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A COMPARISON OF EMOTIONAL EXPERIENCES BASED ON THE INDIVIDUAL ZONES OF OPTIMAL FUNCTIONING MODEL IN RUGBY AND WHEELCHAIR RUGBY PLAYERS

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SUMMARY

The purpose of the present study was to examine and contrast emotional experiences of rugby and wheelchair rugby players by utilizing the Individual Zones of Optimal Functioning (IZOF) model.

The IZOF questionnaire was completed by 26 male rugby and 11 wheelchair rugby players. The content of emotions was studied as a) frequency of separate adjectives from the emotion profiles, b) frequency of adjectives clustered in groups of synonyms, and c) displaying frequency of helpful and harmful effect of the adjectives. To compare the contents of emotions between rugby and wheelchair rugby players the Chi-Square test was used. To compare the intensities of emotions on the inter-group level we utilized Mann-Whitney U Test.

The data revealed several significant differences ($p < 0.05$) between the two teams in selected emotion content (in 6 out of 48 groups of synonyms) and in indicated emotion intensities (during the best ever performance in 6 cases and during the worst ever performance in 1 case out of 48 groups). The analysis also demonstrated that wheelchair rugby players perceived harmful negative emotions during their worst ever performance at significantly higher intensity compared to the rugby players.

The results support utilizing an individual approach in studies of performance-related emotional experiences and suggest that the IZOF model was applicable to research in emotional experiences of athletes with disabilities.

Keywords: emotions, performance, the IZOF questionnaire, confrontation, team sport

INTRODUCTION

The importance of emotions in sport has long been recognized and the exploration of the relationship between emotions and human performance is one of the areas of research in sport psychology that has evoked an extensive interest (c.f. Goud, Greenleaf & Krane, 2002; Syrja, 2000).

This relationship in the sport psychology literature was mostly examined with a limited number of emotions and the studies focused mainly on testing theoretical models set up in other fields of science and non-sport settings (c.f. Hanin & Syrja, 1995; Syrja, 2000).

According to Syrja (2000), none of the main models have received support by all researchers – to avoid the limitations, he supported using idiographic, more reality-grounded, and conceptually holistic approaches with a wider range of positive and negative emotional experiences.

The present study applies the Individual Zones of Optimal Functioning (IZOF) model that emphasizes an idiographic, individual-oriented approach and places importance on the pleasant and unpleasant emotions that affect an athlete's successful and unsuccessful performance patterns. The main emphasis of the IZOF model is on the intra-individual dynamics of the relationship between emotions and performance, and this is how the model principally differs from other employed approaches. The intention of the IZOF model is also to influence an athlete's awareness of his or her subjective performance-related experience and to enable the athlete to use this knowledge effectively (c.f. Hanin, 2000).

The model classifies emotion descriptors into 4 categories: positive emotions with helpful effect (P+), negative emotions with helpful effect (N+), and positive emotions with harmful effect (P-), negative emotions with harmful effect (N-).

It is supposed, that (c.f. Hanin, 2000):

- A) individually successful performance is presumed to occur when an athlete's current emotion intensity is within (or near) his/her optimal zones (P+N+) and outside his/her dysfunctional zones (P-N-);
- B) individually average performance is presumed to occur when an athlete's current emotion intensity is a) within (or near) both his/her optimal (P+N+) and dysfunctional (P-N-) zones, or b) outside both his/her optimal (P+N+) and dysfunctional (P-N-) zones;
- C) individually poor performance is presumed to occur when an athlete's current emotion intensity is outside his/her optimal zones (P+N+) and within (or near) his/her dysfunctional zones (P-N-).

According to Hanin (2000) there are five conceptual distinctions between the IZOF model and other approaches:

1. In the IZOF framework emotion is considered as a major component of the performance-related psycho-biosocial state. The model uses five dimensions explaining the extent of psycho-biosocial states related to performance. Other models are focused mostly on form and intensity dimensions of emotions.
2. The IZOF model uses factors of hedonic tone and predominant functional impact upon performance process to differentiate emotion content into four global emotion categories. This emotion content consists of really experienced emotions which are individually relevant and functionally meaningful in contrast to nomothetic scales where the emotion content is generated by researchers.
3. The IZOF model uses zones of individually optimal intensities of emotion and the in-out of the zone principle to predict an athlete's performance. Nomothetic approaches don't specify the individually optimal intensity of specific emotions and are not motivational and user oriented as is the IZOF model.

4. The IZOF model predicts the individual performance based on the interactive effect of optimal and dysfunctional emotions.
 5. Explanations of emotion-performance relationships in the IZOF model are provided from the psychosocial and psychological perspectives and are based on empirical studies within the sport environment unlike other approaches which were developed in non-sport settings.
- Despite extensive research, a study that applies the IZOF model to athletes with disabilities has not previously been investigated.

The tendency to study predominantly anxiety and the emotional experiences connected to stress in able-bodied sport (c.f. Hanin & Syrja, 1995; Syrja, 2000) is also apparent in disability sport research. The main subjects of interest have been the examination of stress, anxiety, and mood states in relation to performance (c.f. Martin & McCaughey, 2004). The majority of sport psychology theories and psychological techniques have been created based on studies of able-bodied athletes (c.f. Crocker, 1993). In order to extend and adapt these theories it is necessary to provide further research that involves athletes with disabilities as participants (c.f. Reid, 1989).

The study aims to examine and compare emotional profiles of rugby and wheelchair rugby players, using an individual-oriented approach. The findings of this study may function to enhance the understanding of the possible differences and similarities that could exist between athletes with or without disabilities, and may consequently increase the awareness of disability sport.

PROCEDURES

26 male rugby players and 11 male wheelchair rugby players from South Africa participated in this study. All teams played on the club level, with high number of players involved in provincial league. The English version of the questionnaire was used for the purpose of this study and the IZOF-based Emotion-Profiling procedure was followed.

Due to a large number of data, huge inter-individual variability of selected adjectives, and also the low number of participants, the data were not examined for single emotion descriptors, but rather in groups of synonyms.

To compare the contents of emotions between rugby and wheelchair rugby players the Chi-Square test was used.

The intensity of emotions was investigated using the Mann-Whitney *U* Test and the data were presented in two separate groups – the best ever and the worst ever performance.

To our knowledge, no previous research has used the model of Individual Zones of Optimal Functioning on athletes with disabilities or for comparison of emotion profiles of athletes with and without disabilities. Therefore, no hypothesis was formulated.

RESULTS AND DISCUSSION

The results are presented in two main categories – content and intensity of emotions.

A comparison of emotional content is displayed in Figure 1. According to the analysis rugby and wheelchair rugby players significantly differed in 6 groups of emotion descriptors.

Table 1. Significant differences in frequencies of emotions (arranged into groups of synonyms) in rugby (R) and wheelchair rugby players (W)

| Category | Emotional descriptors | Team (N) | | Chi ² | p |
|----------|---|----------|---|------------------|-------|
| | | R | W | | |
| P+ | active, dynamic, energetic, vigorous | 20 | 3 | 8.101 | 0.008 |
| P+ | cheerful, merry, happy | 3 | 5 | 5.247 | 0.035 |
| P- | nice, pleasant, agreeable | 3 | 5 | 5.247 | 0.035 |
| P- | lighthearted, carefree | 8 | 9 | 8.111 | 0.01 |
| N- | sorry, sad, regretful, unhappy, cheerless | 13 | 1 | 5.5 | 0.027 |
| N- | afraid, fearful, scared, panicky | 5 | 7 | 6.955 | 0.018 |

According to the analysis rugby and wheelchair rugby players significantly differed in 6 groups of emotion descriptors.

Twenty rugby players (76.92%) perceived a group of emotions, namely *active, dynamic, energetic* and *vigorous*, as being positive-helpful emotions (P+) in contrast to 3 (27.27%) wheelchair rugby players ($\text{Chi}^2 = 8.101$, $p = 0.008$). Rugby players also reported feeling *sorry, sad, regretful, unhappy, cheerless* as having detrimental effect in 13 cases (50%), as opposed to 1 player (9.09%) from the wheelchair rugby team ($\text{Chi}^2 = 5.5$, $p = 0.027$).

In the other four cases the emotion descriptors were selected significantly often by wheelchair rugby players. *Cheerful, merry* and *happy* were chosen as helpful and *nice, pleasant, agreeable* as harmful by 5 wheelchair rugby players (45.45%) and only by 3 (11.53%) rugby players ($\text{Chi}^2 = 5.247$, $p = 0.035$). *Light-hearted* and *carefree* were the emotions selected from the list of positive emotions by 9 (81.82%) wheelchair and 8 (30.77%) rugby players ($\text{Chi}^2 = 8.111$, $p = 0.01$). Feeling *afraid, fearful, scared* and *panicky* with harmful effect were chosen by 7 (63.64%) of the wheelchair rugby team players in contrast to 5 (19.23%) of the rugby players ($\text{Chi}^2 = 6.955$, $p = 0.018$).

Significant differences emerged in 6 cases (out of 49 results) of the best ever performance intensities and in 1 case (out of 52 results) of the worst ever performance intensities (see Table 2).

Most of the differences were found in the category of harmful-negative emotions (N-) during the best ever performance, where wheelchair rugby players perceived higher intensities than rugby players in the following groups of synonyms: *doubtful, uncertain, indecisive, irresolute* (Mann-Whitney $U = 10.5$, $p = 0.049$), *jittery, nervous, uneasy, restless* (Mann-Whitney $U = 21$, $p = 0.044$), *annoyed, irritated, distressed* (Mann-Whitney $U = 1$, $p = 0.011$), *inactive, sluggish, lazy* (Mann-Whitney $U = 0.5$, $p = 0.02$).

Rugby players stated significantly higher intensity of positive emotions during the best ever performance: *cheerful, merry, happy* – P+ (Mann-Whitney $U = 1$, $p = 0.046$), *active, dynamic, energetic, vigorous* – P- (Mann-Whitney $U = 3.5$, $p = 0.031$). And during the worst ever performance: *confident, certain, sure* – P- (Mann-Whitney $U = 18$, $p = 0.039$).

Table 2. Significant differences in intensities of emotions (arranged into groups of synonyms) in rugby (R) and wheelchair rugby players (W) during best ever (BE) and worst ever (WE) performances

| Emotional descriptors | Team | N | Percent | Mean | Median | Min. | Max. | SD | Mann-Whitney U | Asymp. Sig. (2-tailed) | Category | Performance |
|---|------|----|---------|------|--------|------|------|------|----------------|------------------------|----------|-------------|
| doubtful, uncertain, indecisive, irresolute | R | 15 | 57.7 | 2 | 1 | 0 | 8 | 2.38 | 10.5 | 0.049 | N- | BE |
| | W | 4 | 36.4 | 4 | 4 | 3 | 5 | 0.82 | | | | |
| jittery, nervous, uneasy, restless | R | 13 | 50 | 2.85 | 3 | 0 | 7 | 1.82 | 21 | 0.044 | N- | BE |
| | W | 7 | 63.6 | 4.71 | 4 | 3 | 8 | 2.06 | | | | |
| annoyed, irritated, distressed | R | 13 | 50 | 1.58 | 1 | 0 | 5 | 1.68 | 1 | 0.011 | N- | BE |
| | W | 3 | 27.3 | 7 | 8 | 5 | 8 | 1.73 | | | | |
| inactive, sluggish, lazy | R | 7 | 26.9 | 0.86 | 1 | 0 | 2 | 0.63 | 0.5 | 0.02 | N- | BE |
| | W | 3 | 27.3 | 4 | 5 | 2 | 5 | 1.73 | | | | |
| cheerful, merry, happy | R | 3 | 11.5 | 9.67 | 10 | 9 | 10 | 0.58 | 1 | 0.046 | P+ | BE |
| | W | 5 | 45.5 | 7 | 8 | 3 | 9 | 2.55 | | | | |
| active, dynamic, energetic, vigorous | R | 8 | 30.8 | 8.5 | 9 | 6 | 10 | 1.69 | 3.5 | 0.031 | P- | BE |
| | W | 4 | 36.4 | 5.75 | 5,5 | 4 | 8 | 1.71 | | | | |
| confident, certain, sure | R | 18 | 69.23 | 3.94 | 3 | 0 | 10 | 2.48 | 18 | 0.039 | P+ | WE |
| | W | 5 | 45.45 | 1.6 | 2 | 0 | 3 | 1.14 | | | | |

For a general comparison of the reported intensities, all the data were summarized into 8 categories – P–, P+, N+ and N– for best ever (BE) and for worst ever (WE) performances (see Table 3). The results showed that wheelchair rugby players stated higher intensities of negative emotions with detrimental effect during their best ever performance.

Table 3. Overall comparison of emotion intensities in rugby (R) and wheelchair rugby (WR) players

| Performance | Emotions | Team | Average intensity | Mann-Whitney U | Asymp. Sig. (2-tailed) |
|-------------|----------|------|-------------------|----------------|------------------------|
| BE | N– | R | 2.56 | 62.5 | 0.007 |
| | | W | 4.26 | | |
| BE | N+ | R | 6.16 | 114.5 | 0.343 |
| | | W | 6.69 | | |
| BE | P+ | R | 8.12 | 106.5 | 0.224 |
| | | W | 7.64 | | |
| BE | P– | R | 6.15 | 105 | 0.206 |
| | | W | 5.25 | | |
| WE | N– | R | 7.30 | 122.5 | 0.495 |
| | | W | 7.38 | | |
| WE | N+ | R | 5.47 | 130.5 | 0.678 |
| | | W | 5.85 | | |
| WE | P+ | R | 3.71 | 139 | 0.894 |
| | | W | 3.70 | | |
| WE | P– | R | 5.30 | 135 | 0.790 |
| | | W | 5.55 | | |

Previous research (in able bodied athletes) employing the IZOF model provided clear support for a notion that content of individual emotion profiles differs among the athletes (c.f. Hanin, 2007) and this tendency also seems to be applicable for the wheelchair rugby players.

On the other hand several common patterns were discovered in the content of emotion. The most frequent helpful-positive (P+) emotions (*confident*, *determined* and *motivated*) appeared in both the rugby and wheelchair rugby team. Positive emotions with harmful effect (P-) that were often selected by both teams were *relaxed* and *quiet*. Another category of emotions in which the two teams demonstrated similarity in chosen descriptors was in the group of helpful-negative emotions (N+). *Aggressive* was the emotion selected by 80.77% rugby and 72.73% wheelchair rugby players.

The fact that the above discussed emotion descriptors are not specific to rugby and wheelchair rugby players is apparent, and becomes more so with reference to the findings of a study by Robazza, Bortoli and Nougier (1998).

Other common frequently selected items found in the group of helpful-negative items were (*aggressive* and *tense*), harmful-negative (*nervous*), and harmful-positive (*relaxed*). Also in study of Hanin and Syrja (1995) were found similar patterns (when five most often selected emotions were compared). These facts support a notion that it is possible to find core emotion content items in and across various sports (c.f. Hanin, 2000).

The present study's findings in emotion profiles are in general agreement with the study of Hagtvet and Hanin (2007). Helpful-positive and helpful-negative emotions were more prominent than harmful-positive and harmful-negative emotions during the successful performance.

Trends in the emotion profiles were almost identical in rugby and wheelchair rugby teams, which may indicate that the IZOF profile patterns are applicable also for athletes with disabilities.

The results support utilizing an individual approach in studies of performance-related emotional experiences.

CONCLUSION

The principal finding of the IZOF model is on personal distinctions in functional interpretation of emotions (c.f. Robazza & Bortoli, 2003). When this model is utilized in practice it might help to better understand the individual scale, perception, interpretation and reactions. That also means that there can be applied interventions and self-regulation techniques that are based on the individual emotional experiences. The knowledge of emotional experiences in connection to sport performance might also be one of the important factors of adherence to sport and physical activity in general.

The present study was the first attempt to apply the IZOF model to athletes with disabilities and also to utilize the results for comparison between two different groups. The investigation was limited in many aspects and it is necessary to consider the results as tentative.

The findings supported a notion that the IZOF model is applicable and contributes to research in athletes with disabilities and it will be worthwhile to continue using this model in other studies.

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POROVNÁNÍ EMOČNÍCH PROŽITKŮ HRÁČŮ RAGBY A WHEELCHAIR RAGBY NA ZÁKLADĚ MODELU INDIVIDUÁLNÍCH ZÓN OPTIMÁLNÍHO FUNGOVÁNÍ

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SOUHRN

Cílem studie bylo popsat a porovnat prožívané emoce hráčů rugby a wheelchair rugby pomocí modelu Individuální zóny optimálního fungování (IZOF).

Dotazníkového šetření pomocí Individual Zones of Optimal Functioning Questionnaire se zúčastnilo 26 hráčů rugby a 11 hráčů wheelchair rugby. Emoční obsah byl sledován z hlediska a) frekvence jednotlivých emocí uvedených v emočních profilech, b) frekvence emocí obsažených ve skupinách synonym a c) frekvence příznivého a nepříznivého vlivu emocí. Pro porovnání zvolených emočních zážitků hráči rugby a wheelchair rugby byl použit Chi-Square test. Mezikupinové porovnání intenzit prožívaných emocí jsme získali využitím Mann-Whitney U testu.

Výsledky odhalily několik statisticky významných rozdílů ($p < 0,05$) mezi porovnávanými týmy v obsahu zvolených emočních prožitků (v 6 ze 48 skupin synonym) a ve stanovených emočních intenzitách (v 6 případech

během nejlepšího a v 1 případě během nejhoršího sportovního výkonu z celkem 48 skupin). Výsledky dále prokázaly, že hráči wheelchair rugby prožívali negativní emoce s nepříznivým vlivem během svého nejhoršího výkonu ve významně vyšší intenzitě v porovnání s hráči rugby.

Výsledky studie podpořily využití individuálního přístupu ve výzkumu emočních zážitků v souvislosti se sportovním výkonem a naznačují, že model IZOF je vhodný také pro výzkum emočních zážitků u sportovců s postižením.

Výsledky této studie jsou využívány v pedagogickém procesu na FTVS UK Praha.

Klíčová slova: emoce, výkon, dotazník IZOF, srovnání, týmový sport

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