



Effects of the Sport Education model on adolescents' motivational, emotional and well-being dimensions during a school year

Journal:	<i>European Physical Education Review</i>
Manuscript ID	EPE-21-0054.R1
Manuscript Type:	Original Research Article
Keywords:	motivation, self-determination theory, sport education, emotional intelligence: ability, subjective well-being: cognitive dimension
Abstract:	<p>Research upon the impact of the Sport Education model (SEM) in motivational terms is prolific and consistent; however, there is a gap in research concerning the jointly effects of the SEM on adolescents' motivational, emotional, and well-being dimensions. This study aimed to examine the effect of a multi-season SEM-based program on self-determined motivation, basic psychological needs, emotional intelligence, satisfaction with life, and the intention to be physically active on physical education (PE) students during a school year. 252 high school students ($M = 13.88$; $SD = 1.68$) from grades 7 and 10 (nine intact groups) participated in this study. A quasi-experimental design, with four measurements (T1 –September-, T2 –December-, T3 –March-, and T4 –June-), was carried out. The repeated measures ANOVA, with time as within-subject factor, and both grade-level and gender as between-subject factors, revealed significant effects over time in autonomy $F(3,624) = 12.413$, $p < .001$, $\eta^2 = .056$, competence $F(2.78, 579.09) = 10.733$, $p < .001$, $\eta^2 = .049$, emotional control and regulation $F(2.74, 569.74) = 7.045$, $p < .001$, $\eta^2 = .033$, and emotional empathy $F(2.71, 563.71) = 4.248$, $p < .01$, $\eta^2 = .007$. Some interactions were also found according to grade-level and gender. Between-subject MANOVAs showed differences tended to progressively increase over time. Results confirm the potential of the SEM to cushion the motivational decline and satisfy the basic psychological needs during adolescence. SEM was shown to be, for the first time, a useful model for increasing the dimensions of emotional intelligence in PE.</p>

SCHOLARONE™
Manuscripts

Effects of the Sport Education model on adolescents' motivational, emotional and well-being dimensions during a school year

Abstract

Research upon the impact of the Sport Education model (SEM) in motivational terms is prolific and consistent; however, studies that jointly address the effects of SEM on adolescents' motivational, emotional and well-being dimensions are scarce. This study aimed to examine the effect of a multi-season SEM-based program on self-determined motivation, basic psychological needs, emotional intelligence, satisfaction with life, and the intention to be physically active on physical education (PE) students during a school year. 252 high school students ($M = 13.88$; $SD = 1.68$) from grades 7 and 10 (nine intact groups) participated in this study. A quasi-experimental design, with four measurements (T1 –September-, T2 –December-, T3 –March-, and T4 –June-), without a control group was carried out. The repeated measures ANOVA, with time as within-subject factor, and both grade-level and gender as between-subject factors, revealed significant effects over time in autonomy $F(3,624) = 12.413, p < .001, \eta^2 = .056$, competence $F(2.78, 579.09) = 10.733, p < .001, \eta^2 = .049$, emotional control and regulation $F(2.74, 569.74) = 7.045, p < .001, \eta^2 = .033$, and emotional empathy $F(2.71, 563.71) = 4.248, p < .01, \eta^2 = .007$. Some interactions were also found according to grade-level and gender. Between-subject MANOVAs showed differences tended to progressively increase over time. Results confirm the potential of the SEM to cushion the motivational decline and satisfy the basic psychological needs during adolescence. Furthermore, SEM was shown to be a useful approach for increasing the emotional intelligence dimensions in PE context.

- 1
2
3
4 24 **Keywords:** Motivation, self-determination theory, emotional intelligence: **ability**, sport
5
6
7 25 education, **subjective well-being: cognitive dimension**.
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

For Peer Review

26 **Introduction**

27 The empirical evidence suggests that physical education (PE) has the potential to make
28 important contributions to the development of young people in the physical, social,
29 affective and cognitive domains (Bailey et al., 2009; Bessa et al., 2021). However,
30 research on how the motivational, emotional and well-being students' domains are
31 related within the educational context is scarce (Méndez-Giménez et al., 2020). On the
32 one hand, understanding the adolescents' motivational process in the PE context is
33 important since their physical activity (PA) decreases with age, as indicated by the
34 average annual decline of 7% (Corder et al., 2019; Dumith et al., 2011; Farooq et al.,
35 2018; Sember et al., 2020). Furthermore, the majority of high school students in
36 Western countries do not meet PA recommendations (Kann et al., 2014), and have less
37 motivation towards PE (Ntoumanis et al., 2009). On the other hand, understanding how
38 adolescents manage their emotions in the PE context, and its impact on their motivation
39 and well-being, would allow us to address successful programs for their integral
40 development (Méndez-Giménez et al., 2020).

41 *Self-determination theory*

42 The Self-determination Theory (SDT; Deci and Ryan, 2000) has emerged as one of the
43 most important theoretical frameworks to explain motivation towards PA, both in the
44 school and sport contexts (Ntoumanis and Standage, 2009). It postulates that the
45 individual can be intrinsically (due to the enthusiasm the task entails itself), extrinsically
46 motivated (due to external reinforcement) or amotivated (due to lack of motivation). In
47 addition, extrinsic motivation has a series of intermediate regulations that range from
48 integrated regulation (the most self-determined), to external regulation (the least self-
49 determined), including identified and introjected regulation. A second postulate of the
50 SDT establishes that there are three basic psychological needs (BNP; competence,

1
2
3
4 51 autonomy and relatedness) that allow students to be self-determined, that is, to be
5
6 52 intrinsically motivated. They are considered as *innate psychological nutrients that are*
7
8 53 *essential for ongoing psychological growth, integrity, and well-being* (Deci and Ryan,
9
10 54 2000, p. 229). Autonomy refers to the student's ability to perform tasks independently.
11
12 55 Competence refers to the student's ability to solve motor problems effectively.
13
14 56 Relatedness refers to the ability to relate to peers, regardless of gender or origin.
15
16 57 Extensive research in the PE context (e.g. Ntoumanis, 2005; Standage et al., 2003;
17
18 58 Standage et al., 2006) has shown that a greater satisfaction of these three needs is
19
20 59 related to a more self-determined motivation. Third, the SDT framework posits that
21
22 60 motivation leads to different types of cognitive, emotional, and behavioral
23
24 61 consequences. The most positive consequences, such as the intention to perform PA,
25
26 62 would be produced by the more self-determined forms of motivation, while the most
27
28 63 negative consequences would be produced by the less self-determined forms of
29
30 64 motivation. Several studies focused on high school PE lessons have shown a drop in
31
32 65 self-determined motivation and an increase in amotivation (Navarro-Patón et al., 2020;
33
34 66 Vlachopoulos et al., 2011), along with a decrease in BPN (Cecchini et al., 2012;
35
36 67 Navarro-Patón et al., 2018; Vlachopoulos et al., 2011). The authors pointed out the
37
38 68 teacher's methodology as a possible cause since a class climate of competition and
39
40 69 performance is commonly generated and emphasized during this educational stage.
41
42 70 Inter-gender differences have also been revealed in self-determined motivation in favor
43
44 71 of boys, suggesting the existence of a gendered curriculum (Navarro-Patón et al., 2020).

72 *Emotional intelligence*

73 Over the last decades, emotional intelligence (EI) has evolved a huge interest in the
74 field of psychology, sport or education (Hodzic et al., 2017). **Two main approaches on**
75 **EI stand out in literature: ability and trait EI models. Ability models consider EI to be**

1
2
3
4 76 composed of specific emotional skills (Mayer and Salovey, 1997). EI is understood as
5
6 77 the set of interrelated competences to perceive, express, understand, regulate, and
7
8 78 control emotions in oneself and others (Mayer et al., 2016). Trait EI elements are
9
10 79 personality traits, as opposed to competencies or mental abilities. Trait models include
11
12 80 EI as dispositions related to emotion, in a hierarchically lower position to the
13
14 81 personality traits that determine the way people behave in emotional situations (Petrides
15
16 82 et al., 2007). The present study analyzes the emotional intelligence of PE students from
17
18 83 the EI ability model.
19
20
21

22
23 84 A couple of meta-analysis has highlighted a positive relationship between EI and
24
25 85 mental, psychosomatic and physical health (Martins et al., 2010), as well as with
26
27 86 subjective well-being in children, adolescents and young people (Sánchez-Álvarez et
28
29 87 al., 2016). Other studies have reported moderate relationships between EI and
30
31 88 satisfaction with life in both cross-sectional and prospective studies (Brackett et al.,
32
33 89 2004; Extremera et al., 2011). In the sport field, the review by Laborde et al. (2016)
34
35 90 found a positive relationship between trait EI and higher performance and sports
36
37 91 success. They also revealed more pleasant (and less unpleasant) emotions both during
38
39 92 and after the competitive event, as well as lower levels of stress, and greater
40
41 93 involvement in adaptive behaviors. Furthermore, EI was related to a higher level of PA
42
43 94 and positive attitudes towards PA. In the same way, it has been shown that trait EI is
44
45 95 positively related to the duration and frequency of sports participation (Laborde et al.,
46
47 96 2017).
48
49
50
51

52 97 *Subjective well-being*

53
54 98 Motivational and emotional factors are related to well-being constructs. Within SDT,
55
56 99 Ryan and Deci (2001) pointed out the close relationship between more self-determined
57
58 100 forms of motivation and well-being. Besides, the association between emotion and well-
59
60

1
2
3
4 101 being has been established (e.g. Sanchez-Alvarez et al., 2016). Subjective well-being
5
6 102 includes both cognitive and affective evaluations of a person's life (Diener, 2000).
7
8 103 Cognitive well-being refers to the evaluation of people in their past and present lives
9
10 104 and is usually measured using the Satisfaction with Life Scale (Diener et al., 1985).
11
12 105 Affective well-being represents the balance between an individual's experience of
13
14 106 positive and negative emotions. This study analyses the cognitive dimension of
15
16 107 subjective well-being.

108 *Sport education model & comprehensive development of students*

109 Despite the importance of motivational, emotional and well-being factors in the
110 comprehensive development of students, there is little information on how the PE
111 curriculum or the application of pedagogical models-based programs influences these
112 dimensions. One of the most studied pedagogical models is Sport Education (SEM;
113 Hastie et al., 2011; Hastie et al., 2014; Siedentop, 1994). The SEM was defined as a
114 model that allows students to live authentic sports experiences. It pursues three
115 fundamental objectives, that is, students to be competent, enthusiastic about the practice
116 and literate (Siedentop, 1994). Compared to the traditional methodology (based in short
117 units, teacher-led activities and direct instruction), SEM teaching is organized through
118 longer units or seasons; small, heterogeneous and persistent teams during the unit; use
119 of rotating roles (giving responsibilities to students); systematic records, and final
120 events in a festive atmosphere (Siedentop et al., 2020).

121 Research on the impact of specific SEM seasons on motivational outcomes is
122 relatively consistent across gender, grade, and content (Chu and Zhang, 2018).
123 Compared with the traditional methodology, several studies showed significant
124 differences in favor of SEM in self-determined motivation (Bessa et al., 2021;
125 Burgueño et al., 2017; Cuevas et al., 2016; Perlman, 2011; Viciano et al., 2020) and in

1
2
3
4 126 some or all of the BPN (Burgueño et al., 2018; Cuevas et al., 2015; Méndez-Giménez et
5
6 127 al., 2015; Wallhead et al., 2014). Chu and Zhang (2018) concluded that SEM programs
7
8 128 generally promote a greater climate of mastery and greater students' perception of
9
10 129 autonomy, competence, and relatedness than the traditional PE curriculum, facilitating
11
12 130 students' self-determined motivation. However, a gap in this line of research is to verify
13
14 131 whether the increased levels of self-determined motivation and BPN satisfaction are
15
16 132 maintained over time in consecutive SEM programs. Martínez de Ojeda et al. (2016)
17
18 133 reported maintained high levels in classroom social climate, perceived competence, and
19
20 134 intention to be physically active in elementary school students over three consecutive
21
22 135 seasons. Martínez de Ojeda et al. (2021) compared the SEM conditions against the
23
24 136 traditional model in students from second to sixth grade of primary education. Students
25
26 137 who followed the SEM-condition progressively received seasons throughout their
27
28 138 educational pathway (up to a maximum of 16 seasons during five school years). Results
29
30 139 showed positive effects in intrinsic motivation (girls), identified regulation (sixth
31
32 140 grade), and BPN (competence, relationship, and novelty) in those students who
33
34 141 participated through SEM programs. However, boys were more amotivated.
35
36
37
38
39
40

41 142 Regarding the emotional dimension, only a few studies have analyzed the effect
42
43 143 of specific SEM seasons on students' EI. Méndez-Giménez et al. (2017) found
44
45 144 significant differences in favor of the experimental group in a season of body expression
46
47 145 (mime), both in EI (attention, clarity and repair) and BPN (autonomy, competence and
48
49 146 relationship) of sixth grade students. Luna et al. (2019) revealed that a 16-session SEM
50
51 147 pilot program of *ringo* (an alternative sport) promoted significant improvements in trait
52
53 148 EI, and in a specific indicator of subjective well-being of the experimental group
54
55 149 (grades 7 to 9). More recently, the study conducted by Arikan (2020) developed and
56
57 150 applied a 16-week volleyball program combining the Socio-Emotional Learning
58
59
60

1
2
3
4 151 framework and the SEM. The ANCOVA analysis showed significant posttest
5
6 152 differences in students' EI levels in favor of the experimental group. Finally, the results
7
8
9 153 of the study by Luna et al. (2020) found significant improvements in the affective
10
11 154 component of subjective well-being and in the reduction of anxiety in favor of the SEM
12
13 155 group compared to a control group.

156 To date, no study has jointly reported the impact of the SEM on motivational,
157 emotional and well-being dimensions in PE students. Chu and Zhang (2018) consider
158 imperative to conduct more research with students in grades 11 and 12 (junior and
159 senior high school), because students in this age group begin to be less physically active
160 and adopt sedentary lifestyles (Kann et al., 2014).

161 *Objectives and hypotheses*

162 The present study analyzed the effects of the SEM on BPN, self-determined motivation,
163 EI dimensions (recognition, control and regulation, and empathy emotional),
164 satisfaction with life, and PA intentions on high school students from 7 and 10 grades
165 during a full school year. Likewise, it assessed whether the effect varied depending on
166 the grade-level and gender. Based on specific scientific evidence, the following results
167 were hypothesized:

168 Hypothesis 1: A progressive and significant increase over time in BPN.

169 Hypothesis 2: Students' self-determined motivation would remain high and
170 without significant changes across the year.

171 Hypothesis 3: Significant increases in students' EI.

172 Hypothesis 4: No differences are expected over time in the rest of the variables.

173 Hypothesis 5: Higher motivational, emotional benefits and well-being benefits in
174 seventh-grade students.

175 **Method**

1
2
3
4 176 *Participants and setting*
5

6 177 This study was carried out in a state coeducational high school in southern Spain. It was
7
8 178 selected because of its accessibility and collaboration towards research interventions.
9
10 179 The socioeconomic level of the families is intermediate. 13% of students are at a socio-
11
12 180 educational disadvantage or have learning difficulties. The high school is located in the
13
14 181 outskirts of the town, near a marginal area; however, the percentage of gipsy ethnic or
15
16 182 immigrant students is very low (< 7%). Participants were 252 students from nine natural
17
18 183 groups of 7th and 10th grade. The inclusion criteria were: (a) students who had attended
19
20 184 the 80% of the SEM sessions, and (b) students with 95% of the questionnaires properly
21
22 185 completed. As a result, 40 students were discarded. The final sample presented less than
23
24 186 5% of missing values in the analyzed variables, which followed the assumption of loss
25
26 187 of data completely at random (missing completely at random: MCAR). Therefore,
27
28 188 missing values were imputed using the EM (Expectation-Maximization) algorithm.
29
30 189 Consequently, a final sample of 212 participants (123 boys and 89 girls) took part in the
31
32 190 study, aged between 12 and 18 years ($M = 13.88$; $SD = 1.68$). Students in this study had
33
34 191 no prior experience with SEM.
35
36
37
38
39

40
41 192 *Design*
42

43 193 Data for this study were collected in connection to a large research project (a complete
44
45 194 school year) on learning with SEM, which was approved by the school at the beginning
46
47 195 of the academic year. It was followed a quasi-experimental design with non-probability
48
49 196 sampling for convenience and pre-test (T1), post-test1 (T2), post-test2 (T3), and post-
50
51 197 test3 (T4) measurements in all groups. The study was carried out without a control
52
53 198 group. Each student participated in five SEM seasons of 60 minutes per lesson, twice a
54
55 199 week. The timing of the teaching units (seasons) and pertinent administrations of
56
57 200 questionnaires are represented in Figure 1.
58
59
60

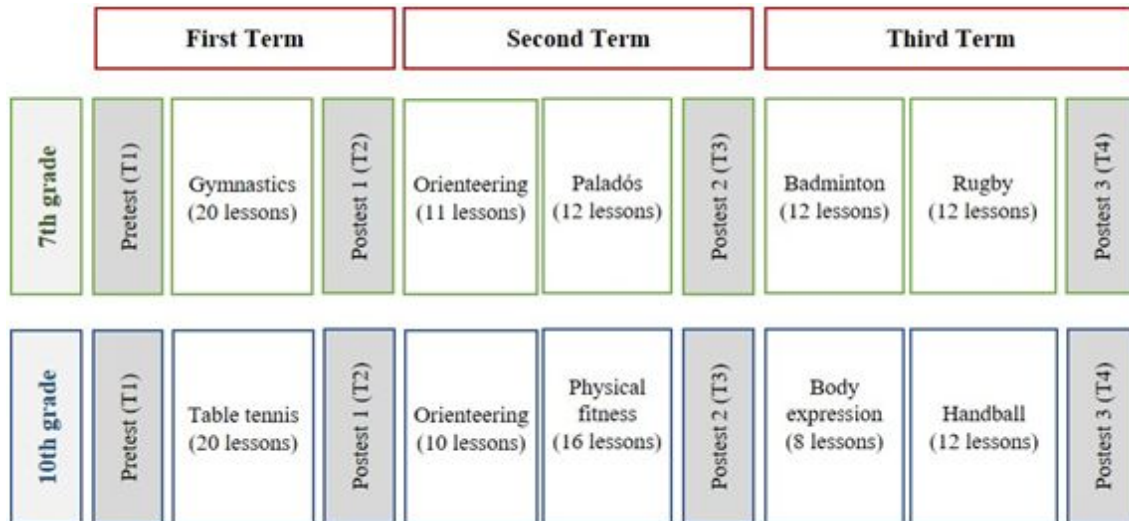


Figure 1. Timing of SEM units and sequential administration of questionnaires.

Procedure

Each of the seasons were designed and implemented in all of the groups by the same teacher/researcher (expert in SE), with more than ten years of experience years implementing the model. To ensure the fidelity of each season, two experts in pedagogical models exhaustively reviewed the program, thus ensuring the inclusion of all indicators in order for a unit to be classified as SEM (Farias et al., 2018; Hastie et al., 2017): (1) the season lasted for a long period of time, (2) the teams remained together throughout the season, (3) the competition included modified versions of the original game, (4) the students played roles other than the player, (5) periods of intra-group practice were included through reduced games, (6) the festivity was present throughout each season, (7) a keeping-record system was established, and (8) a final event culminated each season. **Additional recommendations from Hastie and Casey (2014) have been followed: (a) description of the curricular elements of the unit, (b) validation of model implementation, and (c) a description of the program context.**

The study had the approval of the board of the school. Parents or legal guardians of each student signed the informed consent letter to allow their child to participate in

1
2
3
4 219 the study. Procedures were conformed in accordance with the Declaration of Helsinki
5
6 220 (2013). The questionnaires were anonymous and students were assured that their
7
8 221 responses would not be available to their teachers or parents. They were also offered the
9
10 222 possibility to decline participation or withdraw at any time. Questionnaires were
11
12 223 administered through *GoogleForm* platform in the presence of one of the researchers,
13
14 224 during class hours and in the center's computer lab. The average time for completing the
15
16 225 questionnaires was 30 minutes, approximately. The dates on which the questionnaires
17
18 226 were administered were as follows (T): September 2018 (T1), December 2018 (T2),
19
20 227 March 2019 (T3), and June 2019 (T4).

228 *Instruments*

229 *Basic psychological needs.* The Basic Psychological Needs in Exercise Scale (BPNES)
230 was applied, which has been adapted to Spanish and the context of school PE by
231 Moreno et al. (2008). The scale consists of 12 items divided into three factors:
232 autonomy (four items; e.g. "I have the opportunity to choose how to perform the
233 exercises"), competence (four items; e.g. "I perform the exercises effectively"), and
234 relatedness (four items; e.g. "I feel very comfortable with my classmates"). These items
235 were introduced by the phrase "In my PE classes...". In the study by Moreno et al.
236 (2008) Cronbach's alpha values were as follows: .81 for autonomy, .78 for competence,
237 and .84 for relatedness.

238 *Self-determined motivation.* The different types of motivation were evaluated using the
239 Perceived Locus of Causality scale (PLOC; Goudas et al., 1994), which was translated
240 into Spanish and validated in the context of PE by Moreno et al. (2009). The instrument
241 is headed by the statement "I participate in PE classes..." and is composed of five factors
242 and 20 items (four for each factor): intrinsic motivation (e.g. "Because PE is fun"),
243 identified regulation (e.g. "Because I want to learn sports skills"), introjected regulation

1
2
3
4 244 (e.g. "Because I want the teacher to think that I am a good student"), external regulation
5
6 245 (e.g. "Because I will have problems if I don't") and amotivation (e.g. "But I don't really
7
8 246 know why"). The study by Moreno et al. (2009) obtained the following Cronbach's
9
10 247 alpha values: .80 for intrinsic motivation, .80 for identified regulation, .67 for
11
12 248 introjected regulation, .70 for external regulation, and .74 for amotivation. The scores
13
14 249 obtained in each of the PLOC subscales were used to calculate the self-determination
15
16 250 index (SDI): $(2 \times \text{intrinsic motivation} + \text{identified regulation}) - ((\text{introjected regulation}$
17
18 251 $+ \text{external regulation}) / 2 + 2 \times \text{amotivation})$ (Vallerand and Rousseau, 2001). This
19
20 252 index indicates the degree of self-determined motivation and has been widely used in
21
22 253 motivational research in PE classes (e.g. Moreno-Murcia et al., 2008; Ntoumanis,
23
24 254 2005). In this research, the values ranged between -13.88 and +18.
25
26 255 *Emotional intelligence. The ability model of EI was evaluated.* The Emotional
27
28 256 Intelligence questionnaire in PE was validated by Cecchini et al. (2018) from an
29
30 257 adaptation of the Emotional Intelligence scale in Sport (Arruza et al., 2013). This
31
32 258 instrument is made up of 22 items that load into three factors: emotional recognition
33
34 259 (eight items), which indicates the student's ability to recognize their own emotions in PE
35
36 260 classes (e.g. "I am aware of my emotions when I play or compete"); emotional control
37
38 261 and regulation (seven items), which includes the ability to control emotions during play
39
40 262 and participation in classes (e.g. "When I face a game and / or competition, I control my
41
42 263 emotions"); and emotional empathy (seven items), which includes the ability to be
43
44 264 aware of and appreciate the feelings of peers in PE lessons (e.g. "I easily understand
45
46 265 how my peers and / or rivals feel in games and / or competitions"). The items were
47
48 266 preceded by the heading: "In my PE classes...". Cronbach's alpha values from the study
49
50 267 by Cecchini et al. (2018) were .87, .81, .82, for recognition, control and regulation, and
51
52 268 emotional empathy, respectively.
53
54
55
56
57
58
59
60

1
2
3
4 269 *Subjective well-being (cognitive dimension)*. It was used the Satisfaction with Life
5
6 270 questionnaire by Diener et al. (1985), which measures a single factor composed of five
7
8 271 items (e.g. "I am very satisfied with my life"). This instrument has been validated in
9
10 272 Spanish by Cabañero et al. (2004). Cronbach's alpha coefficient in the study by Diener
11
12 273 et al. (1985) was .87 and in Cabañero et al. (2004) was .82.

13
14
15 274 *Intention to be physically active*. The Intention to be Physically Active scale of Hein et
16
17 275 al. (2004) was used. The intention to practice sports or physical activity expressed by
18
19 276 students has been seen as a strong predictor of these behaviors (Hein et al., 2004). This
20
21 277 instrument is made up of five items (e.g. "After finishing high school, I would like to be
22
23 278 physically active") that load a single factor. Items are preceded by the phrase
24
25 279 "Regarding your intention to practice some physical-sport activity...". The Cronbach's
26
27 280 alpha coefficient in the study by Hein et al. (2004) was .80. In the Spanish context,
28
29 281 Moreno et al. (2007) verified its good psychometric properties through factor analysis
30
31 282 and internal consistency (Cronbach's alpha of .94).

32
33
34 283 All the questionnaires used a Likert scale from 1 (Totally disagree) to 5 (Totally
35
36 284 agree), with the exception of the PLOC, which rated the items between 1 (Totally
37
38 285 disagree) and 7 (Totally agree).

39 286 *Statistical analyses*

40
41
42 287 Data were processed using the IBM SPSS 24 software. The descriptive statistics were
43
44 288 calculated and the reliability of the scales was checked by means of Cronbach's alpha.
45
46 289 Acceptable values in all the scales were found ($\alpha > .70$, Nunnally, 1978), with the
47
48 290 exception of autonomy in pretest ($\alpha = .68$). Nevertheless, considering the proximity to
49
50 291 acceptability levels, as well as the interest which implied for the study, this value was
51
52 292 maintained for following analysis (Table 1). It was determined that one variable
53
54
55
56
57
58
59
60

1
2
3
4 293 followed a normal distribution when absolute values of asymmetry and kurtosis were
5
6 294 lower than 2 (Gravetter and Wallnau, 2014). This was met in all cases.
7
8

9 295 In order to assess the effects of the SEM-based annual program in the three
10
11 296 BPN, the self-determination scores, the dimensions of EI (recognition, control,
12
13 297 regulation and empathy), the satisfaction with life, and the intention to be physically
14
15 298 active, ANOVAs repeated measures (T1, T2, T3, and T4) were used as within-subject
16
17 299 factors, whilst grade (7th / 10th) and gender (boys / girls) were considered as between-
18
19 300 subject factors. The level of significance was set at $p < .05$. Likewise, the size of the
20
21 301 effect was calculated (η_p^2). Cohen (1988: 40) classifies the size of the effect as small
22
23 302 ($\eta_p^2 = .20$), medium ($\eta_p^2 = .50$) and big ($\eta_p^2 = .80$). Mauchly's test was used to verify
24
25 303 whether the sphericity assumption was met. Finally, comparisons between grades were
26
27 304 determined using MANOVA(s) intergroup, one for each period (T1, T2, T3, and T4).
28
29 305 The abovementioned variables were considered as dependent variables, while grades
30
31 306 (7th, 10th) were assumed as permanent factors.
32
33
34
35
36

37 **Results**

38 *Reliability and descriptive statistics*

39
40 308 Table 1 shows the internal reliability coefficients, means and standard deviations of
41
42 309 each analyzed variable in T1, T2, T3, and T4, regarding both total sample and by grade.
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

Table 1. Cronbach's alpha and descriptive statistics of the variables (four measurement times) according to the total sample and by grade.

	Grade	α	T1		T2			T3			T4		
			<i>M</i>	<i>SD</i>	α	<i>SD</i>	<i>DT</i>	α	<i>SD</i>	<i>DT</i>	α	<i>M</i>	<i>SD</i>
Autonomy	7 th		3.48	.80		3.54	.85		3.70	.85		3.92	.80
	10 th		3.42	.72		3.44	.74		3.52	.78		3.59	.82
	Total	.68	3.45 ^a	.76	.81	3.49 ^{ab}	.79	.83	3.61 ^{bc}	.81	.85	3.74 ^c	.83
Competence	7 th		3.97	.73		3.99	.75		4.14	.73		4.32	.64
	10 th		3.88	.79		3.90	.65		3.89	.72		3.98	.67
	Total	.75	3.92 ^a	.76	.75	3.94 ^a	.70	.80	4.00 ^a	.73	.79	4.14 ^b	.67
Relatedness	7 th		4.29	.76		4.23	.73		4.32	.73		4.34	.72
	10 th		4.13	.88		4.12	.79		4.03	.80		4.03	.83
	Total	.84	4.20	.83	.85	4.17	.77	.86	4.16	.78	.87	4.18	.79
Self-determination index	7 th		7.61	4.98		6.77	5.34		6.56	6.02		6.84	5.92
	10 th		6.10	5.40		5.91	5.29		5.03	5.41		5.32	5.75
	Total	.80	6.80	5.25	.83	6.31	5.32	.85	5.74	5.74	.84	6.02	5.87
Emotional recognition	7 th		4.18	.63		4.23	.59		4.23	.76		4.26	.71
	10 th		4.11	.58		4.08	.57		3.97	.62		4.02	.60
	Total	.82	4.15	.60	.88	4.15	.59	.93	4.09	.70	.83	4.13	.66
Emotional Control and regulation	7 th		3.81	.74		3.97	.65		4.09	.76		4.13	.73
	10 th		3.75	.72		3.71	.67		3.74	.70		3.77	.66
	Total	.79	3.78 ^a	.73	.83	3.83 ^{ab}	.67	.88	3.90 ^{bc}	.75	.88	3.93 ^c	.72
Emotional	7 th		3.81	.74		3.92	.74		3.97	.74		4.01	.75

311	empathy	10 th		3.78	.68		3.81	.60	3.79	.66	3.89	.68		
		Total	.82	3.80 ^a	.71	.86	3.86 ^{ab}	.67	.88	3.87 ^{ab}	.70	.90	3.94 ^{bc}	.72
312	Intention phys.	7 th		4.04	.86		4.01	.86	4.06	.82	4.06	.80		
	active	10 th		3.98	1.01		3.96	.88	3.96	.90	4.06	.89		
313		Total	.84	4.01	.94	.84	3.98	.87	.85	4.01	.87	.86	4.06	.85
	Satisfaction	7 th		4.12	.83		4.23	.68	4.14	.86	4.08	.82		
314	with life	10 th		3.84	.79		3.75	.73	3.75	.67	3.78	.77		
315		Total	.84	3.97	.82	.85	3.97	.75	.86	3.93	.79	.88	3.92	.80

Note: In each row of the total sample, means with different superscripts differ at a level of $p < .05$.

1
2
3
4
5 318 *Main effects of intervention*
6

7 319 All variables met the normality criteria, with values of both asymmetry and kurtosis
8
9 320 lower than 2. In relation to the BPN, a main effect of the intervention emerged through
10
11 321 time in autonomy $F(3,624) = 12.413, p < .001, \eta^2 = .056$. Mauchly's test indicated that
12
13 322 the sphericity assumption was met ($p > .05$). Regarding pair-wise test (Bonferroni),
14
15 323 statistically significant differences were found between: T1-T3 [$t(211) = -2.92, p < .05$],
16
17 324 T1-T4 [$t(211) = -5.37, p < .001$], and T2-T4 [$t(211) = -4.58, p < .001$]. Neither gender
18
19 325 nor group differences were observed ($p > .05$). A main time effect of the intervention
20
21 326 emerged in competence $F(2.78, 579.09) = 10.733, p < .001, \eta^2 = .049$. Mauchly's test
22
23 327 pointed that the sphericity assumption was not met ($p < .05$); therefore, degrees of
24
25 328 freedom were corrected by means of the Greenhouse-Geisser's test ($\epsilon=.93$). With
26
27 329 regards to pair-wise test (Bonferroni), statistically significant differences were found
28
29 330 between T1-T4 [$t(211) = -4.94, p < .001$], T2-T4 [$t(211) = -4.80, p < .001$], and T3-T4
30
31 331 [$t(211) = -3.04, p < .05$]. Besides, factor x grade x gender interaction was significant
32
33 332 $F(2.78, 579.09) = 4.604, p < .01, \eta^2 = .022$.
34
35
36
37
38
39

40 333 In addition, a main effect of the intervention was observed in the SDI factor
41
42 334 $F(1.98, 411.41) = 8.423, p < .001, \eta^2 = .039$. Mauchly's test showed that the sphericity
43
44 335 assumption was not met ($p < .05$); therefore, grades of freedom were corrected
45
46 336 according to the Greenhouse-Geisser's estimation ($\epsilon=.66$).
47
48

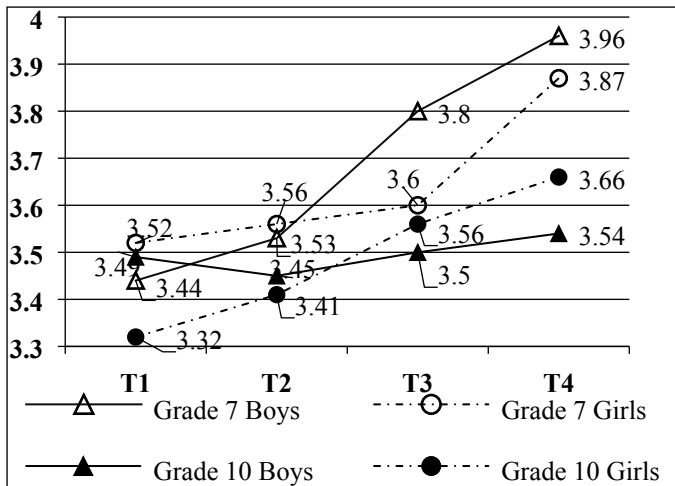
49 337 Secondly, a main time effect of the intervention emerged in emotional control and
50
51 338 regulation $F(2.74, 569.74) = 7.045, p < .001, \eta^2 = .033$. Mauchly's test indicated that the
52
53 339 sphericity assumption was not met ($p < .05$); therefore, grades of freedom were
54
55 340 corrected using Greenhouse- Geisser's test ($\epsilon=.91$). With regards to pair-wise tests
56
57 341 (Bonferroni), statistically significant differences were found between T1-T3 [$t(211) = -$
58
59
60

1
2
3
4 342 3.23, $p < .01$], T1-T4 [$t(211) = -3.67, p < .01$], and T2-T4 [$t(211) = -2.78, p < .05$].
5
6 343 There were also observed a significant factor x grade interaction, $F(2.74, 569.74) =$
7
8 344 4.621, $p < .01, \eta^2 = .022$, as well as a factor x grade x gender interaction $F(2.74, 569.74)$
9
10 345 = 2.729, $p < .05, \eta^2 = .013$. A main time effect emerged in emotional empathy $F(2.71,$
11
12 346 563.71) = 4.248, $p < .01, \eta^2 = .007$. The Mauchly's test indicated that the sphericity
13
14 347 assumption was not met ($p < .05$); therefore, the grades of freedom were corrected by
15
16 348 means of Greenhouse-Geisser's estimation ($\epsilon=.93$). Regarding pair-wise tests
17
18 349 (Bonferroni), statistically significant differences were found between T1-T4 [$t(211) = -$
19
20 350 3.08, $p < .05$].
21
22
23
24

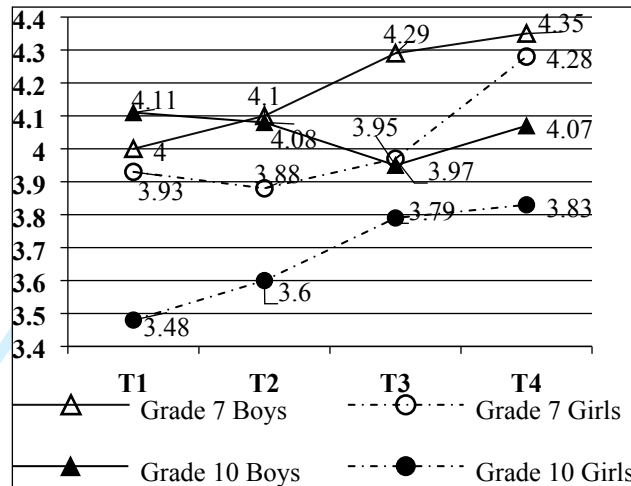
25 351 Figure 2 represents the evolution of variables in T1, T2, T3 and T4, according to
26
27 352 grade level and gender.
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46

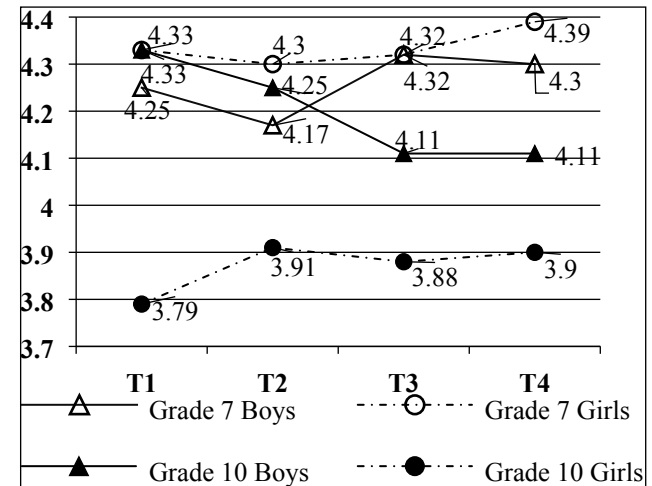
Autonomy



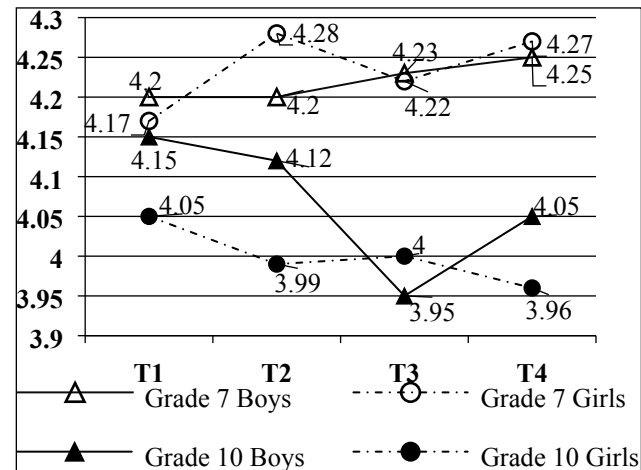
Competence



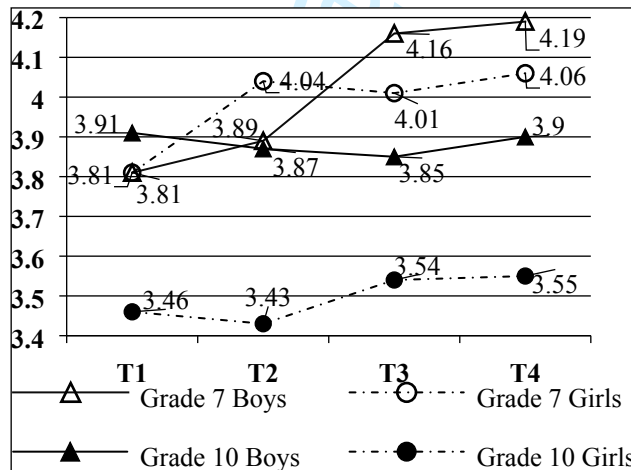
Relatedness



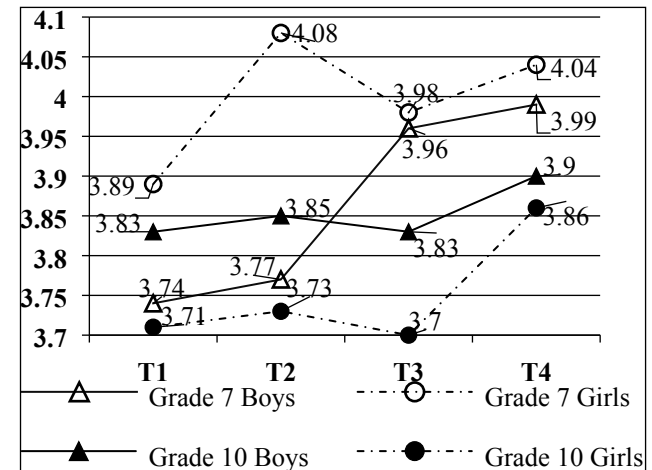
Emotional recognition

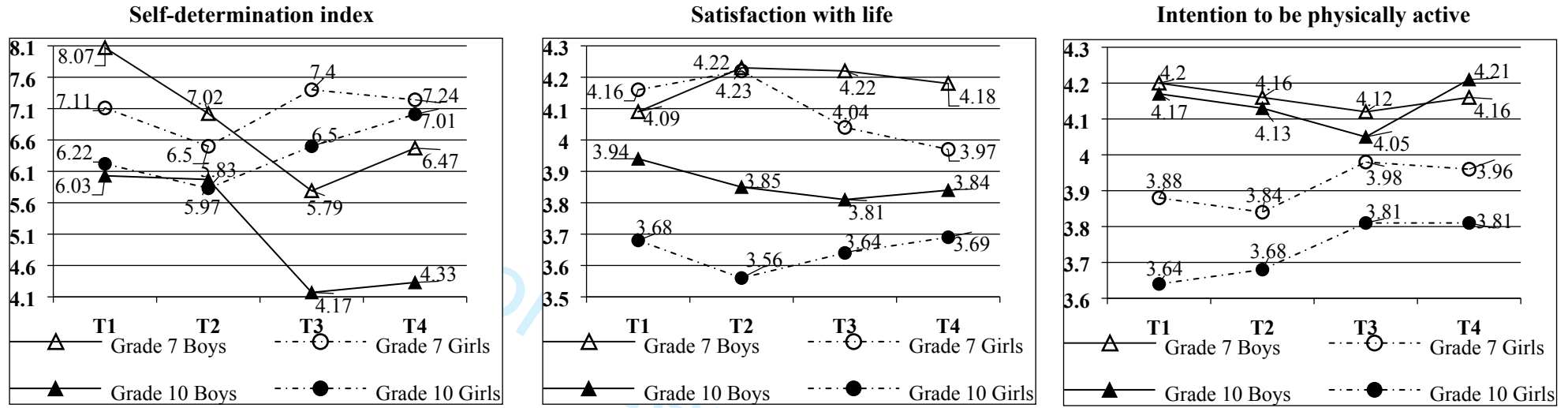


Emotional control and regulation



Emotional empathy





353 **Figure 2.** Evolution of the analyzed variables at T1, T2, T3 and T4, by grade level and gender.

354

355 *Comparison between groups*

356 In relation to between-subject MANOVAs, a significant effect emerged for the grade in
357 all times, except in T1: T2 [Wilks' lambda (10, 201) = .79, $F = 2.769$, $p < .01$, $\eta^2 = .12$];
358 T3 [Wilks' lambda (10, 201) = .90, $F = 2.233$, $p < .05$, $\eta^2 = .10$], T4 [Wilks' lambda (10,
359 201) = .83, $F = 4.007$, $p < .001$, $\eta^2 = .16$]. Differences arouse in a greater number of
360 variables as time progressed: T1, satisfaction with life [$F = 6.067$, $p = .015$, $\eta^2 = .028$];
361 T2, emotional recognition [$F = 3.947$, $p = .048$, $\eta^2 = .018$], emotional control and
362 regulation [$F = 7.832$, $p = .006$, $\eta^2 = .036$], and satisfaction with life [$F = 24.241$, p
363 $< .001$, $\eta^2 = .103$]; T3, competence [$F = 6.162$, $p = .014$, $\eta^2 = .029$], relatedness [$F =$
364 7.479 , $p = .007$, $\eta^2 = .034$], emotional recognition [$F = .7314$, $p = .007$, $\eta^2 = .034$],
365 emotional control and regulation [$F = 12.132$, $p = .001$, $\eta^2 = .055$], and satisfaction with
366 life [$F = 13.551$, $p < .001$, $\eta^2 = .061$]; and T4, autonomy [$F = 8.732$, $p = .003$, $\eta^2 = .040$],
367 competence [$F = 13.818$, $p < .001$, $\eta^2 = .062$], relatedness [$F = 8.509$, $p = .004$, $\eta^2 =$
368 $.039$], emotional recognition [$F = 7.409$, $p = .007$, $\eta^2 = .024$], emotional control and
369 regulation [$F = 13.808$, $p < .001$, $\eta^2 = .062$], and satisfaction with life [$F = 7.418$, p
370 $= .007$, $\eta^2 = .034$].

371 **Discussion**

372 The main purpose of this study was to jointly analyze the SEM's effect on students'
373 motivational, emotional and wellbeing dimensions, as well as their intention to be
374 physically active. In addition, effects were analyzed according to grade-level and
375 gender.

376 Results partially supported hypothesis 1 (a **progressive and significant increase**
377 **over time in BPN**). Significant increases across the year were found on two of the BPN:
378 autonomy and competence. These results are consistent with earlier research comparing
379 SEM and traditional methodology (Burgueño et al., 2018; Cuevas et al., 2015; Méndez-

1
2
3
4 380 Giménez et al., 2015). In the present study, the long-lasting use of the SEM could
5
6 381 progressively increase students' perception of autonomy, regardless elements such as
7
8 382 teaching content, age and gender. The learning of responsibilities (roles) throughout
9
10 383 several seasons, along with a more independent decision-making (model's inherent
11
12 384 traits), could explain this increase (Perlman and Goc Karp, 2010). Consistent with
13
14 385 previous research (Méndez-Giménez et al., 2015), the continuous implementation of the
15
16 386 SEM was associated with improvements on students' competence. Both modified game
17
18 387 forms and properly adjusted equipment (inherent to SEM) are possible explanations of
19
20 388 these results (Siedentop et al., 2020). Moreover, interactions according to both grade
21
22 389 and gender emerged. That is, improvements in competence over time were greater on
23
24 390 seventh-grade students, while it was more pronounced on girls (especially among tenth-
25
26 391 grade students). The program could moderate gender-based differences commonly
27
28 392 attributed to adolescence (Fraguela-Vale et al., 2020). Contrary to the expected results,
29
30 393 there were not found changes across the seasons on students' relatedness. Research has
31
32 394 emphasized SEM's potential for developing peer relationships (Luna, Guerrero,
33
34 395 Rodrigo-Ruiz, et al., 2020; Penney et al., 2002). It has been stated that roles' assignment
35
36 396 prompted more and better peer interactions (Hastie, 2000). A plausible explanation of
37
38 397 our results could be found in the high punctuations. In fact, among the BPN, relatedness
39
40 398 had the highest values in all measurement phases (4.20, 4.17, 4.16, and 4.18,
41
42 399 respectively in T1, T2, T3, and T4).

400 The second hypothesis prognosticated that **students' self-determined motivation**
401 **levels would remain high and without significant changes across the year.** It was
402 assumed that the SEM would generate an 'absorbing effect' of both the fall of self-
403 determined motivation and the raise of amotivation during secondary education
404 (Cecchini et al., 2012; Navarro-Patón et al., 2020; Ntoumanis et al., 2009). Results

1
2
3
4 405 confirm the hypothesis and strengthen the potential of the SEM for maintaining upper
5
6 406 motivational levels through one-year school programs, especially when the novelty
7
8
9 407 effect of the methodology ceases to be a constant. In addition, it was found a gender
10
11 408 effect. Self-determined motivation levels reversed during the year with boys suffering a
12
13 409 decrease. For their part, girls seem to benefit from the continuous effect of the SEM.
14
15 410 Similar results were found by Martínez de Ojeda et al. (2021) with sixth-grade students.
16
17 411 They speculated with the confronted perception of school-sport and media paradigm,
18
19 412 against the ideal promoted through the SEM (where fair play and values are extolled
20
21 413 during competition). This could cause a more sensitive motivational conflict on boys,
22
23 414 given that they participated in extracurricular sports to a greater extent.
24
25

26
27 415 Regarding **ability** EI, results showed significant increases over time in two
28
29 416 dimensions: regulation and control, and emotional empathy. These results align with the
30
31 417 scarce previous research (Arikan, 2020; Luna et al., 2019; Méndez-Giménez et al.,
32
33 418 2017) and support the hypothesis 3 (**significant increases in students' EI**). Various
34
35 419 structures of the model, such as permanent teams, festive environment during
36
37 420 competition, and fair play, provide opportunities for students to empathize and to be
38
39 421 aware of their emotions and those of their peers and rivals during the game. These
40
41 422 findings are important given the close link between EI and positive attitudes towards
42
43 423 physical activity, as well as sport participation (Laborde et al., 2016; 2017). Adolescents
44
45 424 involved in SEM programs can learn to regulate and control their emotions, so that
46
47 425 seasons aid them positive experiences to be mentally relaxed, control their tension level,
48
49 426 recover concentration and make better decisions (Luna et al., 2019; 2020). To properly
50
51 427 manage emotions in PE and in physical-sports practice is essential to be effective
52
53 428 (Cecchini et al., 2018). In addition, there were found interactions between emotional
54
55 429 control and regulation and grade, as well as between this same factor and grade and
56
57
58
59
60

1
2
3
4 430 gender. Seventh-grade students exhibited a significant increase, whilst tenth-grade
5
6 431 students maintained steady levels over the year. Moreover, boys from this last group
7
8 432 exhibited greater punctuations than girls in all phases, whereas values on seventh-grade
9
10 433 students were similar among genders. The study conducted by Cecchini et al. (2018),
11
12 434 with a sample of 1689 students, from fifth to eleventh grade, revealed significant
13
14 435 differences in favor to boys, although it was not specified possible differences according
15
16 436 to age or educational stages. Finally, it could be speculated that emotional recognition,
17
18 437 which had the highest mean scores at all times of measurement, had less room for
19
20 438 improvement. This could have cause that there were no changes over time.

21
22
23
24
25 439 With respect to **hypothesis 4 (no differences in the rest of variables)**, there were
26
27 440 not found differences over time in satisfaction with life nor intention to be physically
28
29 441 active. These results should be interpreted as positive based on Goldbeck et al. (2007)
30
31 442 who found a significant decrease on 11-to-16 years old adolescents' satisfaction with
32
33 443 life, whilst girls significantly exhibited lower scores than boys. In addition, several
34
35 444 studies highlighted that abandonment of physical activity increases during adolescence
36
37 445 (Cervelló et al., 2007). The fact that self-determined motivation scores remained intact
38
39 446 over the year could influence on that reported stability. Future experimental studies
40
41 447 could explain the potential of SEM to generate improvements in both variables.

42
43
44
45 448 Results showed that positive effects on motivational, emotional and well-being
46
47 449 domains were greater on seventh-grade students (**hypothesis 5: higher motivational,**
48
49 450 **emotional and well-being benefits in seventh-grade students**). It emerged a significant
50
51 451 grade-effect in all MANOVAs between-subject, except from T1. In addition, as time
52
53 452 progressed, differences were found in a greater number of variables. ANOVAS showed
54
55 453 the following differences: a) T1: satisfaction with life; b) T2: emotional recognition,
56
57 454 emotional control and regulation, and satisfaction with life; c) T3: competence,

1
2
3
4 455 relatedness, emotional recognition, control and regulation, and satisfaction with life; and
5
6 456 d) T4: autonomy, competence, relatedness, emotional recognition, control and
7
8
9 457 regulation, and satisfaction with life. There is some evidence in the literature of a
10
11 458 significant decrease in the satisfaction of BPN with age, especially during adolescence
12
13 459 (Cecchini et al., 2012; Navarro-Patón et al., 2018). The authors argued that the
14
15 460 methodology used in PE, based on a competitive climate, could be one of the reasons
16
17 461 for this decline. On the contrary, in the present study not only did this decline not
18
19 462 emerge, but the BPN increased. However, the increase was higher in seventh-grade
20
21 463 students, especially in T3 and T4. Based on these data, we conclude that this SEM
22
23 464 program had a positive impact on BPN, even among students who were in the most
24
25 465 critical phase of adolescence.

26
27
28
29 466 Regarding **ability** EI, differences were found between grades in emotional
30
31 467 recognition and emotional control and regulation in T2, T3, and T4. In the first case,
32
33 468 they were due to an increase in scores in seventh-grade and a decrease in tenth-grade,
34
35 469 while in the second they were related to an increase only in seventh-grade. **There is**
36
37 470 **evidence of efficacy and significant improvements in trait EI with SEM in previous**
38
39 471 **studies (Luna et al., 2019). However, in that study there were only three students aged**
40
41 472 **15 years or older (10th grade).** It is reasonable to speculate that the SEM program could
42
43 473 have had a positive impact on seventh-grade students; nonetheless, it is not clear if the
44
45 474 drop/stop on 10th grade students had any kind of influence from the model **or if there is**
46
47 475 **a developmental reason for it. More research is needed to clarify this issue.**

48
49
50
51
52 476 Finally, in line with the findings of Goldbeck et al. (2007), grade-based
53
54 477 differences were found in satisfaction with life, at all measurement times. The authors
55
56 478 concluded that a decline in life satisfaction should be considered a developmental
57
58 479 phenomenon. Our results converge with this body of knowledge, but it does not allow

1
2
3
4 480 us to speculate on a possible methodological effect. Future experimental investigations
5
6 481 could determine whether or not this decrease can be cushioned by the effect generated
7
8
9 482 through SEM programs.

10 483 **Conclusions**

11
12
13 484 In conclusion, results seem to encourage a positive and summative effect of the seasons
14
15 485 contemplated in this multi-season SEM program in terms of self-determined motivation,
16
17
18 486 BPN, and ability EI on adolescents. A possible positive impact of SEM on the cognitive
19
20 487 dimension of subjective well-being is also speculated, which could prevent the decline
21
22 488 observed during adolescence. This manuscript extends from a most comprehensive
23
24 489 perspective of the student' variables the literature on SEM. However, this study has a
25
26 490 number of limitations. First, its quasi-experimental design, where intact class groups
27
28 491 have been used, and a control group was not available. Thus, results should be taken
29
30 492 with caution and it not allows to establishing clear causal relationships. In addition, the
31
32 493 sample belongs to a single high school, and all groups were taught by a single teacher.
33
34 494 Besides, the effect of social desirability, when using only self-reported assessment
35
36 495 instruments. Future studies should include longitudinal and experimental designs with a
37
38
39
40
41 496 broad age spectrum.

42
43
44 497

45 498 **Declaration of Conflicting Interests**

46
47
48 499 The authors declared no potential conflicts of interest with respect to the research,
49
50 500 authorship, and/or publication of this article.

51 501 **Funding**

52
53
54 502 The authors received no financial support for the research, authorship, and/or
55
56 503 publication of this article.

57
58
59 504
60

505 **References**

- 506 Arikan N (2020) Effect of Sport Education Model-Based Social-Emotional Learning
507 Program on Emotional Intelligence. *International Education Studies* 13(4): 41-53.
- 508 Arruza JA, González O, Palacios M, et al. (2013) Un modelo de medida de la
509 inteligencia emocional percibida en contextos deportivo/competitivos. *Revista de*
510 *Psicología del Deporte* 22: 405-413.
- 511 Bailey R, Armour K, Kirk, D, et al. (2009) The educational benefits claimed for
512 physical education and school sport: an academic review. *Physical Education and*
513 *Sport Pedagogy* 24: 1-27.
- 514 Bessa C, Hastie P, Ramos A, et al. (2021). What Actually Differs between Traditional
515 Teaching and Sport Education in Students' Learning Outcomes? A Critical
516 Systematic Review. *Journal of Sports Science and Medicine* 20: 110-125.
- 517 Brackett MA, Mayer JD, and Warner RM (2004) Emotional intelligence and its relation
518 to everyday behaviour. *Personality and Individual Differences* 36: 1387-1402.
- 519 Burgueño R, Cueto-Martín B, Morales-Ortiz E, et al. (2018) Clarifying the influence of
520 sport education on basic psychological need satisfaction in high school students.
521 *Motricidade* 14: 48-58.
- 522 Burgueño R, Medina-Casaubón J, Morales-Ortiz E, et al. (2017) Sport Education versus
523 Traditional Teaching: influence on motivational regulation in high school
524 students. *Cuadernos de Psicología del Deporte* 17: 87-97.
- 525 Cabañero MJ, Richart M, Cabrero J, et al. (2004) Reliability and validity of the
526 satisfaction with life scale of Diener in pregnant and puerperium women. *Psicothema*
527 16(3): 448-455.

- 1
2
3
4 528 Cecchini JA, Fernández-Losa JL, González C, et al. (2012). The self-determined
5
6 529 motivation fall in school kids. *Sport TK. Revista Euroamericana de Ciencias del*
7
8 530 *Deporte* 1(1): 25-31.
- 9
10
11 531 Cecchini JA, Méndez-Giménez A, and García-Romero C (2018) Validation of the
12
13 532 Emotional Intelligence Questionnaire in Physical Education. *Journal of Sport*
14
15 533 *Psychology* 27(1): 87-96.
- 16
17
18 534 Cervelló E, Escartí A, and Guzmán JF (2007) Youth sport dropout from the
19
20 535 achievement goal theory. *Psicothema* 19(1): 65-71.
- 21
22
23 536 Chu TL and Zhang T (2018) Motivational processes in Sport Education programs
24
25 537 among high school students: A systematic review. *European Physical Education*
26
27 538 *Review* 24(3): 372-380.
- 28
29
30 539 Cohen J (1988) The concepts of power analysis. In J Cohen (Ed.), *Statistical Power*
31
32 540 *Analysis for the Behavioral Sciences* (pp. 1-18). Hillsdale NJ: Lawrence Erlbaum
33
34 541 Associates.
- 35
36 542 Corder K, Winpenny E, Love R, et al. (2019) Change in physical activity from
37
38 543 adolescence to early adulthood: a systematic review and meta-analysis of
39
40 544 longitudinal cohort studies. *British Journal of Sports Medicine* 53: 496-503.
- 41
42
43 545 Cuevas R, García-López LM, and Contreras O (2015) Influence of the Sport Education
44
45 546 Model in the psychological basic needs. *Cuadernos de Psicología del*
46
47 547 *Deporte* 15(2): 155-162.
- 48
49
50 548 Cuevas R, García-López LM, and Serra-Olivares J (2016) Sport Education Model and
51
52 549 self-determination theory: An intervention in secondary school children.
53
54 550 *Kinesiology. International Journal of Fundamental and Applied Kinesiology*
55
56 551 48(1): 30–38.
- 57
58
59
60

- 1
2
3
4 552 Deci EL and Ryan RM (2000) The “what” and “why” of goal pursuits: Human needs
5
6 553 and the self-determination of behaviour. *Psychological Inquiry* 11: 227-268.
7
8
9 554 Declaración de Helsinki de la Asociación Médica Mundial (2013) *Principios éticos*
10
11 555 *para las investigaciones médicas en seres humanos*. 64^a Asamblea General,
12
13 556 Fortaleza, Brasil.
- 15 557 Diener E (2000) Subjective well-being: The science of happiness and a proposal for a
16
17
18 558 national index. *American Psychologist* 55: 34-43.
- 20 559 Diener ED, Emmons RA, Larsen RJ, et al. (1985). The Satisfaction with Life Scale.
21
22 560 *Journal of Personality Assessment* 49: 71-75.
- 24 561 Dumith SC, Gigante DP, Domingues MR, et al. (2011) Physical activity change during
25
26
27 562 adolescence: A systematic review and a pooled analysis. *International Journal of*
28
29 563 *Epidemiology* 40(3): 685–698.
- 31 564 Extremera N, Ruiz-Aranda D, Pineda-Galán C, et al. (2011) Emotional intelligence and
32
33
34 565 its relation with hedonic and eudaimonic well-being: A prospective study.
35
36 566 *Personality and Individual Differences* 51: 11–16.
- 38 567 Farias C, Valerio C and Mesquita I (2018) Sport Education as a Curriculum Approach
39
40
41 568 to Student Learning of Invasion Games: Effects on Game Performance and
42
43 569 Game Involvement. *Journal of Sports Science and Medicine* 17: 56-65.
- 45 570 Farooq MA, Parkinson KN, Adamson AJ, et al. (2018) Timing of the decline in
46
47
48 571 physical activity in childhood and adolescence: Gateshead Millennium Cohort
49
50 572 Study *British Journal of Sports Medicine* 52: 1002-1006.
- 52 573 Fraguera-Vale R, Varela-Garrote L, Carretero-García M and Peralbo-Rubio EM (2020)
53
54
55 574 Basic psychological needs, physical self-concept, and physical activity among
56
57 575 adolescents: autonomy in focus. *Frontiers in Psychology* 11:491.doi:
58
59 576 10.3389/fpsyg.2020.00491
60

- 1
2
3
4 577 Goldbeck L, Schmitz TG, Besier, T, et al. (2007). Life satisfaction during adolescence.
5
6 578 *Quality of Life Research* 16: 969-979.
7
8
9 579 Goudas M, Biddle S, and Fox K (1994) Perceived locus of causality, goal orientations,
10
11 580 and perceived competence in school physical education classes. *British Journal of*
12
13 581 *Educational Psychology* 64(3): 453-463.
14
15
16 582 Gravetter FJ, and Wallnau, LB (2014) *Statistics for the behavioral sciences*. Belmont,
17
18 583 CA: Wadsworth.
19
20 584 Hastie PA (2000) An ecological analysis of a sport education season. *Journal of*
21
22 585 *Teaching in Physical Education* 19(4): 355-383.
23
24
25 586 Hastie PA and Casey A (2014) Fidelity in Models-Based Practice Research in Sport
26
27 587 Pedagogy: A Guide for Future Investigations. *Journal of Teaching in Physical*
28
29 588 *Education* 33(3): 422-431.
30
31
32 589 Hastie PA, Martínez de Ojeda D, and Calderón A (2011) A review of research on Sport
33
34 590 Education: 2004 to the present. *Physical Education and Sport Pedagogy* 16(2):
35
36 591 103-132.
37
38
39 592 Hastie PA, Sinelnikov O, Wallhead T, et al. (2014) Perceived and actual motivational
40
41 593 climate of a mastery-involving sport education season. *European Physical*
42
43 594 *Education Review* 20(2): 215-228.
44
45
46 595 Hastie PA, Ward JK and Brock SJ (2017) Effect of graded competition on student
47
48 596 opportunities for participation and success rates during a season of Sport
49
50 597 Education. *Physical Education and Sport Pedagogy* 22(3): 316-327.
51
52
53 598 Hein V, Mür M, and Koka A (2004) Intention to be physically active after school
54
55 599 graduation and its relationship to three types of intrinsic motivation. *European*
56
57 600 *Physical Education Review* 10(1): 5-19.
58
59
60

- 1
2
3
4 601 Hodzic S, Scharfen J, Ripoll P, et al. (2017) How efficient are emotional intelligence
5
6 602 trainings: A meta-analysis. *Emotion Review*, 73: 44–49.
7
8
9 603 Kann L, Kinchen S, Shanklin SL, et al. (2014) Youth Risk Behavior Surveillance —
10
11 604 United States, 2013. *Morbidity and Mortality Weekly Report* 63(SS4): 1–168.
12
13 605 Laborde S, Dosseville F, and Allen MS (2016) Emotional intelligence in sport and
14
15 606 exercise: A systematic review. *Scandinavian Journal of Medicine y Science in*
16
17 607 *Sports* 26(8): 862-874.
18
19
20 608 Laborde S, Guillén F, and Watson M (2017) Trait emotional intelligence questionnaire
21
22 609 full form and short-form versions: links with sport participation frequency and
23
24 610 duration and type of sport practiced. *Personality and Individual Differences*, 108:
25
26 611 5-9.
27
28
29 612 Luna P, Guerrero J, and Cejudo J (2019) improving adolescents' subjective well-being,
30
31 613 trait emotional intelligence and social anxiety through a programme based on the
32
33 614 sport education model. *International Journal of Environmental Research and*
34
35 615 *Public Health* 16: 1821.
36
37
38 616 Luna P, Guerrero J, Rodrigo-Ruiz D, et al. (2020) Social competence and peer social
39
40 617 acceptance: Evaluating effects of an educational intervention in adolescents.
41
42 618 *Frontiers in Psychology*, 11, 1305.
43
44
45 619 Luna P, Rodriguez-Donaire A, Rodrigo-Ruiz D, et al. (2020) Subjective well-being and
46
47 620 psychosocial adjustment: Examining the effects of an intervention based on the
48
49 621 Sport Education Model on children *Sustainability* 12: 4570.
50
51
52 622 Martínez de Ojeda D, Méndez-Giménez A, and Valverde JJ (2016) Sport Education
53
54 623 model effects in the social climate classroom, perceived competence and intent to
55
56 624 be physically. *SportTK* 5(2): 153-166.
57
58
59
60

- 1
2
3
4 625 Martínez de Ojeda D, Puente-Maxera F, and Méndez-Giménez A (2021) Motivational
5
6 626 and social effects of a multiannual Sport Education program. *Revista*
7
8 627 *Internacional de Medicina y Ciencias de la Actividad Física y el Deporte* 21(81):
9
10
11 628 29-46.
- 12
13 629 Martins A, Ramalho N, and Morin E (2010) A comprehensive meta-analysis of the
14
15 630 relationship between emotional intelligence and health. *Personality and*
16
17 631 *Individual Differences* 49: 554-564.
- 18
19
20 632 Mayer JD, Caruso DR, and Salovey P (2016) The Ability Model of Emotional
21
22 633 Intelligence: Principles and Updates. *Emotion Review* 8(4): 290-300.
- 23
24
25 634 Mayer JD and Salovey P (1997) What is emotional intelligence? In P Salovey and DJ
26
27 635 Sluyter (Eds.), *Emotional development and emotional intelligence: Educational*
28
29 636 *implications* (pp. 3-34). Basic Books.
- 30
31
32 637 Méndez-Giménez A, Cecchini JA, and García-Romero C (2020) Profiles of emotional
33
34 638 intelligence and their relationship with motivational and well-being factors in
35
36 639 physical education. *Psicología Educativa* 26(1): 27-36.
- 37
38
39 640 Méndez-Giménez A, Fernández-Río J, and Méndez-Alonso D (2015) Modelo de
40
41 641 Educación Deportiva *versus* Modelo Tradicional: Efectos en la motivación y
42
43 642 deportividad. *Revista Internacional de Medicina y Ciencias de la Actividad Física*
44
45 643 *y el Deporte* 15(59): 449-466.
- 46
47
48 644 Méndez-Giménez A, Martínez de Ojeda D, and Valverde JJ (2017) Emotional
49
50 645 intelligence and motivational mediators in a season of Sport Education mime.
51
52 646 *Ágora para la Educación Física y el Deporte* 19(1): 52-72.
- 53
54
55 647 Moreno JA, González-Cutre D, and Chillón M (2009) Preliminary validation in Spanish
56
57 648 of a scale designed to measure motivation in physical education classes: the
58
59
60

- 1
2
3
4 649 Perceived Locus of Causality (PLOC) Scale. *The Spanish Journal of Psychology*
5
6 650 12(1): 327-337.
7
8
9 651 Moreno JA, González-Cutre D, Chillón M, et al. (2008) Adaptation of the basic
10
11 652 psychological needs in exercise scale to physical education. *Revista Mexicana de*
12
13 653 *Psicología* 25(2): 295-303.
14
15
16 654 Moreno JA, Moreno R, and Cervelló E (2007) The physical self-concept as predictor of
17
18 655 the intention of being physically active. *Psicología y Salud* 17(2): 261-267.
19
20
21 656 Navarro-Patón R, Lago-Ballesteros J, Basanta-Camiño S, et al. (2018) Assessment of
22
23 657 the basic psychological needs in physical education according to age, gender and
24
25 658 educational stage. *Journal of Human Sport and Exercise* 13(3): 710-719.
26
27
28 659 Navarro-Patón R, Lago-Ballesteros J, and Arufe V (2020) Measuring self-determined
29
30 660 motivation towards physical education in compulsory schooling. *Journal of Sport*
31
32 661 *Psychology* 29(Suppl 1): 34-41.
33
34
35 662 Ntoumanis N (2005) A prospective study of participation in optional school physical
36
37 663 education using a self-determination theory frame-work. *Journal of Educational*
38
39 664 *Psychology* 97:444-453.
40
41
42 665 Ntoumanis N, Barkoukis V, and Thøgersen-Ntoumani C. (2009). Developmental
43
44 666 trajectories of motivation in physical education: Course, demographic differences
45
46 667 and antecedents. *Journal of Educational Psychology* 101(3): 717-728.
47
48
49 668 Ntoumanis N and Standage M (2009) Motivation in physical education classes: a self-
50
51 669 determination theory perspective. *Theory and Research in Education* 7: 194-202.
52
53 670 Nunnally JC (1978) *Psychometric theory*. Nueva York: McGraw-Hill.
54
55
56 671 Penney D, Clarke G, and Kinchin G (2002) Developing physical education as a
57
58 672 connective specialism': is sport education the answer? *Sport, Education and*
59
60 673 *Society* 7(1): 55-64.

- 1
2
3
4 674 Perlman D (2011) Examination of self-determination within the Sport Education Model.
5
6 675 *Asia-Pacific Journal of Health, Sport & Physical Education* 2: 79-92.
7
8
9 676 Perlman DJ and Goc Karp G (2010) A self-determined perspective of the sport
10
11 677 education model. *Physical Education and Sport Pedagogy* 15: 401-418.
12
13 678 Petrides KV, Pita R, and Kokkinaki F (2007) The location of trait emotional intelligence
14
15 679 in personality factor space. *British Journal of Psychology* 98: 273-289.
16
17
18 680 Ryan RM and Deci EL (2001) On happiness and human potentials: A review of
19
20 681 research on hedonic and eudaimonic well-being. *Annual Review of Psychology*
21
22 682 52: 141-166.
23
24
25 683 Sánchez-Álvarez N, Extremera N, and Fernández-Berrocal P (2016) The relation
26
27 684 between emotional intelligence and subjective well-being: A meta-analytic
28
29 685 investigation. *The Journal of Positive Psychology* 11(3): 276-285.
30
31
32 686 Sember V, Jurak G, Kovač M, et al. (2020) Decline of physical activity in early
33
34 687 adolescence: A 3-year cohort study. *PLOS ONE* 15(3): e0229305.
35
36
37 688 Siedentop D (1994) *Sport Education: quality PE through positive sport experiences*.
38
39 689 Champaign: Human Kinetics.
40
41 690 Siedentop D, Hastie PA and van der Mars H (2020) *Complete guide to Sport Education*
42
43 691 (3ed). Champaign, IL: Human Kinetics.
44
45
46 692 Standage M, Duda JL, and Ntoumanis N (2003) A model of contextual motivation in
47
48 693 physical education: Using constructs from self-determination and achievement
49
50 694 goal theories to predict physical activity intentions. *Journal of Educational*
51
52 695 *Psychology* 95: 97-110.
53
54
55 696 Standage M, Duda JL, and Ntoumanis N (2006) Students' motivational processes and
56
57 697 their relationship to teacher ratings in school physical education: A self-

- 1
2
3
4 698 determination theory approach. *Research Quarterly for Exercise and Sport* 77:
5
6 699 100-110.
7
8
9 700 Vallerand RJ and Rousseau FI (2001) Intrinsic and extrinsic motivation in sport and
10
11 701 exercise: A review using the hierarchical model of intrinsic and extrinsic
12
13 702 motivation. In RN Singer, HA Hausenblas, and CM Janelle (Eds.): *Handbook of*
14
15 703 *Sport Psychology* (2^a ed. pp. 389-416). New York: John Wiley y Sons.
16
17
18 704 Viciano J, Casado-Robles C, Pérez-Macías L, et al. (2020) A Sport Education teaching
19
20 705 unit as a citizenship education strategy in physical education. A group-
21
22 706 randomized controlled trial. *Retos: Nuevas Perspectivas de Educación Física,*
23
24 707 *Deporte y Recreación* 38: 44-52.
25
26
27 708 Vlachopoulos SP, Katartzi ES, and Kontou MG (2011) The Basic Psychological Needs
28
29 709 in Physical Education Scale. *Journal of Teaching in Physical Education* 30: 263-
30
31 710 280.
32
33
34 711 Vlachopoulos SP, Katartzi ES, Kontou MG, et al. (2011). The revised perceived locus
35
36 712 of causality in physical education scale: Psychometric evaluation among youth.
37
38 713 *Psychology of Sport and Exercise* 12(6): 583-592.
39
40
41 714 Wallhead TL, Garn AC and Vidoni C (2014) Effect of a Sport Education program on
42
43 715 motivation for physical education and leisure-time physical activity. *Research*
44
45 716 *Quarterly for Exercise and Sport* 85(4): 478–487.
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

For Peer Review