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Effects of a personal goal management intervention on positive and negative moods states in soccer academies

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Abstract

The aim of this study was to evaluate the effects of a personal goal-based intervention on positive and negative moods among young athletes of a soccer academy. Study participants (n=22) were randomized into either a treatment group with a personal goal management program (Bouffard, Labelle, Dubé, & Lapierre, 1999) or a control group. Participants’ mood states were measured every three weeks. Results indicated a significant post-intervention group difference on the positive and negative mood states in favor of the treatment group. A significant within-group difference over time was also found for the treatment group. Methodological and applied suggestions are made to develop means to support young athletes.

Key words: goals, moods, intervention, young athletes
Effects of personal goal management intervention on positive and negative mood states in soccer academies

In sport psychology, interventions usually aim at improving performance through the development of mental skills (Andersen, Van Raalte, & Brewer, 2001). However, researchers have recently become interested in facilitating the career transition of athletes through psychological interventions (Miller & Kerr, 2002; Wylleman, Alfermann & Lavallee, 2004). For example, Lavallee (2005) showed the effect of an intervention focus on counselling and supportive strategies on career transition adjustment in retired professional athletes. In the present study we aimed to evaluate the effects of the participation in a psychological intervention on young European soccer players in order to support the well-being of this population during a career transition.

In some European countries, especially in France, the psychological follow-up of athletes engaged in high level sports training programs has developed. In the soccer context, each professional club manages a youth academy for players likely to develop at the highest national level. These soccer academies often recruit players between 14 and 16 years of age, and offer them school education and soccer development for three to four years. For some of these trainees, the school/soccer balance can be difficult to manage (Brettschneider, 1999). Moreover, these academies are based on excellence and competition. At the end of this training program, only 5-10% of them could sign a professional soccer contract (Collin, 2004). Thus, the policy of governing bodies of sport responsible for many European countries encourages the soccer academies to anticipate and prepare trainees for their redeployment. Previously researchers have highlighted the importance of preparing for such important transitions (Grove, Lavallee, Gordon & Harvey, 1998; Webb, Nasco, Riley & Headrick, 1998). Indeed, stopping or re-orienting their career is a major difficulty faced by young high-level athletes (Wylleman, Alfermann, & Lavallee, 2004) because it involves a major life
change that transforms their social and physical worlds, with changes in roles, relationships, and daily routines (Kim & Moen, 2001). These transitions also have an impact on an athlete’s well-being (Kim & Moen, 2001; Stéphan, Billard, Ninot & Delignères, 2003).

Well-being is a fluctuating affective state (Fujita & Diener, 2005) involving the presence of positive affective states and the absence of negative affective states (Diener, Lucas & Oishi, 2002). This level of temporal fluctuation distinguishes moods and emotions theoretically. In the health domain, the Profile of Moods States is frequently used to measure well being (e.g., Chamove & Soeterick, 2006; Sonnaville et al., 1998; Van der Does et al., 1996). According to McNair, Loor, and Droppleman (1992), moods are mild, pervasive, and generalized affective states that are perceived subjectively by individuals. They are relatively long-term states, lasting for hours, days, or even weeks rather than minutes or seconds. Also, moods often build-up gradually as a result of many experiences, in contrast with emotions, which are caused by a single stimulus (Ekman, 1994; Parkinson & Totterdell, 1996).

Well-being can be enhanced when individuals are able to pursue distinct personal goals in ways that are intrinsically-valued and autonomously-chosen (Bouffard, Labelle, Dubé & Lapierre 1999; Cantor & Sanderson, 1998; Emmons, 1996). In sport setting, previous research has tested the effects of goal setting techniques on physical performances of athletes, without showing consistent effects (Hall & Kerr, 2001; Weinberg & Weigand, 1993). Goal setting and PGMP are two techniques of intervention used by psychologists to favor the elaboration of goals. They have the same theoretical assumption that goals are the most immediate regulators of the human behavior (Locke & Latham, 1990). Nevertheless, one recognizes an essential distinction between these two techniques concerning the finality of their effects. Goal setting is a technique used to improve the performance and persistence of an individual (Famose, Sarrazin & Cury, 1999). Generally, goals are assigned at the time of a discussion and must be accepted by the athlete. In the PGMP, the framework of intervention
Aims to promote the emergence of selected goals in an autonomous way, having an intrinsic value for the individual. A key distinction then is that the PGMP, rather than the Goal Setting approach, promotes the identification of intrinsically oriented goals. Moreover, PGMP, unlike goal setting, imposes to consider and to articulate goals in relation with all athlete’s activities because it is an initiative centred on the person. In relation to this population which is the concern of this paper, it also offers an approach which lends itself to the reconciliation of education and football goals. Finally the PGMP distinguishes various phases of goal realization and proposes a frame facilitating the trainees’ involvement at each stage, and this lends itself particularly to work with such a young population.

The PGMP approach is constructed on identified steps in the development of personal goals: elaboration, planning, pursuit, and evaluation (Gollwitzer, 1993; Nuttin, 1985). In this study, only the two first steps were approached. The elaboration of personal goals is the psychological activity which concretize the personal motivation based on the fulfilment of fundamental psychological needs, like that competence or autonomy (Nuttin, 1985), and on the knowledge of the constraints and opportunities of their social and cultural environment (Cantor, 1990). During the elaboration, the participants are invited to draw-up an inventory of their aspirations, to clarify them, select their priorities and to formulate precise behaviors. The step of elaboration is connected positively to happiness (Bouffard, Bastin, Lapierre, & Dubé, 2001) and negatively to depression (Emmons, 1986) and anxiety (Hosen, 1990).

Planning is a psychological exercise which prepares action (Tubbs & Ekeberg, 1991). Different strategies are mobilized through the exploration of possibilities, the search for means, the specification of stages, the identification of necessary skills, and the prediction of difficulties (Cantor & Fleeson, 1994). During the intervention participants are invited to plan in a detailed way the actions to carry out, anticipate the obstacles and the strategies to carry
them out. Studies have shown the beneficial influence of strategies used during planning, like the resolution of problem, on the anxiety of the participants (D'Zurilla & Chang, 1995).

The PGMP has been applied to different populations engaged during transitional periods outside of sport such as university students starting their first year (Bouffard et al., 2001) and people recently retired from their professional activities (Bouffard, Dubé, Lapierre, & Bastin, 1996; Dube, Lapierre, Bouffard & Labelle, 2000). As Bouffard et al. (2001) suggest, PGMP is appropriate for transition and can also be applied to people of other ages, in other transitional periods, such as trainees of soccer academies. It is hypothesized that taking part in the elaboration and planning of the PGMP would lead to the decrease of negative mood states and the increase of positive mood states. Moreover, few sports psychology studies have measured the process by which an intervention produces a significant effect. As such, a repeated measures design was utilized to evaluate the influence of each phase of the intervention on positive and negative mood states.

Method

Participants

Twenty-two participants took part in this study (Mean age = 17.5, SD = 0.8). All participants were male trainees at the same soccer academy, and were members of teams taking part in the national championship in their age category. At the time of the study they had been trainees in a soccer academy for three or four years. Each academy season begins in September and ends in June. All participants were in the last year of the training program and at the end of this year, the possibility to sign a professional soccer contract in this club was decided by the academy coaches. Twenty-six participants were initially invited to take part in either a treatment or neutral task. Four declined to participate. The twenty-two participants were randomly allocated to two eleven-player-groups [treatment group (Mean age = 17.4, SD
and control group (Mean age = 17.6, SD =0.85)]. There was an institutional review board for this study, and the trainees completed a formal consent to take part until the end in their intervention and this study.

**Measures**

Moods were evaluated using the *Profile Of Mood State* (POMS; MacNair et al., 1992), as validated in French by Cayrou, Dickes, and Dolbeault (2003). POMS is a self-evaluation questionnaire composed of 65 adjectives. Each item is graduated in five degrees according to intensity (from 0 to 4). Participants in this study were invited to evaluate the way they experienced the feelings described by the adjectives *in the preceding four or five days*. The POMS includes five negative moods (tension, depression, anger, fatigue and confusion) and one positive mood (vigor) (MacNair et al., 1992). For Terry, Lane, Lane, and Keohane (1999) “*Anger* is typified by feelings that vary in intensity from mild annoyance or aggravation to fury and rage. *Confusion* is proposed to be a feeling state characterised by bewilderment and uncertainty, associated with a general failure to control attention and emotions. *Depression* is associated with a negative self-schema characterised by themes such as hopelessness, personal deficiency, worthlessness and self-blame. *Fatigue* is typified by feelings of mental and physical tiredness. *Tension* is typified by feelings such as nervousness, apprehension, worry and anxiety. *Vigor* is typified by feelings of excitement, alertness and physical energy” (p. 863). In this study, the internal consistency (Cronbach alpha) was found to be .78 for Anger, .83 for Confusion, .81 for Depression, .79 for Fatigue, .88 for Tension, and .86 for Vigor.

**Procedure**

Participants were brought together in a room with the first author and their trainer at the start of the study. It was explained to the participants that the study aim was to evaluate the effects of certain techniques of intervention (individual and group). After having answered
some questions about the study, the participants were asked not to discuss the nature of the study in any way with other participants in the study. Participants were then randomly assigned to groups.

In agreement with the soccer academy, the interventions and evaluations commenced in the middle of the season. From early January to the end of May, measurements were taken six times, one every three weeks: one pre-intervention; one post-intervention; and four intermediary measures. All interventions took place at the soccer academy, at the beginning of the week, with the same reviewer, without the participants knowing the experimental or control nature of the group they belonged to. All the participants were measured each Friday. These measures were taken collectively in the same room. The intervention and evaluation times are detailed in the Figure 1. The level of soccer performance of each group was checked: at the end of the intervention two participants in the treatment group and three in the control group eventually signed professional soccer contracts.

**Intervention**

Every participant of the treatment group received the same intervention. The content of the intervention was an adaptation of the PGMP (Bouffard et al., 1999). This program structures preliminary, elaboration, planning, pursuit and evaluation phases of the personal goals. In this study, only the content of preliminary, elaboration, and planning stages were employed (Table 1). Indeed, the departure of the large majority of the players at the end of the year prevents their accompaniment during the pursuit and evaluation phases of their goals. In addition, the PGMP is generally applied under the shape of a work in small group (3 or 4). This framework is not adapted to this population for several reasons. First, the working group seemed difficult to set up given the competitive dynamic between the trainees especially, in the soccer context. Second, in this specific environment it seemed to the authors more
relevant to propose a process of ‘accompaniment’ throughout the season and to propose individual interviews of clinical type as a vehicle rather than work in small groups.

Excepting for these features, the structure of the PGMP was respected. The framework used was a four-month intervention, including a preliminary group interview and four one-hour face-to-face individual interviews, which took place in a room at the soccer academy. The objectives and the carrying out of the intervention were presented during the preliminary interview and a debate between trainees on their future in the professional soccer was organized. Finally, trainees were asked to prepare the first individual interview thinking of their future after their departure of the soccer academy. Each individual interview employed a semi-structured guide which directed participants to focus on the anticipation of his departure.

With regard to the step of elaboration, the person’s speech is oriented on opportunities and restraints linked to these environments and on the perception of their personal skills (knowledge, know-how, and behavior) and motivation in soccer and school activities. As suggested by Brettschneider (1999), the principal difficulty for this population is to organize these two activities. The first interview was oriented on its skills and motivations. At the end of this interview, to prepare the second, the trainee was invited to think to his environment. The specific goal of this second interview was to help the trainee to adjust his skills and motivations with the constraints and opportunities linked to his environment. As the case, three principal possibilities could be envisaged - to try to sign a contract with another professional club, to play for an amateur club which could offer a job and an educator or trainer formation, or to consider higher education.

During the step of planning, the interviewer encourages the participants to clarify their goals and the definition of means to achieve them. The specifics goals were in a first time to identify the organizations interesting for the trainee - professional or amateurs clubs, or universities- and to get information about theses, then to redefine precisely his expectations,
next to define the inherent difficulties of the step - remain discrete towards coaches of the soccer academy or remain implies in his school and soccer activities in the soccer academy-, and finally to define the mean to contact its interlocutors and to prepare it.

The PMPG framework used individual interviews in order to access subjective information (representation, mood, motivation, experience) testifying to the singularity and the complexity of the phenomenon being studied (Chiland, 1989). The speaker informed each trainee on the interview conditions and on the possibility to stop the program when they wished to. Trainees were informed on the goals of the program: to anticipate and prepare his departure of the soccer academy; on the type of relation between the speaker and the trainee: a collaboration; on the duration of collaboration: four individual interviews at the frequency of every three weeks; and on the method: to propose a space-time to elaborate and plan its personal goals. The fundamental principles of the individual interview of clinical type were respected: confidentiality, benevolence, neutrality and empathy. These principles are in line with the Rogerian approach of the clinical interview (Rogers, 1942) and favour the creation of a confidence climate between the participant and the speaker. These principles favour also the capacity of the speaker to speak freely and the capacity of the interviewer at the same moment to understand, by identification, what lives the speaker and to communicate it to him.

During the elaboration step, the speaker used verbal interventions such as reformulation, questioning and reiteration, supporting the expression and clarification of goals. During the planning step, the speaker was more implicated. To facilitate the development of strategies allowing realization of goals, he used also problems-solving technique. This aimed at supporting the trainee analytical step and the decision-making.

Neutral task

The control group participated in four group meetings during the study. These meetings lasted approximately one hour. The goal was to offer participants a time to discuss
and analyze the quality of their collective and individual performances. Each participant was invited to offer his opinion on the quality of the performance of their team, their opponent, and on the quality of their own performance. The speaker’s role was to serve as a moderator for the discussion. Participants in this group did not discuss career-related goals during these sessions.

Data Analysis

The effect size was calculated for each variable, by applying the procedure suggested by Cohen (1988). This index makes it possible to evaluate the effects independently of the sample size. This procedure was used to evaluate the within and the between group differences. Cohen defined effect sizes as “small” ($d = .2$), “medium” ($d = .5$) and “large” ($d = .8$). Repeated measures analyses of variance, with Bonferroni correction, were conducted in which POMS scales were dependent measures, time was a repeated measures independent variable with six times, and a between-group independent variable with the two groups. Before this analysis, scores were tested to see if they were normally distributed or not. The Lilliefors test was used on each group of data (6 variables* 6 times* 2 groups). Except for only one group of data, all the results were satisfactory. In addition, this analysis was followed by post-hoc comparisons using the Newman Keuls test when statistical significance was obtained.

Results

It is hypothesised that the between groups difference on each mood states evolve between the pre and post test. Effect size estimates showed that the pre-test mean score on each negative mood was higher for the treatment group even though in post-test this was higher. On the other hand, the pre-test mean score of Vigor was higher for the control group even though in post-test this was lower. A significant group*time effect was identified for Depression $F (5, 100) = 3.58, p = .003$, Tension, $F (5, 100) = 2.87, p = .01$, and Fatigue, $F (5,
100) = 4.92, \( p < .001 \). With an alpha level fixed at \( p < .008 \) (.05 / 6 variables), the effect was still found to be significant on the Depression and Fatigue subscales.

Moreover, it is hypothesised that the mean score of Vigor increase in the treatment group and the mean score of each negative mood states decrease. Effect size estimates for the within group difference revealed a strong diminution of their mean score in the treatment group and a stability or an increase in the control group for all the negative mood states. On the other hand, the mean score of Vigor increased at the treatment group and remained stable in the control group. In the treatment group, a Newman Keuls test revealed that scores decreased between T0 and T2 (\( p < .05 \)) and T5 (\( p < .05 \)) for Tension, between T0 and T1 (\( p < .01 \)), T4 (\( p < .05 \)) and T5 (\( p < .05 \)) for Depression, and between T0 and T4 (\( p < .05 \)) and T5 (\( p < .01 \)) for the Fatigue. In the control group, scores increased between T0 and T4 (\( p < .01 \)) and T5 (\( p < .01 \)) for the Depression and Fatigue scales. Results are presented in Table 2.

Discussion

The aim on this study was to evaluate the effect of the soccer academy trainees’ participation in the PGMP on their well-being. Well-being is a psychological phenomenon involving the presence of positive mood states and the absence of negative mood states (Diener, Lucas & Oishi, 2002). In accordance with previous research with retired workers (Dubé et al., 2000) and students (Bouffard et al., 2001), the results support for the efficacy of PGMP with people experiencing a transitional period such as some trainees in a soccer academy. As hypothesized, between the pre-test and the post test, well-being scores had strongly increased for the trainees following the PGMP and remained stable or decreased for the trainees following the neutral task.

A change in the two groups with regard to the level of Depression was also identified, as it steadily increased in the control group and decreased in the treatment group. As Lane, Terry, Beedie, Curry, and Clark (2001) have shown in research with a student population,
Depression levels and goals quality are two very closely linked phenomena. The more an individual pursues interesting, valued and feasible activities, the more depression level is low (Brickman & Coates, 1987; Csikszentmihalyi, 1990). This research supports the behavioral model of depression which suggests that depression is a learned phenomenon (Clark & Steer, 1996; Fensterheim & Baer, 1976; Seligman, 1992).

The other aim of this study was to evaluate the influence of each phase of the intervention on the trainees’ well-being to propose recommendation in the application of the PGMP. After the first interview, an increase was noticed in the well-being in the treatment group and a decline in the control group, and an opposite trend after the second interview. The first interview focused on the definition of each trainee’s competence, and mobilized cognitive activity favoring the perception of attractive activities, while the second interview approached the personal and environmental restraints to consider during the elaboration of the goals. As Pearson and Petitpas (1990) and Lavallee (2005) suggest, the widening of athlete’s list of possible activities can increase their well-being. Nevertheless, confronted with reality, participants had to face their own limits, those imposed by their environments and the difficulty to make a choice. Also, in future applications of PGMP, it would be relevant, for limiting this phenomenon, to conduct earlier the (third) interview focused on the planning.

The present investigation has several limitations. Methodologically, the small size of the sample warrants precaution when interpreting the results. Moreover, several variables were not controlled despite the elaboration of a control group. At a situational level, the average playing time of each trainee was a criterion of achievement as soccer practice, likely to influence how competent he feels (Williams & Reilly, 2000). At an interpersonal level, some studies have highlighted the effect of the manager leadership style on a subordinate’s well-being (McColl-Kennedy & Anderson, 2005). Thus, it would have been interesting to assess and control in both groups the quality of the interpersonal relation between the
participants and their coach. In addition, this study did not measure the persistence of the effects observed over time. The commitment in personal goals enhances well-being as soon as the individual is able to undertake an efficient regulation of his actions toward its achievement (Brandstadter & Renner, 1990). Otherwise, difficulties in adapting to the requirements of the situation make less happy (Ruehlman & Wolchik, 1988). Therefore, an evaluation of this intervention at least six months after its end would have been interesting. The unavailability of our participants prevented us from such a measure.

In terms of clinical implications, the framework proposed in the PGMP is different from those usually proposed in sport such as goal setting with a cognitive-behavioral orientation (Locke & Latham, 1985) or ego-restructuration with a psychoanalytical orientation (Carrier, 1993; Hanna, 1993). PGMP overcomes the specific, unidimensional and especially more or less ascribed aspect of elaborated goals as regards goal setting, making it a personal and a more comprehensive process. It also enables practitioners to go further than simply a fostering of the emergence of personal desires by giving concrete means to achieve their goals. The PGMP can release young athletes of the influence of the organizational context by supporting an autonomous behavior.

In spite of this intervention seems promising for practitioners who want to support young athletes during transitional periods, training academies exist in other sports and it would be interesting in futures studies to adapt and test this program on other athletes in transition. researches should test its effect in a number of participants more important, living in different academies, especially on a younger population of trainees living an other transition period: the newcomers.
References


I the undersigned, Raphael Laurin, attest that the material in the article entitled "Effects of a personal goal management intervention on positive and negative moods states in soccer academies" has not been previously published and that it is not subject for publication in another review.

Dijon, 24/09/07
Footnotes

1  Cohen’s $d = \frac{M_1 - M_2}{s_{\text{pooled}}}$

where $s_{\text{pooled}} = \sqrt{\frac{(s_1^2 + s_2^2)}{2}}$
### Table 1

**Personal Goal Management Program: Objectives and contents of interviews***.

<table>
<thead>
<tr>
<th>Stages</th>
<th>Interviews</th>
<th>Objectives</th>
<th>Main thematic contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preliminary</td>
<td>Group</td>
<td>• To present the objectives and the carrying out of the intervention</td>
<td>• Evocation of their doubt concerning their soccer career (wounds, exclusion, competition)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• To favor debate between trainees on their future in the soccer training center.</td>
<td>• Evocation of their doubt concerning their priority: soccer or school.</td>
</tr>
<tr>
<td>Elaboration of the goals</td>
<td>Individual</td>
<td>• To evoke the personal skills of each trainee in the fields of school and soccer</td>
<td>• Evocation of learning stemming from their soccer training (knowledge and technical, tactical and physical know-how and social behavior).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• To evoke the opportunities and restraints stemming from each trainee’s skills and their environment</td>
<td>• Evocation of the most privileged school subjects.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• To sensitize them to goal setting.</td>
<td></td>
</tr>
<tr>
<td>Planning of the goals</td>
<td>Individual</td>
<td>• To precise the chosen goals, the different means to achieve them and the difficulties they might face</td>
<td>• Expression of the priority given to soccer, school or both</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• To favour planning: means, anticipated obstacles, strategies to be used, time to be devoted...</td>
<td>• Reflection on the preparation of school tests and recruitments.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Expression of information method research (clubs, schools, paths, jobs).</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• To review or strengthen the goals set up</td>
<td>• Evocation of their first results of their research.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• To set of a moral commitment contract to pursue theses goals.</td>
<td>• Evocation of their progress in the preparation of school tests.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• To assess the intervention</td>
<td>• Affirmation of their belief in their goals.</td>
</tr>
</tbody>
</table>
- Expression of their personal opinion about the intervention.

### Table 2

**Means, standard deviations and effect size for POMS variables**

<table>
<thead>
<tr>
<th>Variables</th>
<th>T0</th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
<th>T4</th>
<th>T5</th>
<th>E.S. (Intra)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tension</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T.G.</td>
<td>9.86 (3.38)</td>
<td>8.54 (3.44)</td>
<td>6.72 (3.22)</td>
<td>7.54 (3.10)</td>
<td>8.36 (3.31)</td>
<td>6.45 (2.5)</td>
<td>-1.15</td>
</tr>
<tr>
<td>C.G.</td>
<td>5.84 (3.05)</td>
<td>6.63 (3.8)</td>
<td>6 (3.4)</td>
<td>5.83 (2.74)</td>
<td>7.64 (3.58)</td>
<td>7.45 (2.32)</td>
<td>0.59</td>
</tr>
<tr>
<td><em>E. S. (Inter)</em></td>
<td>1.24</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-0.41</td>
</tr>
<tr>
<td><strong>Depression</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T.G.</td>
<td>8.54 (3.02)</td>
<td>5.36 (3.12)</td>
<td>8.72 (3.25)</td>
<td>8.45 (3.01)</td>
<td>6.81 (2.93)</td>
<td>6.36 (2.54)</td>
<td>-0.78</td>
</tr>
<tr>
<td>C.G.</td>
<td>4.68 (3.12)</td>
<td>5.37 (3.52)</td>
<td>3 (2.63)</td>
<td>4.72 (3.21)</td>
<td>8.09 (3.02)</td>
<td>6.54 (2.84)</td>
<td>0.62</td>
</tr>
<tr>
<td><em>E. S. (Inter)</em></td>
<td>1.26</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-0.06</td>
</tr>
<tr>
<td><strong>Hostility</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T.G.</td>
<td>12.7 (2.75)</td>
<td>9.45 (3.03)</td>
<td>8.9 (2.87)</td>
<td>11.27 (3.17)</td>
<td>10.27 (3)</td>
<td>9 (2.67)</td>
<td>-1.35</td>
</tr>
<tr>
<td>C.G.</td>
<td>8.70 (2.97)</td>
<td>9.45 (2.45)</td>
<td>6.54 (3.02)</td>
<td>6.09 (2.35)</td>
<td>10.63 (3.11)</td>
<td>8.54 (2.88)</td>
<td>-0.05</td>
</tr>
<tr>
<td><em>E. S. (Inter)</em></td>
<td>1.35</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.16</td>
</tr>
<tr>
<td><strong>Vigor</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T.G.</td>
<td>15.1 (3.09)</td>
<td>15.6 (2.98)</td>
<td>15.4 (4.43)</td>
<td>14.7 (3.74)</td>
<td>15.7 (3.34)</td>
<td>18 (3.79)</td>
<td>0.83</td>
</tr>
<tr>
<td>C.G.</td>
<td>14.6 (3.12)</td>
<td>14 (2.88)</td>
<td>14.9 (3.65)</td>
<td>14.2 (3.97)</td>
<td>13.9 (3.87)</td>
<td>14.7 (3.54)</td>
<td>0.03</td>
</tr>
<tr>
<td><em>E. S. (Inter)</em></td>
<td>0.16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.93</td>
</tr>
<tr>
<td><strong>Fatigue</strong></td>
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<tr>
<td>T.G.</td>
<td>8.34 (2.93)</td>
<td>5.82 (2.57)</td>
<td>7.54 (3)</td>
<td>8 (3.03)</td>
<td>6 (2.79)</td>
<td>6 (2.95)</td>
<td>-0.8</td>
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<tr>
<td>C.G.</td>
<td>4.25 (2.89)</td>
<td>4.82 (2.03)</td>
<td>4 (2.23)</td>
<td>4.9 (2.45)</td>
<td>6.27 (2.24)</td>
<td>6.82 (2.84)</td>
<td>0.89</td>
</tr>
<tr>
<td><em>E. S. (Inter)</em></td>
<td>1.41</td>
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<td>-0.29</td>
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<tr>
<td><strong>Confusion</strong></td>
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<tr>
<td>T.G.</td>
<td>7.73 (2.84)</td>
<td>6 (2.75)</td>
<td>5.45 (2.65)</td>
<td>6.27 (3)</td>
<td>6.27 (2.68)</td>
<td>4.45 (2.67)</td>
<td>-1.19</td>
</tr>
<tr>
<td>C.G.</td>
<td>5.97 (2.88)</td>
<td>6.27 (2.45)</td>
<td>4.63 (2.23)</td>
<td>4.82 (2.67)</td>
<td>6.1 (2.83)</td>
<td>5.82 (2.56)</td>
<td>-0.05</td>
</tr>
<tr>
<td><em>E. S. (Inter)</em></td>
<td>0.61</td>
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<td></td>
<td></td>
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<td>-0.53</td>
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</table>

*Note. T.G. = Treatment Group; C.G. = Control Group; E.S. (Intra) = Effect Size (Intra Group); E.S.(Inter) = Effect Size (Inter Groups).*
Figure Caption

*Figure 1.* Temporal representation of the study
Beginning of the last year of formation for participants

Presentation of study

Preliminary group interview

Pre Test T0

T1*

T2*

T3*

T4*

End of the last year of formation for participants


Note. * = week of intervention and evaluation

Neutal task and intervention

Evaluation

M. T. W. T. F. S. S.