

## **Emotional intelligence training in sports: The influence of a season long intervention program on trait emotional intelligence**

Running head: EI training

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## **Abstract**

The aim of this study was to test the effectiveness of an emotional intelligence (EI) training intervention in sport to improve EI at trait level with participants who were not previously motivated to do so. Sixty-seven players from a professional rugby club participated in the study. One group received the EI training intervention, while the other group served as a control group. Participants of both groups were required to complete the trait EI questionnaire in the pre and post-test. The intervention consisted of four face-to-face sessions over a five-month period, with homework and follow-up procedures between sessions. The control group attended video match analyses. Results showed that the EI training was partially successful in increasing EI at the trait level, however adding age as a covariate decreased the effect size of the EI training. Our findings demonstrate that it is possible to increase EI in participants who may not have preexisting motivation to do so through specific intervention. Although, demographic characteristics of intervention and control groups should be held constant in order to draw clearer conclusions in future research.

**Keywords:** emotional intelligence, emotional competence, emotional regulation, emotional skills, coping, stress

# 1 Introduction

Sport competitions are likely to induce pressure and a wide range of emotional responses which have the potential to influence performance (Laborde, Raab, & Dosseville, 2013). In team contact sports specifically, emotions such as anxiety and anger are particularly common given their combative nature, furthermore, particular contact sport elements such as collisions may trigger fright (Campo, Mellalieu, Ferrand, Martinent, & Rosnet, 2012). Therefore, the need for training athletes competing within these sports to regulate their emotions appears crucial. Two approaches can be envisaged here, a micro-level approach targeting specific emotion regulation strategies (e.g., Balk, Adriaanse, de Ridder, & Evers, 2013), or a macro-level approach where a broader range of emotional competences are taken into account, the latter referring to emotional intelligence (EI). More specifically, EI reflects how people deal with their own emotions and with others (Mayer, Caruso, & Salovey, 1999; Petrides & Furnham, 2003). This paper aims to investigate the effects of an EI training intervention for players involved in team contact sports.

Three levels of EI are distinguished, as shown by the tripartite model of EI (Nelis, Quoidbach, Mikolajczak, & Hansenne, 2009): *knowledge*, representing an individual's understanding of emotions; *ability*, representing an individual's options regarding emotional situations; and *trait*, representing how individuals usually react in emotional situations. An important aspect of EI is that recent evidence suggests that training EI knowledge and EI ability levels can lead to improvements in trait EI (e.g., Kotsou, Nelis, Grégoire, & Mikolajczak, 2011; Nelis et al., 2009). Importantly, if research has focused on participants who were motivated to improve their EI, it would be important to investigate whether this preexisting motivation is a requirement for the effectiveness of an EI training intervention, and this issue will be addressed in the current study.

Different conceptualizations exist regarding EI at the trait level to date (Petrides, 2009a). This paper focuses on trait EI (Petrides, 2009b) which currently is the approach that has received the most support regarding external behavioral validity (Petrides, 2009a). Moreover, its validity has been proven in the sporting context (Laborde, Dosseville, Guillén, & Chávez, 2014).

Within the sporting domain, trait EI was found to have an important influence on many aspects of sports performance. At the subjective level, it has been linked with satisfaction of sports performance through a path model involving stress and coping appraisals (Laborde, Dosseville, et al., 2014), and was associated with the use of more efficient coping strategies (Laborde, You, Dosseville, & Salinas, 2012). At the neurophysiological and hormonal levels, trait EI was proved to have a protective effect against stress through heart rate variability (Laborde, Brüll, Weber, & Anders, 2011) and through salivary cortisol (Laborde, Lautenbach, Allen, Herbert, & Achtzehn, 2014). The positive relationships between trait EI and sporting performance combined with the potential to enhance trait EI (e.g., Kotsou, Nelis, Grégoire, & Mikolajczak, 2011; Nelis et al., 2009) suggests that an EI training intervention aiming at developing trait EI could have very beneficial outcomes for athletes.

Currently, two studies have examined the effects of EI training within sports (Barlow & Banks, 2014; Crombie, Lombard, & Noakes, 2011). Firstly, Crombie et al. (2011) utilized an EI training with players from a cricket team, who were distributed between an intervention group or control group. When compared to the control group, players in the intervention group showed an increase in their ability EI between the pre-test and the post-test, as measured by the Mayer, Salovey & Caruso Emotional Intelligence Test (MSCEIT; Mayer, Salovey, & Caruso, 2002). However, as no

measure of EI at the trait level was used, no conclusion could be drawn concerning improvement of EI at this level. Secondly, Barlow and Banks (2014) conducted research in which participants received feedback regarding their results obtained with the Bar-on emotional quotient inventory (Bar-On, 2004) during a single face-to-face session. The day after the last intervention session post-test scores were recorded and subsequently pre and post-test scores were compared. The results showed increases in self-efficacy and a decrease in anxiety in those participants who had received the intervention which contrasted to the control group participants results who received no intervention. However, as participants were not asked to repeat the Bar-on emotional quotient inventory at the post-test stage, therefore no conclusions could be drawn regarding any EI changes at the trait level. The current study aimed to address the drawbacks identified in the current EI training studies in the sporting context through measuring trait EI pre and post-intervention and through the use of a control group.

In summary, the aim of this study was to test the effectiveness of an EI training intervention in team contact sports, on participants who do not have a preexisting motivation to improve their EI. We hypothesized that EI training based on EI knowledge and ability would improve the global score of trait EI as well as the score of its four factors and fifteen subscales.

## **2 Methods**

### **2.1 Participants**

Sixty seven French male rugby union players took part in Study 1 whose ages ranged from 19 to 36 years ( $M = 23.70$ ,  $SD = 4.68$  years). All players were members

of the same club who compete within division one of the French national rugby league.

For organizational reasons, the players of the professional team formed the intervention group ( $N = 31$ ) because their schedule allowed them to realize the intervention at the club, while the players of the U23 team were allocated to the control group ( $N = 36$ ). Ethics approval to conduct the study was obtained from the ethics committee of the local University.

## 2.2 Questionnaire

Trait EI was assessed using the French version of the trait emotional intelligence questionnaire (TEIQue; Mikolajczak, Luminet, Leroy, & Roy, 2007). The long version of the TEIQue used in this study contained 153 items, 15 subscales, and four factors: well-being (“Most days, I feel great to be alive”); self-control (“I can handle most difficulties in my life in a cool and composed manner”); emotionality (“Generally, I know exactly why I feel the way I do”); and sociability (“I would describe myself as a good negotiator”). The participants had to rate these items on a scale of 1 (*completely disagree*) to 7 (*completely agree*). The internal consistency of the French validation of global trait EI has a Chronbach’s alpha of .95 for males and in the current study it was .92.

## 2.3 Procedure

A cover story was used in order to not prime participants that the intervention was aimed to increase their EI. The players were told that they had the possibility to receive face-to-face interventions to improve their psychological skills. The first author of this study, who was also the sport psychologist of the rugby club, delivered the intervention. Players were invited to participate in the study and were ensured that

not participating would have no consequences for them. If players chose to participate they were reassured that their results would not be shared with their coach and that they could withdraw from the intervention at any time which would not result in any consequences for them. Seven players did not accept and sixty seven volunteered to take part in the study. The intervention took place throughout a whole sporting season (30 weeks) and consisted in six sessions comprising of a pre and post-test and of four individual intervention sessions lasting from 45 min to 90 min (1 session every 5 weeks). The added value of this protocol is that it was specifically designed for the population of interest (i.e., rugby players), using tools and exercises that were relevant for the domain considered. An overview of the sessions can be seen in Table 1, and **additional** details about the sessions can be found in Campo, Laborde, and Weckemann (in press).

\*\*\* Insert Table 1 near here \*\*\*

In addition, some homework and follow-up procedures were implemented between sessions. Homework consisted of completing exercises between sessions, these were aimed at improving specific skills associated with the topic discussed within the previous session, for example using the micro expression training tool (Ekman & Matsumoto, 2007) or the Geneva affective picture database (Dan-Glauser & Scherer, 2011) to improve the individual's capacity to recognize self and others' emotions. Follow-up procedures were provided after each session, which consisted of a pedagogical document synthesizing the key points raised during sessions. In contrast, the control group were involved in video game analyses sessions which were organized in group settings.

## 2.4 Data analysis

Firstly, the TEIQue subscales, factors and global score were entered as dependent variables and a repeated measure MANOVA was performed. Time (pre vs. post) was used as a within-subject variable and group condition (control vs. intervention) as a between-subject variable. Secondly, the same repeated-measures MANOVA was performed again but instead using age as a covariate as our samples differed significantly regarding this aspect<sup>1</sup>.

## 3 Results

For the first repeated-measures MANOVA, a main effect of condition ( $F(15, 51) = 2.526, p < .001$ , Wilks' lambda = 0.574, partial  $\eta^2 = .43$ ), a main effect of time, ( $F(15, 51) = 10.199, p < .001$ , Wilks' lambda = 0.250, partial  $\eta^2 = .75$ ), as well as an interaction effect of condition x time ( $F(15, 51) = 3.558, p < .001$ , Wilks' lambda = 0.489, partial  $\eta^2 = .51$ ) were found. Given our main hypothesis, it was important to focus on the follow-up ANOVAs concerning the interaction effect of condition x time. A significant effect was found for the subscales social competence ( $F(1, 65) = 4.102, p = .047$ , partial  $\eta^2 = .06$ ), emotion perception ( $F(1, 65) = 4.175, p = .039$ , partial  $\eta^2 = .06$ ) and emotion management ( $F(1, 65) = 6.324, p = .014$ , partial  $\eta^2 = .09$ ). A tendency was found for the factor sociability ( $F(1, 65) = 3.312, p = .073$ , partial  $\eta^2 = .05$ ). As illustrated by the descriptive statistics (see Table 1), all effects indicate an increase from pre to post-test scores in the intervention group when compared to the control group.

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<sup>1</sup> A Mann-Whitney test indicated that intervention group was higher in age ( $Mdn = 28$  yrs) than control group ( $Mdn = 21$  yrs),  $U = 53, p = .000$ .



\*\*\* Insert Table 2 here \*\*\*

Following this, the same repeated-measures MANOVA was conducted integrating age as a covariate. No main effect of age was found ( $F(15, 50) = 0.957, p = .511, \text{Wilks' lambda} = 0.777, \text{partial } \eta^2 = .22$ ). No interaction effect time x age was found, ( $F(15, 50) = 0.990, p = .479, \text{Wilks' lambda} = 0.771, \text{partial } \eta^2 = .28$ ). Contrary to the first MANOVA, no main effect of condition ( $F(15, 50) = 1.109, p < .001, \text{Wilks' lambda} = 0.750, \text{partial } \eta^2 = .25$ ), nor time ( $F(15, 50) = 1.500, p = .141, \text{Wilks' lambda} = 0.690, \text{partial } \eta^2 = .31$ ) were found. However, there was a significant interaction effect of condition x time ( $F(15, 50) = 2.972, p = .002, \text{Wilks' lambda} = 0.471, \text{partial } \eta^2 = .47$ ). In order to clarify this, follow-up ANOVAs concerning the interaction effect of condition x time were conducted. From this only one EI subscale showed a tendency towards pertinent results, namely with impulsivity (low) ( $F(1, 64) = 3.034, p = .086, \text{partial } \eta^2 = .05$ ). As illustrated by the descriptive statistics (see Table 1), there is an increase in impulsivity (low) between the pre and post-test in the intervention group when compared to the control group. As the subscale impulsivity (low) represents impulsivity in a reversed score fashion, it shows that impulsivity has a tendency to decrease between the pre and post-test in the intervention in comparison to the control group.

## 4 Discussion

The aim of this study was to test the effectiveness of an EI training intervention in team contact sports, on participants not having a preexisting motivation to improve their EI. It was hypothesized that an EI training based on EI knowledge and ability

would improve the global score of trait EI as well as the score of its four factors and fifteen subscales. Our hypothesis was only partly verified: results showed that the intervention was effective in regards to increasing specific aspects of trait EI (i.e., social competence, emotion perception, and emotion management) but not global trait EI. In addition, when using age as a covariate it decreased the effect size and as a result no significant improvements could be found on the individual EI subscales and EI factors.

The current study furthers current knowledge as it demonstrated the value of an EI training intervention which developed specific aspects of trait EI. Furthermore, trait EI was developed even within a population who had no preexisting motivation to increase EI which is contrary to previous studies where participants had an initial motivation to change this (Kotsou et al., 2011; Nelis et al., 2011; Nelis et al., 2009). The current study's findings go above and beyond previous research in the sporting context that did not show any change in EI at the trait level after EI training (Barlow & Banks, 2014; Crombie et al., 2011), although the current research only demonstrated change within specific subscales and not global trait EI.

Several factors could explain the occurrence of improvement within specific aspects of trait EI and not global trait EI. First, intervention modalities (i.e., pre and post tests, four intervention sessions applied to the specific context, homework and follow-up procedures, control group) differed from former studies, for example Kotsou et al. (2011) who used a 15 hour intervention targeting five core emotional competencies, followed by a four week e-mail follow-up process. Second, regarding age, its confounding effect may come from the fact that age was found to be positively correlated with trait EI (Laborde, Dosseville, et al., 2014; Mikolajczak et

al., 2007), which could be further explained by the actuality that life experience is linked with improved emotion regulation strategies (Yeung, Wong, & Lok, 2011).

An imperative limitation of this study is the non-randomization of participants to both experimental and control groups, due to organizational reasons. This introduced a bias in our analysis, as the age of both samples differed greatly and influenced the results of the study. Further research should pay attention to demographic variables and aim to match these when comparing intervention and control groups. Another limitation is that the TEIQue was the sole measure used when assessing the effectiveness of the intervention. This may have been strengthened through other measures such as other subjective questionnaires related to emotion regulation or objective markers such as cortisol (Kotsou et al., 2011; Nelis et al., 2011) and heart rate variability (Laborde et al., 2011). Finally, no retention test was used, which could have determined if the effects of the intervention lasted over time, as utilized in Kotsou et al. (2011) who found that effects of intervention could last up to one year. Using such measures in the future would help to ensure the validity of an EI training intervention.

## **5 Conclusion**

The findings of this study highlight encouraging developments within EI research by establishing the possibility to improve EI at the trait level, even if the individual does not possess a preexisting motivation to do so. As emotions and pressure in sport performance have an influence at the physiological (e.g., Lautenbach, Laborde, Achtzehn, & Raab, 2014) and cognitive levels (e.g., Laborde & Raab, 2013; Laborde, Raab, & Kinrade, 2014), we can envisage that increasing EI at the trait level could also influence other aspects of sport performance. It also provides an interesting avenue for future research within other performance

domains, such as business, human surgery, and emergency services, in which individuals are faced with pressure and where emotion regulation plays a critical role.

## Reference list

- Balk, Y. A., Adriaanse, M. A., de Ridder, D. T. D., & Evers, C. (2013). Coping under pressure: employing emotion regulation strategies to enhance performance under pressure. *Journal of Sport & Exercise Psychology, 35*, 408-418.
- Bar-On, R. (2004). The Bar-On Emotional Quotient Inventory (EQ-i): Rationale, description and summary of psychometric properties. In G. Geher (Ed.), *Measuring emotional intelligence: Common ground and controversy*. Hauppauge, NY: Nova Science.
- Barlow, A., & Banks, A. P. (2014). Using emotional intelligence in coaching high-performance athletes: a randomised controlled trial. *Coaching: An International Journal of Theory, Research and Practice, 1-8*. doi: 10.1080/17521882.2014.939679
- Campo, M., Laborde, S., & Weckemann, S. (in press). Emotional Intelligence training: implications for performance and health *Advances in Psychology Research*. New York: Nova Publishers.
- Campo, M., Mellalieu, S., Ferrand, C., Martinet, G., & Rosnet, E. (2012). Emotions in team contact sports : A systematic review. *The Sport Psychologist, 26*, 62-97.
- Crombie, D., Lombard, C., & Noakes, T. D. (2011). Increasing Emotional Intelligence in Cricketers: An Intervention Study. *International Journal of Sports Science & Coaching, 6*, 69-86.
- Dan-Glauser, E. S., & Scherer, K. R. (2011). The Geneva affective picture database (GAPED): a new 730-picture database focusing on valence and normative significance. *Behav Res Methods, 43*(2), 468-477. doi: 10.3758/s13428-011-0064-1
- Ekman, P., & Matsumoto, D. (2007). The Micro-Expression Training Tool, v.2. (METT2). Available at <http://www.humintell.com>.
- Hanin, Y. (2000). *Emotions in sport*. Champaign, IL: Human Kinetics.
- Kotsou, I., Nelis, D., Grégoire, J., & Mikolajczak, M. (2011). Emotional plasticity: Conditions and effects of improving emotional competence in adulthood. *Journal of Applied Psychology, 96*, 827-839.
- Laborde, S., Brüll, A., Weber, J., & Anders, L. S. (2011). Trait emotional intelligence in sports: A protective role against stress through heart rate variability? *Personality and Individual Differences, 51*, 23-27. doi: 10.1016/j.paid.2011.03.003
- Laborde, S., Dosseville, F., Guillén, F., & Chávez, E. (2014). Validity of the trait emotional intelligence questionnaire in sports and its links with performance satisfaction. *Psychology of Sport and Exercise, 15*, 481-490. doi: 10.1016/j.psychsport.2014.05.001
- Laborde, S., Lautenbach, F., Allen, M. S., Herbert, C., & Achtzehn, S. (2014). The role of trait emotional intelligence in emotion regulation and performance under pressure. *Personality and Individual Differences, 57*, 43-47. doi: 10.1016/j.Paid.2013.09.013
- Laborde, S., & Raab, M. (2013). The tale of hearts and reason: the influence of mood on decision making. *Journal of Sport & Exercise Psychology, 35*, 339-357.

- Laborde, S., Raab, M., & Dosseville, F. (2013). Emotions and Performance: Valuable insights from the sports domain. In C. Mohiyeddini, M. Eysenck & S. Bauer (Eds.), *Handbook of Psychology of Emotions: Recent Theoretical Perspectives and Novel Empirical Findings* (Vol. 1, pp. 325-358). New York, NY: Nova.
- Laborde, S., Raab, M., & Kinrade, N. P. (2014). Is the ability to keep your mind sharp under pressure reflected in your heart? Evidence for the neurophysiological bases of decision reinvestment. *Biol Psychol*, *100C*, 34-42. doi: 10.1016/j.biopsycho.2014.05.003
- Laborde, S., You, M., Dosseville, F., & Salinas, A. (2012). Culture, individual differences, and situation: Influence on coping in French and Chinese table tennis players. *European Journal of Sport Science*, *12*, 265-261. doi: 10.1080/17461391.2011.566367
- Lautenbach, F., Laborde, S., Achtzehn, S., & Raab, M. (2014). Preliminary evidence of salivary cortisol predicting performance in a controlled setting. *Psychoneuroendocrinology*, *42*, 218-224.
- Lazarus, R. S. (1999). *Stress and emotion: A new synthesis*. New York, NY: Springer.
- Mayer, J. D., Caruso, D. R., & Salovey, P. (1999). Emotional intelligence meets traditional standards for an intelligence. *Intelligence*, *27*, 267-298. doi: 10.1016/S0160-2896(99)00016-1
- Mayer, J. D., Salovey, P., & Caruso, D. R. (2002). *Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT): User's Manual*. Toronto, ON: Multi-Health Systems Inc.
- Mikolajczak, M., Luminet, O., Leroy, C., & Roy, E. (2007). Psychometric properties of the Trait Emotional Intelligence Questionnaire: Factor structure, reliability, construct, and incremental validity in a French-speaking population. *Journal of Personality Assessment*, *88*, 338-353. doi: 10.1080/00223890701333431
- Nelis, D., Kotsou, I., Quoidbach, J., Hansenne, M., Weytens, F., Dupuis, P., & Mikolajczak, M. (2011). Increasing Emotional Competence Improves Psychological and Physical Well-Being, Social Relationships, and Employability. *Emotion*, *11*, 354-366. doi: 10.1037/a0021554
- Nelis, D., Quoidbach, J., Mikolajczak, M., & Hansenne, M. (2009). Increasing emotional intelligence: (How) is it possible? *Personality and Individual Differences*, *47*, 36-41. doi: 10.1016/j.paid.2009.01.046
- Petrides, K. V. (2009a). Psychometric properties of the Trait Emotional Intelligence Questionnaire (TEIQue). In C. Stough, D. H. Saklofske & J. D. A. Parker (Eds.), *Assessing emotional intelligence: Theory, research, and applications*. (pp. 85-101). New York, NY: Springer Science.
- Petrides, K. V. (2009b). *Technical manual for the Trait Emotional Intelligence Questionnaire (TEIQue)*. London, England: London Psychometric Laboratory.
- Petrides, K. V., & Furnham, A. (2003). Trait emotional intelligence: behavioural validation in two studies of emotion recognition and reactivity to mood induction. *European Journal of Personality*, *17*, 39-57. doi: 10.1002/per.466

Yeung, D. Y., Wong, C. K. M., & Lok, D. P. P. (2011). Emotion regulation mediates age differences in emotions. *Aging & Mental Health, 15*, 414-418. doi: 10.1080/13607863.2010.536136

Table 1

Content of the emotional intelligence training intervention

<b>Session</b>	<b>Content</b>
1	Pre-test, filling out the TEIQue
2	Introduction to EI, provision of feedback based on the TEIQue's individual profiles and explanation of the influence of EI in human performance
3	Increase knowledge about emotions through the use of appraisal theories (Lazarus, 1999) and education of recognition of emotion amongst self and others
4	Introduction of the Individual Zone of Optimal Functioning (Hanin, 2000), education of emotional contagion in sport and increase knowledge of self and interpersonal emotion regulation
5	Application of knowledge learnt in the first three intervention sessions through building individual precompetitive routines
6	Post-test, filling out the trait emotional intelligence questionnaire

*Note.* EI: Emotional Intelligence; TEIQue: Trait Emotional Intelligence Questionnaire



Table 2

## Descriptive statistics

Trait EI	Control				Intervention			
	Pre		Post		Pre		Post	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Self-esteem	4.75	0.79	4.71	0.84	5.00	0.61	5.16	1.53
Emotion expression	3.98	1.13	3.87	1.10	4.12	0.95	4.25	1.53
Self-motivation	4.80	0.69	4.74	0.67	4.94	0.72	5.06	1.44
Emotion regulation	4.19	0.76	4.29	0.93	4.78	0.82	5.20	1.55
Happiness	5.39	1.01	5.30	1.11	6.09	0.64	6.09	1.70
Empathy	4.59	0.69	4.60	0.84	4.38	0.75	4.49	1.35
Social Competence	4.56	0.66	4.61	0.70	4.72	0.72	5.21	1.56
Impulsiveness (low)	4.18	0.66	4.10	0.71	4.74	0.88	4.55	1.50
Emotion perception	4.30	0.82	4.24	0.73	4.45	0.73	4.91	1.49
Stress management	4.32	1.16	4.41	1.20	4.96	0.75	5.30	1.60
Emotion management (others)	4.25	0.65	4.28	0.74	4.25	0.71	4.99	1.49
Optimism	4.64	0.95	4.72	0.88	5.05	0.76	5.42	1.63
Relationship skills	5.55	0.75	5.40	0.89	5.85	0.64	5.80	1.65
Adaptability	4.30	0.55	4.43	0.56	4.45	0.65	4.82	1.43
Assertiveness	4.66	0.74	4.60	0.70	5.04	0.58	5.08	1.53
Well-being	4.93	0.75	4.91	0.76	5.38	0.53	5.56	1.58
Self-control	4.23	0.68	4.27	0.75	4.83	0.65	5.02	1.50
Emotionality	4.61	0.58	4.53	0.56	4.70	0.59	4.86	1.42
Sociability	4.49	0.50	4.50	0.55	4.67	0.52	5.09	1.50
Global Trait EI Score	4.56	0.40	4.55	0.44	4.85	0.43	5.09	1.45