

Emotional Valences During Critical Incidents in Sport

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Abstract— The aim was to diagnose the emotional states in sport environment. From this study, we have extracted the kinds and the factors of pleasure-displeasure generated by critical events during sport activity. The survey was conducted on 100 subjects (74% male and 26% female) aged 18 to 26 years. The Critical Incident Technique (Flanagan, 1954) is used to identify and analyze critical incidents from a behavioral-cognitive retrospective, for describe the emotional states of pleasure (positive valence) and displeasure (negative valence) during the sport practices. The results show that five pleasure states and ten negative emotional states (physical discomfort, disappointment and failure, anger, sadness and unhappiness, anxiety and stress, fear, contempt and underestimation, demotivation, guilt, hatred). Level of intensity of sensations varies significantly ($p < .000$) according to the emotional states of which 81.7%. And there is no significant effect of sex and age on the intensity valence pleasure – displeasure and occur several times (46.7%), and vary significantly ($p < .038$) according to the nature of the sports: 55.8% of emotional cases are produced in team sports (30.23 %). And we observed a significant effect of nature exercise on producing emotional states pleasure (joy, self esteem, superiority achievement / motivation). The competition exercises as the most attractive source for feelings of pleasure with a percentage of 73.7%. So, for the discomfort states the subjects consider the rivalry exercises are the most promising the negative feelings. The female athletes react significantly ($p < .28$) more than males and are sensitive to the presence effect of the other ($p < .002$). The emotions in the practice of sport, are inescapable, with multi-faceted, and should thus be managed knowingly.

Index Terms— Critical Incidents, Displeasure, Emotions, Psycho-affective reactions, Pleasure, Sport

1 INTRODUCTION

IN modern society and through wide the world, the emotional investment of peoples has become more and more growing up in sport: fervent fanaticism, violence behaviors, excessive practices, emotions exaggerated. The emotions are the result of experiences of pleasure or displeasure of some events lived. Several researchers wanted to know more details about the different faces of emotion related to daily life, as the pain [1], the pleasure [2], and the mood [3]. The majority of authors agreed that emotions were defined as a multicomponent phenomenon, with interrelated elements: expressive behaviors; cognitive assessments; physiological reactions; trends in action and subjective emotional experience.

The physiological classification of emotions is based on Positive activation - negative activation (PANA) of neurophysiological system [4]. In the anthropological sense, Jeu (1977) [5] proposed a classification of sports according to their emotional significance. So, Huizinga (1950) [6] and Caillois (2001) [7] have distinguished four sport forms according to an emotional criteria (Agon, Alea, Illinx, and Mimicry). From a sociocognitive perspective [8], emotions are a strong relationship with cognition and the environment. Some researchers have re-examined the emotions felt by pupils in physical education

in a learning perspective [9, 10] and their relationship with academic achievement [11]. Delignières and Garsault (2004) [12] went as far as to assert that the pleasure of practicing sport and physical activity should be considered a fundamental acquisition in Physical Education, and as a conditional factor the learning process and investment.

Therefore, the purpose of this study was to describe the emotional reactivity invested in sports training and competition through the retrospective recall situation experienced by athletes and describing the components of valence pleasure-displeasure.

2 MATERIALS AND METHODS

2.1 Participants

The survey was conducted on 100 subjects (74% male and 26% female) aged 18 to 26 years, recruited from Physical Education Program at the Hassan II University, Casablanca, which belongs to the professional sports club. All participants practice during their schooling, at least 3-4 hours of sport per week and have lived several training and competition session. It was asked to these participants to describe their past experiences in sport. All of the subjects were informed of the purpose and procedures of the survey, and informed consent was obtained before the commencement of the study.

2.2 The Critical Incident Technique (CIT)

The Critical Incident Technique [13] is used to identify and analyze critical incidents from a behavioral-cognitive retrospective. This experience analysis narrative method reduced the biases related to retrospective recall and increased the ecological validity of the observations [14]. It consists of asking students-in our case- to describe events (positive and negative) considered particularly significant among the expe-

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periences related at the emotional situations in physical activity on two dimensions (valence):

The sensations of pleasure or enjoyment corresponding to the positive emotional valence: the question used to assess critical situations is «Describe a physical activity event (training, competition, other) which you had experienced a great pleasure or enjoyment and that you want relive it again». While the sensations of displeasure or suffering corresponding to the negative emotional valence: the question used is «Describe a physical activity event (training, competition, other) which you had an uncomfortable feeling or a painful sensation that you do not like to relive this again ».

The variables describing the sensations of pleasure and displeasure are: nature, intensity, repetitions of psycho-affective reactions. Also, we recorded informations about: sex, age, emotion conditions, nature and category of physical activity.

2.3 Data analysis

The data are analysed by the Techniques of Content Analysis [15]. We respected the stages of corpus formation, selection - interpretation of the meaning units and coding and categorization of items. The data are analyzed by the ANOVA II, Khi 2 ($p < .05$) comparing the frequencies of variables, we examined the effect of age, sex, emotionnel valence, nature of physical activity (Table 2).

3 RESULTS

3.1 The psycho-affective valence expressed by the athletes

The emotional states are presented by gender in Table 1. We have identified 15 emotional states, including five pleasure states: joy (61%), self-esteem (13%), and feeling of superiority, achievement / motivation, security and self-confidence. And ten negative emotional states: physical discomfort (32%), disappointment and failure (20.60%), anger (10.30%), sadness and unhappiness (9.30 %), anxiety and stress (7.20 %), fear (7.20%), contempt and underestimation (6.20%), demotivation (5.20%), guilt (1%), hatred (1%).

The effect of age on the valence displeasure-pleasure in athletes shows that there is no significant effect of age of the subjects on the variation of the valence of the sensations produced by physical activity (table 2). However, there is a tendency that subjects relate events that are produced during adolescence (68.4%) more than for adulthoods (26%) or puberty period (5.6%).

3.2 Intensity of sensations during critical incidents in sporting activity

Level of intensity of sensations varies significantly ($p < .000$) according to the emotional states of which 81.7% of emotional reactions reported by our sample are of high intensity, mainly at the level of joy, disappointment and failure, demotivation, sadness ($p < .05$). And there is no significant interaction effect of sex and age on the intensity valence pleasure-displeasure (Table 2).

TABLE 1
THE EMOTIONAL VALENCE SOURCES OF PLEASURE AND DISPLEASURE.

Valence	Sex		Total % (n)
	Male % (n)	Female % (n)	
Emotional positive States			
Joy	45,0%(45)	17,0%(17)	62,0% (62)
Self esteem	9,0% (9)	4,0% (4)	13,0% (13)
Superiority	7,0%(7)	3,0%(3)	10,0%(10)
Achievement / motivation	7,0% (7)	1,0% (1)	8,0% (8)
Security & self confidence	5,0%(5)	2,0%(2)	7,0%(7)
Total	73,0%(73)	27,0%(27)	100,0%(100)
Emotional negative States			
Physical discomfort	19,60%(19)	12,40%(12)	32,00%(31)
Disappointment/ failure	19,60%(19)	1,00%(1)	20,60%(20)
Anger	7,20%(7)	3,10%(3)	10,30%(10)
Sadness	7,20%(7)	2,10%(2)	9,30%(9)
Fear	4,10%(4)	3,10%(3)	7,20%(7)
Anxiety and stress	4,10%(4)	3,10%(3)	7,20%(7)
Despised/ Underestimated	5,20%(5)	1,00%(1)	6,20%(6)
Demotivation	2,10%(2)	3,10%(3)	5,20%(5)
Hatred	1,00%(1)	0,00%(0)	1,00%(1)
Culpability	1,00%(1)	0,00%(0)	1,00%(1)
Total	72,20%(70)	27,80%(27)	100,00%(97)

3.3 Repetitions of pleasure- displeasure valences

The valence pleasure-displeasure is independent of the number of repetitions (p : ns.) occurring for the first time account for 53.3%, while several times account for 46.7%. However, significant differences are observed in "joy" (1st time, 19.3%), and disappointment and failure (several times, 15.0%).

3.4 Effect of the nature of sport activity practiced on the emotional valences

The results indicate that the subject feels both of the emotional valences in all sports families (Table 2). Emotional states vary significantly ($p < .038$) according to the nature of the sports: 55.8% of emotional cases are produced (30.23%) in team sports (joy vs disappointment/ failure), and 37.6% during individual sports (19.3% physical discomfort and self esteem), and 6.6% in combat sports (2.0% joy vs physical discomfort).

3.5 Effect of the nature exercise on the emotional valences

Emotional states are significantly ($p < .008$) dependent of the nature exercise and sex interaction (Table 2). So, the results show a significant effect of nature exercise on producing emotional pleasure (joy, self esteem, superiority achievement / motivation). The subjects marked the competition exercises as the most attractive source for feelings of pleasure with a percentage of 73.7%. So for the discomfort states the subjects consider the rivalry exercises are the most promising the negative feelings (physical discomfort, disappointment/ failure, despised/ underestimated, demotivation, culpability and anger), with a percentage of 59.8%. However we find that the valence pleasure - displeasure is less located on training exercises. Considering the nature of physique exercise effect on emotional valence, the female athletes react more significantly than males ($p < .28$, sex effect x nature exercise effect).

3.6 The effect of the presence of the other on the valence pleasure- displeasure

Through the content analysis of the responses submitted by the subjects, we obtained three kinds accompaniment subjects during sports practice: with family, friends or a sports team. However, reading the data show that during a painful or joyful incident, there is always the presence of the other. The analysis shows that there is no significant effect of the predominance kind of accompaniment on the valence pleasure/displeasure (Table 2). However, we notice that the highest rate (59.40%) is mentioned when the situation of pleasure or displeasure was happened with team members. While the critical incident rate of sporting exercise continuous to be moderately high in the presence of a friend, or teammates. (37.60%). However, it is rare to identify subjects declaring states of discomfort or enjoyment next to a family member (father, mother, brother, or other family member, 3%). This variation reflects the moderate variables intervention (e.i. gender). In fact, the female athletes emotions are significantly sensitive effect of the presence of the other, more than male ($p < .002$, sex effect).

discomfort, disappointment and failure, anger, sadness and unhappiness, anxiety and stress, fear, contempt and underestimation, demotivation, guilt, hatred).

The positive affects are often characterized by feelings of greater success and satisfaction, and sense of achievement, and provides satisfaction, pleasure, self-esteem and confidence, which are sources of well-being and motivation, open-mindedness, and generate consequently, the positive attitudes. While the negative affects, such as the feeling of tension, fear, hostility and distress, discomfort, suffering, anxiety, even depression, would have as a common denominator the "discomfort". The repeated negative emotions accompanied by a lack of positive affectivity, generate frustrations and promote the development of mood and anxiety disorders.

Several neurophysiologic studies have observed that activation of catechoaminergic and dopaminergic systems during the physical activity. In fact, the secretion of serotonin and norepinephrine in the limbic region (neurotransmitters), are responsible for the pleasure feeling and motivation during in physical activities [16]. There is an activating the amygdala-hippocampus connection: The specific thalamic nucleus is the center of perception and transmission of discomfort and pain. The thalamus plays a role in the initial coding of information, the amygdala and the hippocampus help to strengthen the encoded memory (it's the role the methods of experience analysis narrative, as the CIT). Therefore, the prefrontal cortex gives meaning to the emotional stimulus. Moreove, Miles et al. (1993) [17] have shown that the intense athletic training may lead to the appearance of micro-lesions that most often cause acute sensations of pain and discomfort. Some studies have shown that the production of the lactic acid during increases the pain [18, 19]. The emotion system is strongly associated of cognitive system [20], both of them constitute one affective-cognitive structure unified (thoughts/ emotion pattern).

Therefore, we have observed in our study that the majority of emotional reactions reported by our sample are of high intensity, mainly at the level of joy, disappointment and failure, demotivation and sadness. The repetitions of the valences pleasure / displeasure occurred in several times (46.7%). The results also showed a significant relationship between the frequency of incidents repetition and the valences. Indeed if the athlete often feels emotional discomfort during practice, this may lead him away from physical activity. The subjects marked that (55.8%) of emotional states are produced in most cases during team sports. We observed also, that the competition exercises as the most attractive source for feelings of pleasure- discomfort states the subjects consider the rivalry exercises are the most promising the negative feelings (physical discomfort, disappointment/ failure, despised/ underestimated, demotivation, culpability and anger). According to some studies [21] mood and emotions vary according to the context (sport of competition vs recreational sport) and situation (failure vs success) [22], and according of the phases of the game [23]. Previous studies have shown that children from 7-14 years practicing various sports activities (football, baseball ou hockey) feel more pleasure when it comes to perform a task or achieve personal progress 24-26].

TABLE 2

EFFECTS OF FACTORS ON VARIATION OF EMOTIONAL STATES.

Emotionnel states	Sex effect	Age effect	Intensity effect	Nature of Exercise effect	Nature of sport activity effect	Accompaniment effect	Repetition effect
Emotional States of pleasure							
Joy	ns	ns	.05	.05	.03	ns	.05
Self Esteem	ns	ns	ns	.05	.05	ns	ns
Superiority	ns	ns	ns	.05	ns	ns	ns
Achievement / Motivation	ns	ns	ns	.05	ns	ns	ns
Security & self confidence	ns	ns	ns	ns	ns	ns	ns
Total	ns	ns	ns	.01	.04	ns	ns
Emotional States of displeasure							
Physical discomfort	ns	ns	ns	.05	.03	ns	ns
Disappointment/ failure	.05	ns	.05	.05	.05	ns	.05
Anger	ns	ns	ns	.05	ns	ns	ns
Sadness	ns	ns	.05	ns	ns	ns	ns
Fear	ns	ns	ns	ns	ns	ns	ns
Anxiety and stress	ns	ns	ns	ns	ns	ns	ns
Despised/ Underestimated	ns	ns	ns	.05	ns	ns	ns
Demotivation	ns	.05	.05	.05	ns	ns	ns
Culpability	ns	ns	ns	.05	ns	ns	ns
Hatred	ns	ns	ns	ns	ns	ns	ns
Total	ns	ns	ns	.00	.04	ns	ns
Global valence	ns	ns	.000	.008	.038	.000	ns

The data are analyzed by the ANOVA II ($p < .05$).

4 DISCUSSION

The aim of this study was to describe the psycho-affective valences retained in the memory of athletes as responses to critical incidents occurred in the sport activities. The analysis of these incidents allowed us to be located in the emotions of displeasure- pleasure valence by gender and age categories. The results show that five pleasure states (joy, self-esteem, feeling of superiority, achievement / motivation, security and self-confidence) and ten negative emotional states (physical

On the other hand, the results show that age has no effect on psycho-affective valences. Indeed be happy or be angry has no related with the age group of those who practice a physical activity. However, Martens (1990) [27] found that the negative emotions and discomfort caused by anxiety are especially higher in young athletes than older. Nevertheless, the current study has shown that the nature of physique exercise effect on emotional valence, the female athletes react more significantly than male. So, Bartholomew (1998) [28] showed that there is even a difference between both genders. On the other hand, Treasure and Roberts (1994) [29] suggesting that the determinants of pleasure vary from one individual to another. The sources of pleasure, also varies according to mental representations towards the critical incidents and the challenge of competition [30, 31].

We obtained the kinds accompaniment subjects during sports practices (family, friends, coache... etc) and, there is no significant differentiating factor of the kind of accompaniment on the valence of pleasure/displeasure. But, we noted that, the female athletes' emotions are significantly sensitive to the presence of the other, more than males. However, it is the active presence of others which generates an effect on the valence of the emotions [32]. However, several studies have shown that the encouragement of parents and coaches increases the pleasure felt of children [33, 34] and the motivational climate influences positively the emotional state during precompetitive periods [35].

Further work is required to verify our conclusions, by exploiting a larger sample containing the different psychological profiles, by sex, age and ethnicity, to weight the results. It is also recommend to develop experimental approaches with methodological tools as direct observation system, rating scales, to assess the valence of pleasure-displeasure. We also recommend checking the relationship between emotional control and athletic performance.

4 CONCLUSION

In this investigation, the aim was to diagnose the emotional states in sport environment. From this study, we have extracted the kinds and the factors of pleasure-displeasure generated by critical events during sport activity. The following conclusions can be drawn from the present study. Athletes react by different emotional states that can eventually be repeated several times, and are of high intensity, without any difference in both sexes. However, the female athletes emotions are significantly sensitive of the effect of the presence of the other, more than males. The emotion valences are produced mainly during adolescence and decrease slightly with age. We have concluded that the subjects feel both of the emotional valences in all sports categories mainly during team sports. Considering the nature of physique exercise effect on emotional valence, the female athletes react more significantly than males. The competition balance and rivalry exercises are two main sources of producing pleasure and displeasure emotions. The emotions in the practice of sport, are inescapable,

with multi-faceted, and should thus be managed knowingly.

REFERENCES

- [1] V. Bruno and W. Chantal, "L'évaluation de la douleur de l'enfant," *MT PÃ©diatrie*, Vol.12, No. 5, 2009.
- [2] D. Lafollie, and C. Le Scanff, "Recherche de sensations, désinhibition et pratique de sports à risque: quelques pistes de réflexion," *Annales Médico-Psychologiques*, vol. 166, pp.794-798, 2008.
- [3] R.J. Anderson, and S. Brice, "The mood-enhancing benefits of exercise: Memory biases augment the effect", *Psychology of Sport and Exercise*, 2010.
- [4] J. Posner, J.A. Russell, and B. S. Peterson, "The circumplex model of affect: An integrative approach to affective neuroscience, cognitive development, and psychopathology,". *Developmental and Psychopathology*, vol.17: pp.715-734, 2005.
- [5] B. Jeu, "Le sport, l'émotion et l'espace ; essai sur la classification des sports et des rapports avec la pensée mythique," Paris : Vigot, 1977.
- [6] J. Huizinga, "Homo Ludens," English translation, New York: Roy Publishers, 1950.
- [7] R. Caillois, "Man, play, and games," : University of Illinois Press, 2001.
- [8] R.S. Lazarus, "Progress on a cognitive-motivational-relational theory of emotion", *American Psychologist*, 46(8), pp.819-834. 1991.
- [9] P. Gagnaire, and F. Lavie, "Le plaisir des élèves en éducation physique et sportive : utilité ou nécessité ?," Montpellier : AFRAPS, 2007.
- [10] G. Haye, "Le plaisir. Pour l'action," ed. Revue EPS, 2011.
- [11] R. Pekrun, and E. J. Stephens, "Academic emotions. In K. R. Harris, S. Graham et T. Hurden (dir.), *APA educational psychology handbook, vol. 2. Individual differences and cultural and contextual factors*, pp. 3-31, Washington : APA, 2012.
- [12] D. Delignières, and C. Garsault, "Libres propos sur l'EPS", Paris : Revue EPS, 2004
- [13] J. C. Flanagan, "Psychological Bulletin" vol. 51, no. 4, July, 1954,
- [14] R. Larson, and M. Csikszentmihalyi, "The experience sampling method. In H. T. Reis (Ed.), *Naturalistic approaches to studying social interaction*," *New directions for methodology of social and behavioral sciences*, p.41-56. San Francisco, CA: Jossey-Bass, 1983.
- [15] B. Berelson, "Content Analysis in Communication Research,". Glencoe, IL: The Free Press, 1951.
- [16] M. Zuckerman, "Behavioral expressions and biosocial bases of sensation seeking," New York: Cambridge University Press, 1994.
- [17] S. Miles, and P. Clarkson, "Exercise-induced muscle pain, soreness and cramps," *J Sports Med and Physiol Fit.*, 34: 203-16, 1994.
- [18] J. Howell, G. Chleboun and R. Conatser, "Muscle stiffness, strength loss, swelling and soreness following exercise-induced injury in humans," *J. Physiol.*, 464: 183-96, 1993.
- [19] M. Warhol, A. Siegel, and W.L.M. Evans, "Silverman Skeletal muscle injury and repair in marathon runners after competition," *Am J. Pathol.*, vol.118, p.2331-9, 1985.
- [20] C.E. Izard, "Basic emotions, natural kinds, emotion schemas, and a new paradigm," *Perspectives on Psychological Science*, vol. 2, p.260-280, 2007.
- [21] P. C. Terry, Lane, A. M., and G. J. Fogarty, "Construct validity of the POMS-A for use with adults," *Psychology of Sport and Exercise*, vol.4, p.125-139, 2003.
- [22] C. Sève, L. Luc Ria, G. Poizat, J. Saury, and M. Durand, "Performance-induced emotions experienced during high-stakes table tennis matches," *Psychology of Sport and Exercise*, vol. 8, 25-46, 2007.
- [23] E. Cerin, A. Szabo, N. Hunt, and C., Williams, "Temporal patterning of competitive emotions: A critical review," vol. 18, pp. 605-626, 2000.
- [24] M. Goudas, and S.J.H. Biddle, "Perceived motivational climate and intrinsic motivation in school physical education classes" *European Journal of Psychology of Education*, vol. 9, pp.241-250, 1994.
- [25] G.C. Roberts, and U. Duda, "Motivation in Sport : The Mediating Role of Perceived Ability," *Journal of Sport Psychology*, vol.6, pp.312-324, 1984.
- [26] Wankel, L.M. and Kreisel, P.S.J. "Factors underlying enjoyment of youth sports : Sport and age comparison," *Journal of Sport Psychology*, vol 7, pp.51-64, 1985.
- [27] R. Martens, R.S. Vealey, and D. Burton, "Competitive anxiety in sport," *Champaign : Human Kinetics Publisher*, 1990.
- [28] JB. Bartholomew, and DE. Linder, "State anxiety following resistance exercise: role of gender and exercise intensity," *J Behav Med*, vol.21; pp. 205-219, 1998.

- [29] D.C. Treasure, and G.C. Roberts, "Cognitive and affective concomitants of task and ego goal orientation during the middle school years," *Journal of Exercise and Sport Psychology*, vol.16, pp.15-28,1994.
- [30] C. Perrin , "Analyse des relations entre le rapport aux APS et les conceptions de la santé STAPS," vol. 31, pp.21-30,1993.
- [31] M. Bousquet, "Analyse des représentations et des locus de causalité dans les domaines du sport et de la santé chez les adolescents", PhD dissertation, STAPS, Montpellier Univ., 1, 1997.
- [32] N. Debois, P. Fleurance, and F. D'Arripe-Longueville, "Les déterminants de l'anxiété précompétitive en gymnastique féminine," *Sci Motr* , vol 41, pp. 33-46, 2000.
- [33] T.K. Scalan, and R. Lewthwaite, "Social psychological aspects of competition for male youth sport participants : IV. Predictors of enjoyment," *Journal of Sport Psychology*, vol.8, pp. 25-35,1986.
- [34] M. Goudas, and S. Biddle, "Pupil perceptions of enjoyment in physical education," *Physical Education Review*, vol.16, pp.145-150, 1993.
- [35] J.L. Duda , L. Chi, M.L. Newton, M.D. Walling, and D Catley, " Task and ego orientation and intrinsic motivation in sport," *Int J Sport Psychol*, vol.26, pp. 40-63, 1995.

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