories compare to unpleasant-helpful and pleasant-unhelpful states. Similar results were also reported by Pellizzari et al. (2011) among gymnast.

The two typical curves for the intensity of items before the best and worst performances were observed among most of the participants. Lower intensity for the dysfunctional feelings and higher intensity for functional feelings were reported for the most successful performances while an opposite ratio was associated with poor performances. These findings were in accordance with findings from the previous research (e.g., Middleton, Ruiz, & Robazza, 2017) as well as with fundamental assumption about predictions for performance according to interactive effects of emotions enhancing and impairing performance from the IZOF model (Hanin, 2007). Interestingly, the majority of horses' profiles created based on the riders' perception of the horses showed the two typical curves too. Similar to riders' profiles, the functional items describing the horse



and rider-horse interaction were present in the best performances while the dysfunctional items were more often related to unsuccessful performances. In studies where the researchers were trying to analyze the relationship between the horses' state and performance suggested that the optimal level of horses' arousal for performance was individual as proposed in the IZOF conceptualization for humans (McBride & Mills, 2012). The current findings, provided a small portion of support for this hypothesis because from the riders' perspective, the horses' descriptors had quite high interindividual variability in the dimension intensity and content.

Besides, two exceptions were observed among riders and their horses. In the first case, different curves for the intensity level of the rider-related functional and dysfunctional states before the best and worst performances were recorded. However, the intensity curves of horse-related items were not different for these performances. The second case showed a very similar intensity curves for the riders' best and worst performances, while the intensity curves for the horse-related items before the performances were different. The "in-out of the zone" notion of the IZOF conceptualization (Hanin, 2007; Robazza, 2006, Ruiz & Hanin, 2014, Ruiz et al., 2017) postulated that a successful performance is predictable when an athlete is in the optimal zone and out of the dysfunctional zone before the performance. With this in mind, these findings suggested that a prediction about the equestrian team performance might be more complicated, because of the interaction between a rider's and a horse's states.

Deductive analysis according to the IZOF model conceptualization (Hanin & Ekkekakis, 2014; Ruiz et al., 2016) showed that all eight modalities of psychobiosocial states were represented among riders idiosyncratically generated descriptors. Riders used more functional than dysfunctional descriptors for their best and worst performances. Furthermore, in the psychological modalities, riders' feelings category was dominated over the horse-related items. On the other hand, in bodily and social modalities the feelings related to the horse and rider-horse interaction were more frequently represented than the riders' feelings.

The intensity of functional items across cognitive, motivational, volitional, and affective pleasant modalities from psychological states and for all biological and social modalities was higher for the best performances compare to the worst performances, where the intensity was lower. Compared to the study by Ruiz et al. (2016), this work

found a higher intensity only of cognitive, volitional, and bodily functional modalities in successful performances. On the other hand, in the cognitive, motivational, anxiety, bodily, operational, and communicative modalities, the intensity was lower for the dysfunctional items in the most successful performances and higher for the less successful performances. In the current study, the only exception was observed in functional anger and anxiety modalities, where the intensity was lower for the best performances and higher for the worst performances. These results are in a line with the research using nomothetic approach to study anxiety among equestrian sports which showed that a lower level of anxiety was present among elite athletes and was considered as beneficial for the performance (Meyers et al., 1999; Wolframm & Micklewright, 2009, 2010, 2011; Wolframm et al., 2010). In the IPPS assessment method studies, Ruiz et al. (2016) also found a higher intensity of dysfunctional anxiety and anger modalities before unsuccessful performances among divers. Furthermore, they also reported a high intensity of dysfunctional bodily feelings similarly as in results from this study. However, the anger and anxiety states were categorized as functional for the performance in the IPPS assessment tool and also perceived as functional by divers (Ruiz et al., 2016), overall, most of the riders in this study perceived them as dysfunctional.

#### *Temporal dynamics of the psychobiosocial states in an actual competition*

Results from the temporal dynamics of the riders' states in an actual competition showed high inter-individual and also intraindividual differences across the intensity and content of the descriptors. Likewise, in IZOF model conceptualization (Hanin, 2000, 2003, 2007) a high intraindividual variability across the intensity level and descriptors is recognized. The intensity of the states was developing during the days according to the situational factors (e.g., difficulty level of the competition, social or environmental pressure) and riders' appraisals of them. The psychobiosocial states of riders from the first day followed the psychobiosocial states of the second and third days and some patterns within the individuals occurred. Except one, all performances in actual competitions were evaluated as good by riders. Affective pleasant-functional descriptors were increased more often before the performances in show jumping riders. This finding was comparable with results from the studies from Pellizzari et al. (2011), where the optimal-pleasant emotions were experienced before a good performance by gymnast and Cerin and Barnett (2006) where a higher intensity and frequency of

positive emotions were observed during pre-competitive period of time by martial artists.

Furthermore, some similarities were found for pleasant-helpful feelings from cognitive modality and the intensity of those were decreased during the performances. The items from other modalities showed a high variability if changes in the intensity occurred. Finally, immediately after the good performances, the intensity was decreased more frequently in the affective unpleasant-unhelpful, cognitive pleasant-helpful, cognitive unpleasant-unhelpful, and motivational and volitional modalities. The decrease across the modalities could be related to disengagement from the performance, which was described by Cerin and Barnett (2006). However, when the competition continued during the following day, the intensity level was changed again later during the day (noon or evening) which suggested that riders started a new preparation period for the upcoming performance. In addition, immediately after the competition, the intensity of items in the affective pleasant form was increased which was also observed in the study conducted by Pellizzari et al. (2011).

In general, the results from the states intensity comparison before the most successful and unsuccessful performances and the actual competitions showed that before a good performance the intensity was more frequently closer to the best performances in the riders' feeling category. Furthermore, the states from the riders' perception of the horse and rider-horse interaction categories indicated similarities with the best performances in all reported cases. These findings are in line with the fundamental assumption of the IZOF model related to the "in-out of the zone" notion and predictability of a performance according to a pre-performance states intensity (Hanin, 2007; Robazza, 2006; Ruiz & Hanin, 2014). Moreover, according to the results, it seems that functional horses' "states" need to be at an optimal level to achieve a good performance, while riders' states can have a higher variability in intensity. Only for the rider D, patterns were not found across the states before the performances. The reasons could be in not proper identification of the "optimal zone" and relevant descriptors for the performance during the interview.

#### *Strengths and limitations of the study*

Findings from the current research offer a holistic picture and deeper insight to performance-related experiences of show jumping riders studied with a qualitative

idiographic approach. Context dimension of show jumping competitions was explored and described in terms of relevant factors for the riders' performances and psychobiosocial states. In addition, detailed exploration of time, form, content, and intensity dimensions and temporal dynamics of psychobiosocial states in an actual competition contributed to knowledge within the IZOF model conceptualization related to equestrian sports and temporal dynamics of athletes' states. Overall, without the horses, there would not exist any equestrian sports. Therefore, the examination of the horses' states from the riders' perspective in the current research is a valuable input for equestrian science.

Besides the strengths, the study has also few limitations. First of all, the explorative nature of the research did not allow to explain causal relationships among the studied variables. Furthermore, standardized assessments of the athletes' individual experiences were not available in the Slovak language, therefore they were not used in the study. Other limitations can be seen in the assessment of the content dimension which was made by the researcher and not by the riders. Moreover, the majority of the performances in the actual competitions were considered to be good, and therefore, the comparison with the bad performances was very limited. Last but not least, the number of participants was very small in the conducted research.

#### *Future research directions and practical implications*

In future work, it would be beneficial to investigate the relationship and interaction between the riders' and horses' states and identify possible mediators of this relationship such as situational, environmental, and social factors, and riders' appraisals. Moreover, assessment of the horse's states with the principles of individualized profiling within the IZOF model conceptualization from different than riders' perspective (e.g., coaches or judges perspective) could offer more insight into the rider-horse interaction. Further, suggestions for future research are to use the standardized tool for creating individualized profiles of riders, exploring the optimal zone of functioning through the multiple assessments, developing and analyzing profiles with only the most relevant items for riders, and studying the temporal dynamics of the states at the same difficulty level of the show jumping competition during a longer period of time. Indeed, including of appraisal and coping variables into longitudinal studies of psychobiosocial states in equestrian sports would also provide more complex

information. Overall, this study could serve as a starting point for the researcher in the equestrian field to develop more focused and specific research on the relevant topic.

Findings can help sports psychologists working with athletes from equestrian sports to get familiar with those and gain a deeper insight which can consequently improve the provided interventions. Indeed, the useful examples of working with the individualized profiling in performance-related context were given. Moreover, methods and results from this study can be illustrated to riders as an example how they can approach their states relevant to performance and increase their meta-experiences through self-reflection.

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