

THE RELATIONSHIP BETWEEN EMOTIONS AND CONFIDENCE AMONG GREEK ATHLETES FROM DIFFERENT COMPETITIVE SPORTS

Olga Kouli¹, Evangelos Bebetos¹, Ilias Kamperis¹ and Athanasios Papaioannou²

¹*Democritus University of Thrace, Komotini, Hellas*

²*University of Thessaly, Trikala, Hellas*

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Abstract:

Emotional relationships are crucial for an accurate prediction and control of the impact of emotions on athletic performance. The *Individual Zones of Optimal Functioning* (IZOF) model attempts to describe and explain emotions related to individually successful and poor performances (Hanin, 1997, 2000). The participants were 617 Greek athletes (424 males and 190 females) from five different sports. Their ages ranged from 18 to 30 years ($M=24.30$, $SD=3.70$). All athletes completed the questionnaire on emotions (IZOF, Hanin, 2000), which was translated into Greek (Hanin, Papaioannou & Lukkarila, 2001). The aim of the study was the examination of a possible relationship between emotions and confidence and among different competitive sports in Greece. The results supported the good psychometric properties of the assessment tool. Additionally, the results indicated statistically significant differences among sports in almost all the questionnaire variables: (a) in *optimal-pleasant* emotions swimmers had higher scores than Graeco-Roman and freestyle wrestlers, (b) in *optimal-unpleasant* emotions swimmers had higher scores than taekwondoists and water polo players, and (c) in *dysfunctional-unpleasant* emotions swimmers had lower scores than taekwondoists and water polo players. On the other hand, in *dysfunctional-pleasant* emotions and in *confidence* no statistically significant differences among the sports were found. According to previous research, it is also important to indicate that emotional content and intensity are different in training practice and competitions and that they vary across the pre-, mid-, and post-event performance situations (Hanin & Stambulova, 2002). Possible future research might replicate and extend the study's findings, explore an athlete's anxiety, goal-orientations, motivation and performance, and develop effective intervention strategies.

Key words: *Individual Zones of Optimal Functioning, emotions, confidence, sport*

Introduction

The *Individual Zones of Optimal Functioning* (IZOF) Model conceptualizes emotional content within the framework of four global emotion categories derived from two factors: *hedonic tone* (pleasure-displeasure) and *functionality* (optimal, helpful-dysfunctional, harmful). The four emotion categories include pleasant (positively toned) and functionally optimal emotions (P+), unpleasant (negatively toned) and functionally optimal emotions (N+), pleasant and dysfunctional emotions (P-), and unpleasant and dysfunctional emotions (N-). This four-category framework provides a robust and sufficiently broad structure that can accommodate a wide range of idiosyncratic, athlete-generated emotional labels (Hanin, 2000, 2003). In other words, to describe their idiosyncratic subjective emotional experiences, athletes use their own vocabularies. Although self-generated emotion descriptors are

idiosyncratic, conceptually and functionally the items are equivalent (across the categories) as they describe experiences accompanying individually successful and unsuccessful performance situations (Hagtvet & Hanin, 2007).

The *Individual Zones of Optimal Functioning Model* (Hanin, 1997, 2000) was developed in order to identify emotional states that effect successful and less successful performances of elite athletes. More specifically, five dimensions (form, intensity, content, time, context) are used to identify individually either optimal or dysfunctional dynamics of performance (Robazza, Pellizzari, & Hanin, 2004).

The model explains the dynamics of emotion-performance relationships based on the athletes' self-description of their experiences. Sports activity is repeatable and experiences such as anxiety may influence performance and may develop stable patterns of experiences such as trait anxiety. Very often

athletes reflect upon their experiences in order to identify successful and unsuccessful performances (Nieuwenhuys, Hanin, & Bakker, 2008).

The IZOF model makes several predictions on the relationships between emotion and performance. To begin with, there is a highly interindividual variability in the intensity and content which has a direct relationship with the athletes' successful and poor performances. Additionally, it is possible to expect successful performance when combined maximum enriching and minimum damaging effects occur. On the other hand, a possibility of poor performance is expected when low enriching and high damaging effects are observed (Hanin, 1997, 2000; Kamata, Tenenbaum, & Hanin, 2002). From the sport-related perspective, it is necessary that the athletes are aware of their optimal and dysfunctional zones, which means that the person is able to distinguish the successful states from the less successful ones and is able to enter and stay in the optimal zone during a performance. Finally, the bi-directional relation between emotion and performance must be taken into consideration, where emotion can affect performance and, on the other hand, the on-going performance can affect emotions during and after the event (Robazza, et al., 2004).

The zones reflect the individual differences upon athletes' ability to find and use efficiently the right and available resources. Therefore, the explanation of the relation of emotions and performance is based on the resource matching. Optimal, pleasant and/or unpleasant emotions reflect on the availability of the resources and their effective use. However, unpleasant and pleasant emotions reflect a lack of resources and their ineffective use (Hanin, 1997).

Previous research indicated that the IZOF model has been used in order to describe, predict and explain emotion-performance relationships. In his work examining pre/competition anxiety of elite athletes Hanin (1980, 1986) indicated the use of a programme for optimization of pre-competition anxiety. In his later works (1997, 2000), Hanin proposed several guidelines for the individualized regulation of emotions including the principles of: multimodality, multizone, multidirection, multifunction, multistage, multitask and multi-method.

As was notified, it is very important for any intervention programme to realize that each athlete has his/her own optimal emotional intensity (Hanin, 1980, 1986). It is also important to indicate that emotional content and intensity are different in practice and in competitions, and that they vary across the pre-, mid-, and post-event performance situations (Hanin & Stambulova, 2002). Individual assessment procedures include semi-structured interviews (Orlick, 2000), individual profiles of emotion and performance (Jones, 1993; Hanin, 2000), metaphor-generation methods (Hanin & Stambu-

lova, 2002), and narratives (Sparkes & Silvennoinen, 1999).

In their research Salminen, Liukkonen, Hanin, and Hyvonen (1995) tested the four categories of the IZOF model and their relation to athletic anxiety and performance. Their results supported the IZOF model. Additionally, they found that the use of the State Anxiety Inventory can help individuals find out the direction that is needed in order to regulate anxiety towards their optimal level prior to a competition. A study of Robazza, Bortoli and Nougier (2000) indicated that the best and the worst outcomes were associated with the optimal and the delayed conditions, respectively, among elite archers. Likewise, performance outcomes and heart-rate pattern can be assessed during training in order to determine optimal arousal and action timing.

Robazza, Pellizzari and Hanin (2004) examined the effects of multimodal and individualized self-regulation strategies upon emotions and bodily symptoms of athletes' psycho-bio-social state and their performance, with the use of the IZOF model. The results from the research conducted by Robazza et al. (2004) supported the hypothesis regarding the effectiveness of the mental training strategy aimed at optimizing pre-competition psycho-bio-social states, which improved competition performance. Cohen, Tenenbaum and English (2006) examined the relation between emotions and golf performance. They used a psychological skills training intervention, with a focus on arousal, pleasantness and functionality during practice and competition time. Their results indicated that the use of the IZOF model and specifically the use of emotional self-regulation skills improved golf performance.

In a later study, Hagtvet and Hanin (2007) estimated the between- and within-individual consistency of IZOF-based emotion profiles which describe successful and unsuccessful performance situations, among 12 highly skilled ice-hockey players. Their results revealed a unique and specific interaction of emotions which characterized a successful performance. This pattern with a predominance of optimal pleasant and unpleasant emotions was revealed in both the between- and within-individual comparisons. Finally, Nieuwenhuys and his colleagues (2008) in their case study of an elite yachtsman, tried to show that describing and structuring athletes' subjective experiences during competition can be instrumental and supplemental in order to better understand the implementation of their coping strategies. Their results indicated that coping strategies were related to the existing meta-experiences and these meta-experiences were related to an awareness of the experienced situational states.

Additionally, confidence consistently appears as a key skill possessed by successful elite athletes.

International-level elite athletes have identified confidence as the most critical mental skill (Vealey, 2009). Self-confidence is identified as the degree of certainty athletes have about their ability to successfully perform sports skills (Feltz & Chase, 1998). Successful mastery of a task is expected to enhance confidence; however, Bandura (1997) acknowledges that individuals who perform the same task and master the same challenges may in fact vary in the amount of perceived confidence that is derived from their success. Based on the theoretical aspects proposed by Bandura (1990, 1997), athletes may use different sources to develop, enhance and sustain confidence, and research has supported this notion (Feltz & Lirgg, 2001; Vealey, 2001).

The present study attempts to examine any possible relation between the four emotion categories (optimal-pleasant, optimal-unpleasant, dysfunctional-pleasant, and dysfunctional-unpleasant) of the IZOF model and confidence among Greek competitive athletes.

Methods

Subjects and procedure

The sample included 617 athletes (424 males and 190 females), from five different sports (120 from taekwondo, 119 from swimming, 121 from water polo, 148 from Graeco-Roman wrestling style and 109 from freestyle wrestling). Their ages ranged between 18 to 30 years ($M=24.30$, $SD=3.70$). They completed the emotions' questionnaire (IZOF, Hanin, 2000), which was translated into Greek by Hanin, Papaioannou and Lukkarila (2001).

The questionnaire consisted of 23 items assessing 4 categories, namely: *optimal-pleasant* (5 items, question example: *confident*), *optimal-unpleasant* (5 items, question example: *overjoyed*), *dysfunctional-pleasant* (6 items, question example: *attacking*), and *dysfunctional-unpleasant* (7 items, question example: *uncertain*). Emotional intensity was measured on the modified Borg's category ratio (CR-10) scale ranging from 0 = nothing at all, to 10 = very, very much, and ● = maximal possible.

Also, the athletes responded to two additional questions, assessing *confidence* (question example: *I am ready for competition*). Their answers ranged from 0 = *not at all* to 10 = *very much so*. The participants answered the questionnaire just before their competition. Researchers informed them that their participation was completely voluntary and their individual responses would be held in strict confidence.

Principal component analysis, Pearson correlations between obtained factors and univariate analyses (ANOVA) for gender and sport-related differences were used for data analyses.

Results

Reliability and validity

The questionnaire for emotions (IZOF, Hanin, 2000; Hanin, Papaioannou & Lukkarila, 2001) has already been validated as correct in Greece (Kouli, Kouvarda, Astrapellos, & Papaioannou, 2007).

The principal components analysis of the responses of the sample of athletes on the 23 items of emotions instrument resulted in 4 categories with eigenvalues greater than 1 and accounting for 58.02% of the variance. The results suggest 4 factors: *optimal-pleasant* (.64 – .82), *optimal-unpleasant* (.62 – .81), *dysfunctional-pleasant* (.63 – .81), and *dysfunctional-unpleasant* (.66 – .81). The alpha reliability coefficients for the four scales were: .87 for *optimal-pleasant*, .84 for *optimal-unpleasant*, .80 for *dysfunctional-pleasant* and .70 for *dysfunctional-unpleasant* and .77 for *confidence*.

Correlations

The questionnaire's factors were mutually statistically significantly related. More specifically, the *optimal-pleasant* emotions category had a high positive relationship with *optimal-unpleasant*, *dysfunctional-pleasant* and *confidence* categories, but a high negative relationship with *dysfunctional-unpleasant*. The *optimal-unpleasant* emotions category had a high positive relationship with *confidence*, a high negative relationship with *dysfunctional-unpleasant* and no relationship

Table 1. Pearson product-moment correlation coefficients for each scale

| | 1 | 2 | 3 | 4 | 5 |
|-----------------------------------|---------|---------|--------|---------|------|
| Emotions | | | | | |
| 1. optimal-pleasant (P+) | 1.00 | | | | |
| 2. optimal-unpleasant (N+) | .416** | 1.00 | | | |
| 3. dysfunctional-pleasant (P-) | .269** | -.054 | 1.00 | | |
| 4. dysfunctional unpleasant (N-) | -.338** | -.217** | .273** | 1.00 | |
| 2 questions for confidence | | | | | |
| 5. confidence | .642** | .404** | .209** | -.350** | 1.00 |

Note: ** Correlation is significant at the .01 level.

with *dysfunctional-pleasant*. Also, *dysfunctional-pleasant* had a high positive relationship with *dysfunctional-unpleasant* and *confidence* categories. Finally, *dysfunctional-unpleasant* had a high negative relationship with *confidence* (Table 1).

Gender and sport-related differences

Univariate analyses were conducted in order to find any gender or sport-related differences. The analyses revealed there were no statistically significant differences between genders. However, there were statistically significant differences between sports in almost all the variables. The *post-hoc* Bonferroni test showed differences among the five different sports. More specifically:

- for the category of *optimal-pleasant* emotions: $F_{4,539}=3.568$, $p<.01$, where the swimmers had higher scores ($M=7.89$, $SD=1.75$) than the Graeco-Roman wrestlers ($M=7.06$, $SD=1.93$) and freestyle wrestlers ($M=7.05$, $SD=2.22$);
- for the category of *optimal-unpleasant* emotions: $F_{4,527}=5.736$, $p<.01$, where the swimmers had higher scores ($M=6.47$, $SD=2.08$) than taekwondoists ($M=5.25$, $SD=2.31$) and water polo players ($M=5.64$, $SD=2.38$);
- for the category of *dysfunctional-pleasant* emotions: $F_{4,514}=2.770$, $p<.05$, where the water polo players had higher scores ($M=5.78$, $SD=2.06$) than freestyle wrestlers ($M=4.96$, $SD=1.98$);
- for the category of *dysfunctional-unpleasant* emotions: $F_{4,532}=8.564$, $p<.001$, where the swimmers had lower scores ($M=2.33$, $SD=2.02$) than taekwondoists ($M=3.08$, $SD=2.33$) and water polo players ($M=3.55$, $SD=2.37$);
- for the factor of *confidence*: no statistically significant differences were found.

The results are presented in Table 2.

sant) of the IZOF model and confidence among Greek athletes of different competitive sports.

The results showed that, in the present study, the reliability analysis also supported the psychometric properties of the questionnaire.

According to the results of correlation analysis the most interesting is that *dysfunctional-unpleasant* emotions had a high positive relationship only with *dysfunctional-pleasant* emotions. This might have occurred because the researchers believe that both of these categories are dysfunctional for athletes' performance (Hagtvet & Hanin, 2007). On the other hand, *dysfunctional-unpleasant* emotions had a high negative relationship with *optimal-pleasant* emotions, *optimal-unpleasant* emotions and *confidence*, which positively influence athletes' performance (Hanin, 2004).

Additionally, results indicated statistically significant differences for sports in almost all variables, where in *optimal-pleasant* emotions swimmers had higher scores than Graeco-Roman wrestlers and freestyle wrestlers. Also, in *optimal-unpleasant* emotions, swimmers had higher scores than taekwondoists and water polo players. Moreover, in *dysfunctional-unpleasant* emotions, swimmers had lower scores than taekwondoists and water polo players. On the other hand, in *dysfunctional-pleasant* emotions and in *confidence* there were no statistically significant differences among the sports.

Optimal and dysfunctional profiles can be contrasted as two opposite visual representations of the interaction of success-related and failure-related subjective experiences across the four emotion content categories. More specifically, each profile consists of optimal and dysfunctional emotion descriptors, but their intensities (representing extreme situations) are opposite in successful performances ($P+$, $N+$, $> P-$, $N-$ bell-shaped or

Table 2. Means and standard deviations of sports for each scale

| | optimal-pleasant | | optimal-unpleasant | | dysfunctional-pleasant | | dysfunctional-unpleasant | | confidence | |
|------------------------|------------------|------|--------------------|------|------------------------|------|--------------------------|------|------------|------|
| | M | SD | M | SD | M | SD | M | SD | M | SD |
| Taekwondo | 7.20 | 1.93 | 5.25** | 2.31 | 5.59 | 2.87 | 3.08*** | 2.33 | 7.58 | 2.02 |
| Swimming | 7.89** | 1.75 | 6.47** | 2.08 | 5.08 | 2.27 | 2.33*** | 2.02 | 7.66 | 1.99 |
| Water-polo | 7.43 | 1.93 | 5.64** | 2.38 | 5.78* | 2.06 | 3.55*** | 2.37 | 7.12 | 2.32 |
| Graeco-Roman wrestling | 7.06** | 1.93 | 6.06 | 2.27 | 5.25 | 1.66 | 5.94 | 1.93 | 7.47 | 2.10 |
| Freestyle wrestling | 7.05** | 2.22 | 6.05 | 2.22 | 4.96* | 1.98 | 5.89 | 2.10 | 7.34 | 2.31 |

Note: * $p<.05$, ** $p<.01$, *** $p<.001$

Discussion and conclusions

The purpose of the present study was to examine any possible relations between the four emotion categories (*optimal-pleasant*, *optimal-unpleasant*, *dysfunctional-pleasant*, and *dysfunctional-unplea-*

iceberg profile) and in poor performances ($P+$, $N+$, $< P-$, $N-$ "cavity" shaped or flat (P -skewed or N -skewed profiles). Thus, conceptually and empirically the optimal IZOF profile is significantly different from the dysfunctional emotional profile

with no overlapping in item content and intensity across successful and poor performances (Hanin, 1997, 2000).

According to the mean scores of all sports, *optimal-pleasant* and *confidence* categories are generally high. The researchers believe that either the athletes themselves or in cooperation with their coach, might have used appropriate psychological techniques which helped them with their emotions. This relates to previous research where it was indicated that each athlete had a specific constellation or a 'recipe' of individually optimal and dysfunctional emotional content described by athlete-generated idiosyncratic markers (Hanin, 1980, 1986, 1993, 1995, 1997, 2000; Gould & Udry, 1994). That might be the answer to the research's result between the team sport of water polo and the individual sports of swimming and taekwondo. It is also important to indicate that emotional content and intensity are different in training practice and competitions, and that they vary across the pre-, mid-, and post-event performance situations (Hanin & Stambulova, 2002). In the present research, athletes answered the questionnaire right before they competed.

Also, as reported by Robazza, Pellizzari and Hanin (2004), the zones reflect individual differences in athletes' ability to efficiently recruit and utilize available resources. Therefore, the explanation of the functional impact of emotions upon performance in the IZOF model is based on the notion of resources matching. Optimal pleasant emotions reflect the availability of resources and their effective recruitment and utilization by producing energizing (enhanced effort) and organizing (enhanced skill) effects. In contrast, dysfunctional unpleasant and pleasant emotions reflect a lack of resources or their inefficient recruitment and utilization resulting in dis-energizing and dis-organizing effects of emotions upon performance.

Hanin and Stambulova (2004) mentioned that the application of what is already available in sport psychology is extremely important. Practical experience and expertise available in sport psychology are important not only in a competitive and elite sport setting but also in such a high-achievement setting as the performing arts and business. There are promising indications that the gap between theoretical knowledge and experience-based knowledge in sport psychology is gradually being bridged. Moreover, there is a clear shift in applied sport psychology from a predominantly negative, problem-oriented, and deficit-repairing approach, initially borrowed from clinical psychology, to a more positive psychology focusing on optimal performance and on an athlete's and team's strengths than limitations. This may provide an opportunity for sport psychology to become the psychology of athletic and personal excellence.

The observed differences in the selection of sport-related confidence sources may be partially explained by individual differences in perceptions of success (Magyar & Duda, 2000). The most important source of confidence for athletes is *performance success* (Vealey, 2009). Most of the research since the mid-1980s has examined the relationship between self-confidence and performance with athletes in natural competitive settings. Self-confidence has been shown to have a positive, yet moderate, relationship with performance. An important finding has been that self-confidence assessed *after* performance is more strongly related to performance than confidence assessed prior to performance, suggesting that performance influences confidence more strongly than confidence influences performance (Vealey, 2009).

More specifically, according to the findings of the present study, if coaches would like to increase the levels of their athletes' confidence, they should try to raise *optimal-pleasant*, *optimal-unpleasant* and *dysfunctional-pleasant* emotions, and diminish *dysfunctional-unpleasant* emotions. Similarly, Hanin (2004), argued that anecdotal evidence and practical experience indicate that functionally *optimal-pleasant* and *optimal-unpleasant* emotions (P+N+) prior to and during an activity are usually anticipatory and are triggered by the appraisals of challenge and threat. In contrast, situationally *dysfunctional-pleasant* and *dysfunctional-unpleasant* emotions (P-N-) during an activity are usually triggered by the perception of "achieved" outcomes (appraisals of gain and loss) before the task is completed.

Finally, as also Hanin (2004) underlined, unpleasant emotions are not always detrimental to an athletic performance for all athletes, neither are pleasant emotions always beneficial for all athletes' performances. Moreover, high self-confidence can sometimes lead to complacency or the underestimation of a "weak" opponent, resulting in insufficient alertness, lack of focus, and/or carelessness. So, coaches and athletes, as well as sport psychologists, are beginning to realize that coping with stress and using stress to enhance performance are possible. An idiosyncratic experience is the best indicator of how athletes can perform up to their potential, either stress-free or using competitive stress to their advantage.

Further research is needed to replicate and extend the study's findings, explore athletes' anxiety, coping, goal-orientations, motivation, and performance, and develop effective intervention strategies. In conclusion, a presupposition for the successful use of the IZOF model is the proper preparation of athletes and coaches with the help of sport psychologists, in order to control, explain and understand the effect of their emotions in pursuing success in sports.

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POVEZANOST EMOCIJA I SAMOPOUZDANJA U GRČKIH SPORTAŠA IZ RAZLIČITIH SPORTOVA

Povezanost emocija ključna je za točno predviđanje i kontrolu utjecaja emocija na sportsku uspješnost. Model *Individualnih zona optimalnoga funkcioniranja* (IZOF) pokušava opisati i objasniti emocije povezane s uspješnim i neuspješnim izvedbama sportaša (Hanin, 1997, 2000). Uzorak ispitanika činilo je 617 grčkih sportaša (424 muškarca i 190 žena) iz različitih sportova. Dob sportaša bila je od 18 do 30 godina ($M=24,30$, $SD=3,70$). Svi sportaši ispunili su upitnik za procjenu emocija (IZOF; Hanin, 2000) koji je preveden na grčki jezik (Hanin, Papaioannou, & Lukkarila, 2001). Cilj istraživanja bio je utvrđivanje mogućih povezanosti između emocija i samopouzdanja te njihove povezanosti među različitim sportovima. Rezultati istraživanja pokazali su vrlo dobre metrijske karakteristike mjernog instrumenta korištenoga u istraživanju. Također, rezultati su potvrdili statistički značajne razlike među sportovima u gotovo svim varijablama upitnika: a) u optimalno ugodnim emocijama, plivači su imali više vrijednosti u odnosu

na hrvače grčko-rimskim i slobodnim stilom, b) u optimalno neugodnim emocijama, plivači su imali više vrijednosti u odnosu na taekwondoše i vaterpoliste i c) u disfunkcionalno neugodnim emocijama, plivači su imali niže vrijednosti u odnosu na taekwondoše i vaterpoliste. S druge strane, u disfunkcionalno ugodnim emocijama te u razini samopouzdanja nisu utvrđene statistički značajne razlike između sportova. U skladu s dosadašnjim istraživanjima, vrlo je važno naglasiti da su emocionalni sadržaj i intenzitet različiti u treningu i natjecanju te da variraju tijekom događaja prije, tijekom i nakon utakmice ili nastupa (Hanin & Stambulova, 2002). Moguće buduće istraživanje moglo bi ponoviti i proširiti rezultate dobivene ovim istraživanjem te istražiti sportaševu anksioznost, ciljnu orijentaciju, motivaciju i uspješnost te razviti učinkovite intervencijske strategije.

Ključne riječi: *Individualna zona optimalnog funkcioniranja, emocije, samopouzdanje, sport*

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Correspondence to:

Olga Kouli, PhD

Department of Physical Education & Sport Science

Democritus University of Thrace

Komotini, 69100, Greece

Phone: +30 25310 26022

Fax: +30 25310 39623

E-mail: okouli@phyed.duth.gr