

Preventive interventions for children in organized team sport tackling aggression: Results from the pilot evaluation of “Fairplayer.Sport”

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Abstract

Current reviews revealed that there is a lack of effective programs and valuable effectiveness studies related to prevention of aggressive behavior and fostering of social competence in early adolescents participating in organized team sports (e.g., ball sports, such as soccer). Using a randomized controlled design, the present pilot study presents first results regarding the effectiveness of the preventive intervention program “Fairplayer.Sport” that was implemented with preadolescent soccer players ($N = 145$ preadolescents; aged 9–14 years; mean = 12.2 years) in organized team sport (13 soccer teams). Results revealed a reduction of aggressive behavior in the intervention groups compared to waiting-control groups (small effect size). This effect remained stable 3 months after program implementation. Implications for planning and implementing preventive intervention programs are discussed.

KEYWORDS

aggressive behavior, efficacy, fair play, preadolescents, preventive intervention, prosocial behavior, soccer

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1 | INTRODUCTION

1.1 | Organized team sports' impact on positive youth development

Participating in sports—especially in organized team sports like soccer—does not only promote health and physical fitness but also provides the opportunity to interact with peers. In general, during the interaction with peers, conflict solving skills and other social-emotional skills and abilities such as perspective taking, or empathy are trained (Bukowski, Buhrmester, & Underwood, 2011). From this point of view, organized team sports such as soccer seem to provide an ideal context to promote positive child and adolescent development in different domains and to prevent aggressive behavior. Sports-related positive attributes such as emotional self-regulation, team play (cooperation), and fair play (moral self) seem to be prominent target skills to be addressed with organized team sport participation. This approach seems even more promising knowing, for example, that over 60% of adolescents in Germany are participating in sports on a regular basis (Burrmann & Mutz, 2017) and worldwide, sports participation still represents a favorite leisure activity of children and adolescents (Hulteen et al., 2017). A substantial amount of evidence does support the positive view on the role of sports engagement for a positive youth development (Eime, Young, Harvey, Charity, & Payne, 2013). Zarrett et al. (2008), for example, summarized existing evidence and concluded that sports participation is linked to better educational performance, to less substance abuse (with the exception of alcohol), and to lower rates of mental health problems. The authors additionally highlight that consistent activity in adolescence corresponds with higher levels of prosocial behavior and civic engagement in early adulthood. In their own study with early adolescents, they found that sports engagement was associated with indicators of positive youth development and lower levels of depression, if engagement was intense and continued for more than a year. Opstoel et al. (2019) collected existing evidence for the link between personal and social development (prosocial behavior, cooperation) and sports engagement in children and adolescents. Weaker evidence was reported for problem solving skills, responsibility, leadership, making friends, and communication skills.

However, participation in sports-like activities, including organized team sports such as soccer, does not automatically enhance prosocial behavior. Under certain circumstances different kinds of sports contexts seems to have the tendency to foster aggressive behavior (Rutten et al., 2007). For example, Nery, Neto, Rosado, and Smith (2019) investigated the relation between participation in different kind of sports and bullying, a negative behavior including aggressive, hostile behavior, in a Portuguese sample. They found that over 50% of the sample of over 1,400 young athletes were involved in bullying episodes within their team or in competitive contexts. However, most bullying occurred occasionally and did not reach a “chronic level” and most attacks were verbal or social in nature and did not include physical aggression. Sønderlund et al. (2014) reviewed studies dealing with the relation between alcohol use, violence, and sports participation. In sum, the studies showed that compared to non-athlete populations, alcohol use and violence was more frequent in sports populations. Reasons responsible for this relation might be the salient competitive nature of many sports events and the related pressure to succeed, the training, the identification with a “jock” identity, and the promotion of team cohesion based on the expression of hyper-masculinity (sexism, alcohol proneness, aggression). More generally, some authors claim that the main reason for negative outcomes associated with sports participation might be the underlying social norms. These norms include the acceptance of pain and injury during play, as well as the focus on the competitive nature of sports and the approval of aggressive behavior toward opponents in order to win the game (Stafford, Alexander, & Fry, 2013).

The relation between sports activities, social–emotional skill development, and aggression is not discussed solely within the sports context. A pending debate deals with the role of sports as a platform for learning social–emotional skills that might fulfill important functions outside the sports context. Mutz and Baur (2009), for example, offer different explanations for the acclaimed preventive effect of sports participation. From their point of view, participation in organized and supervised activities prevent children and adolescents from being engaged in aggressive behavior. In addition, from a social bonding perspective, participation in (especially organized team) sports might increase commitment to social norms and the search for approval from important actors (coaches, teammates) within the sports context. Finally, a traditional social learning perspective assumes that young athletes learn through direct experiences of reinforcement or observations of actions how to behave in and outside sports environments. The experience of negative consequences following rule transgressions during the game or training sessions might exert a preventive effect on the frequency of subsequent aggressive behavior. Mutz and Baur (2009) concluded that sports participation alone does not guarantee a positive youth development. Instead, coaching and training should include elements that actively promote the prevention of aggressive behavior through sports activities. Thus, the development of organized team sports-based programs promoting life skills especially for socially vulnerable populations marks a step in the right direction.

In sum, it can be said that mere participation in sports, such as organized team sports (e.g., soccer) might lead to a positive or negative development of social–emotional skills and might prevent or promote aggressive behavior (Fraser-Thomas & Côté, 2009). In order to unlock the positive potential of, for example, organized team sports for social–emotional development in childhood and adolescence, the implementation of structured activities and training of sport coaches—including knowledge from developmental psychology—might serve as a solution to this aforementioned ambivalence.

1.2 | Organized team sports programs to foster social–emotional development and prevent aggressive behavior in adolescents

Beller (2002) distinguishes between formal and informal programs trying to foster social–emotional development and to prevent aggressive behavior in youth sports. The former type actively implements appropriate methods and exercises into regular training sessions. The latter uses the potential of the sports context to discuss situations of aggressive content, to implement token systems, or to foster social learning processes. A prominent example representing a mixed type is sports education (SE; Siedentrop, 2002), an approach originally designed for the school context that aims at fostering responsibility and practicing fair competition within the sports context. Systematic reviews on the effects of SE on team members indicated that persistent team membership under SE conditions promotes personal and social development in the form of student responsibility, autonomy, building friendships, empathy, and fair play (Bessa, Hastie, Araújo, & Mesquita, 2019).

Hermens, Super, Verkooijen, and Koelen (2017) systematically reviewed sports-based programs for socially vulnerable individuals not solely focused on the SE approach. The authors concluded that the few existing studies lack methodological rigor. For example, selection biases might have emerged because comparisons groups often consisted of team members who refused to take part in the program. Nevertheless, results were promising in that, in most programs, an improvement in social emotional skills emerged. As conducive elements of sports-based programs, the authors identified a positive youth–coach relationship, encouraging sports coaches who bring their athletes to face challenges within

the sports activities, commitment to the sports program, and the inclusion of a life skills education element.

In a recent general systematic review of sports-based youth development interventions in the United States, Whitley, Massey, Camiré, Boutet, and Borbee (2019) analyzed 56 independent studies. A substantial amount of the included studies showed methodological weaknesses such as simple single group pre-post or cross-sectional designs, selection biases, high attrition rates, or weak documentation of measurement instruments and implementation quality. Bearing these methodological constraints and variability in approaches in mind, according to Whitley et al. (2019), sports-based youth development interventions might profit from several aspects that should be addressed: (a) group climate (e.g., sense of caring, trust, stability); (b) leadership (e.g., adult–youth relationships, training); (c) youth engagement (e.g., youth leadership, ability to practice life skills); and (d) activities (e.g., fun, novelty), including activities outside the intervention itself (e.g., community service, ability to practice life skills outside the pitch). The last point is of great relevance for a transfer of skills developed in the sports context to other life environments (e.g., school, community).

However, the evidence for effective universal preventive intervention programs aiming at preventing aggressive behavior by promoting sociomoral and social skills outside the school context such as organized sports is weak (Matjasko et al., 2012). As recent reviews have shown, the realization of sound evaluation and intervention designs still represents a pressing demand to confirm the effectiveness of sports-based prevention programs (Hermens et al., 2017; Whitley et al., 2019). This is surprising because participation in organized team sports is considered a valuable platform for social and emotional growth and, for example, in Germany organized team sports is still very popular among young people (Kurz & Tietjens, 2000). Thus, organized team sports offer opportunities to reach the young target group outside the school context and to implement preventive intervention measures to foster social–emotional competencies and to prevent aggressive behavior in a “natural living environment.” An example is the German program “Fairplayer.Sport” (Hess, Weller, & Scheithauer, 2015), which aimed at addressing the above described weaknesses inherent in other programs by developing an interdisciplinary and theoretically informed program for organized team sports such as soccer and by realizing a controlled pilot evaluation study.

1.3 | The program “Fairplayer.Sport”

The main objectives of the German manualized, universal preventive intervention program “Fairplayer.Sport” (Hess et al., 2015) are to prevent aggressive behavior and to foster social–emotional and moral competence related to fair play in children playing soccer (in German “Fußball”) or other team ball sports in sport clubs (mass sport) or in other organized team sport contexts. The main target group of the program are children aged 9–13 years (early adolescents). The increasing orientation toward peers, growing perspective taking and coordination abilities and skills, important developmental steps in self-concept development, and important changes in neuronal structures make children of this age group an important target for preventive intervention programs.

The program combines knowledge gained from developmental psychology and sport science and uses movement-oriented training exercises, combined with cognitive reflection and interactive discussion of experiences made during exercises in phases of reflection. Current fair play-relevant situations from past training and competition situations are also reflected.

After an introductory phase that ensures that children have a common understanding of fair behavior and follow the same rules and aims during Fairplayer.Sport training, early adolescents go through the program's exercises in consecutive steps during regular training time. Program's exercises are related to the following topics: Self-awareness, emotion regulation, perspective taking, empathy, cooperation, and fair play. The program includes cognitive-behavioral methods, empathy and emotion regulation training, as well as social skills training. Promoting social-emotional skills related to these topics enables early adolescents to, for example, control, suppress, respectively, impulsive/aggressive behavior in challenging situations (e.g., experiences of exclusion, disadvantage, or provocation) and—*instead* to perform socially acceptable, appropriate behavior. Additionally, sports trainers are trained to build a positive, supportive relationship with the early adolescents and to foster a positive, cooperative group climate.

It takes about 7–8 months to complete the entire program (including 15–18 training sessions). The basic elements and core structure of the program are shown in Figure 1. Besides “Fairplayer.Sport” training of sport club trainers and other preparatory work, the program includes a parent's evening and a team/sport club party (for further information on the program see Hess et al., 2015).

Program's topics are addressed in consecutive training sessions. At least one 60 min training session per week is recommended. The sessions follow a standardized procedure, however, with some flexibility. For example, some measures can be processed in just one training session, while others can be extended to three training sessions if necessary. The training for coaches is offered by experienced “Fairplayer.Sport” instructors who then conduct the training sessions with the early adolescents, and their parents, respectively.

1.4 | Present study

The main aim of the present pilot study was to pilot test the effectiveness of the program “Fairplayer.Sport” for the first time. Based on the theoretical considerations outlined above, the main hypothesis concerning the effectiveness of the “Fairplayer.Sport” program can be summarized as follows: We expected a significant effect of the preventive intervention program “Fairplayer.Sport” with regard to reducing individual aggressive behavior applying a controlled trial with a pre-, post-, and follow-up (3 months delay) measurement. To account for a socio-economic framework, we controlled for contextual variables such as team cohesion and trainer behavior.

2 | METHODS

2.1 | Participants

Following an online introduction to the program and after discussing organizational aspects, 13 soccer clubs from Berlin, Germany, declared interest in participating in the pilot evaluation trial. There were no a priori criteria for selection and the intervention did not focus on at-risk groups. One team from each club was selected by the club representatives to receive the program. These 13 teams were randomly assigned either to the intervention group (six teams; $n = 63$) or the waiting-control group (seven teams; $n = 82$). The number of pilot evaluation participants in teams varied between 4 and 16 adolescents with a mean number of 11 participants per team. In each of the two groups there was one female team. In sum 145 preadolescents aged between 9 and 14 years ($M = 12.2$ years, $SD = 1.06$) and their regular sport club trainers participated. 133 adolescents (91.7 %) were male. At the

first measurement point, 59.7 % of the participants attended elementary school (in general covering an age span between 6 and 11 years in Germany), the rest attended secondary school (in general covering an age span between 12 and 18 years in Germany). There were no differences in distributions between intervention and waiting-control group regarding several socio-demographic background variables (such as household density computed as the ratio of number of rooms and family members; see Fukuda, Nakamura, & Takano, 2004) and migration background (determined when at least one parent was not born in Germany).

2.2 | Procedure

All participants were informed about the program and the pilot evaluation study and informed consent was provided by participants and their parents to take part in the pilot evaluation study. The evaluation study followed strict ethical principles, as declared by the German Research Foundation, and Helsinki Ethical Declaration. For the pilot evaluation trial, the program was implemented in a highly standardized way by trained external coaches assisted by regular team coaches. In this standardized trial, the implementation of the whole program consisted of 11 weekly sessions of about 60 min. The whole program implementation took approximately 3–4 months. The “Fairplayer.Sport” exercises were usually conducted during regular training sessions once a week, although in general, they are designed to be implemented as additional training units. Although the duration of the program was shorter than recommended in the manual, all included target skills (see Figure 1) were addressed during the pilot evaluation trial. An extension of the standardized program procedure and a continuation of program topics with repeated execution of single program elements are recommended but were not achieved during this pilot evaluation trial.

All participants in the intervention group were asked to fill out a questionnaire before program start (i.e., pre-test: T1), 3–4 months later, shortly after the program was finished (post-test: T2), and again three months after the program was finished (follow-up: T3). The waiting-control group was asked to fill out the same questionnaire using the same intervals, but without receiving the “Fairplayer.Sport” program. In addition, the waiting-control group intervals were started with a delay of 3 months compared to the intervention group. This time lag was necessary to be able to deliver the training program to the waiting-control group within the limited timeframe of the project. The waiting-control group received the program upon completion of the follow-up measurement occasion of the intervention group.

2.3 | Measures

2.3.1 | Behavioral outcomes

Relational aggression

In the present study, a German translation (Scheithauer & Bull, 2006) of the Relational Aggression Scale introduced by Crick and Grotpeter (1995) was completed by the participants. The scale—originally applied as a peer nomination measure—was adapted for self-report and adjusted to fit a sports context. The scale has five items (e.g., “When I’m mad at a person, I ignore them or stop talking to them.”). The participants responded on a 5-point Likert scale (“never” = 1, “seldom” = 2, “sometimes” = 3, “often” = 4, “very often” = 5). Internal consistency in the present study was good ($\alpha_{T1} = .87$, $\alpha_{T2} = .92$, $\alpha_{T3} = .92$).

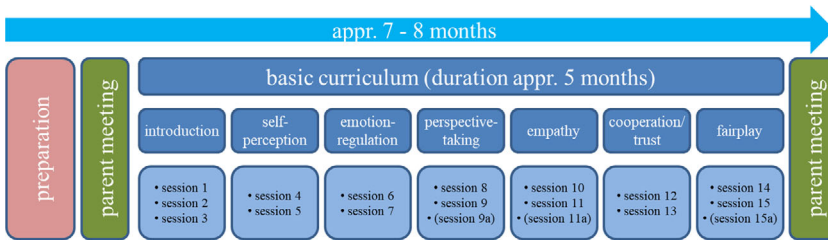


FIGURE 1 Basic elements and core structure of the program Fairplayer.Sport (taken from Hess et al., 2015, p. 42 [transl. by author])

Negative behavior

To assess more overt aspects of preadolescents' aggressive behavior, the subscale "negative behavior" of the German version of the Teenage Inventory of Social Skills (TISS-D) (Pössel & Häusler, 2004) was applied. The subscale included 14 items. Examples of items for the negative subscale are "I laugh at other guys when they make mistakes" or "I hit other guys when they make me mad." Responses are provided on a 5-point Likert scale ("never true" = 1, "seldom true" = 2, "sometimes true" = 3, "often true" = 4, "almost always true" = 5). In the present study, internal consistencies were good to excellent (negative behavior: $\alpha_{T1} = .87$, $\alpha_{T2} = .90$, $\alpha_{T3} = .88$).

2.3.2 | Covariate measures

Group cohesion

Group cohesion was measured using a German translation of the subscale "Unity of Purpose" from the Multidimensional Group Cohesion Instrument (MCGI) developed by Yukelson, Weinberg, and Jackson (1984). This measure was designed for the sports context, thus, modifications with respect to item formulation were not necessary (e.g., "Do you perceive your team to be closely knit?"). The subscale consisted of eight items measured on a 5-point Likert scale ("never true" = 1, "seldom true" = 2, "sometimes true" = 3, "often true" = 4, "almost always true" = 5). In the present study, the internal consistency was satisfactory ($\alpha_{T1} = .78$).

Trainer care

The way in which preadolescents perceive their regular coaches (not the coaches from the scientific staff) as caring was assessed using the subscale "Teacher Care" from the Landau Scales for Social Climate (Saldern & Littig, 1987). The scale was originally designed for school teachers and the item wording had to be changed accordingly, to fit the sports context (e.g., "The trainer takes care about our problems."). The subscale consisted of eight items measured on a 4-point Likert scale ("never true" = 1, "seldom true" = 2, "rather true" = 3, "almost always true" = 4). In the present study, the internal consistency was satisfactory ($\alpha_{T1} = .76$).

2.3.3 | Implementation quality

Implementation quality was monitored by trained external coaches who filled in semi-structured questionnaires regularly. These questionnaires included ratings in an open format about (a) external circumstances such as weather conditions or problems regarding

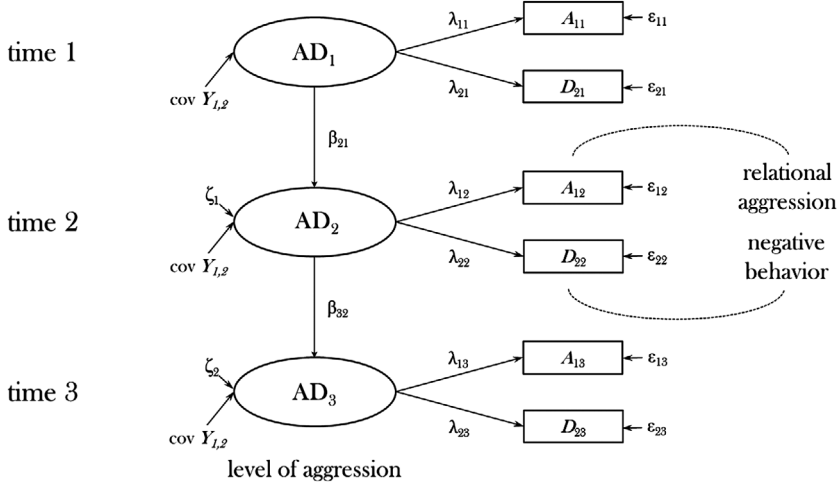


FIGURE 2 Overall longitudinal autoregressive structural equation model regarding level of aggression (three measurement time points), time 1, 2, and 3 represent pre-, post-, and follow-up-measurement points; AD_{*i*} represents latent measures of level of aggression, A_{*ij*} measures of relational aggression, D_{*ij*} measures of negative behavior, β_{*ij*}, regression paths, cov Y_{*ij*}, influence of covariates, λ_{*ij*}, factor loading within measurement models, ε_{*ij*}, error terms

training sessions (e.g., illness of regular coaches), (b) the degree to which the exercises were implemented as intended, and (c) the motivation and attention of the participants, for example, regarding the different exercises or discussion parts of the program.

2.4 | Statistical analysis

All statistical analysis were ran using IBM SPSS version 23 and Mplus, version 7.1 (Muthén & Muthén, 2012). Differences in all relevant outcome and covariates between intervention and control group were computed prior to further analyses using *t*-tests for independent variables (Wright, Ivers, Eldridge, Taljaard, & Bremner, 2015). To be able to use all information available in the data, parameters were estimated applying maximum-likelihood estimation based on robust standard errors (MLR; Muthén & Muthén, 2012). Prior to analyzing the repeated measurement data this way, it was tested if participants with missing data differed from participants with data on all measurements points regarding outcomes (Weiber & Mühlhaus, 2014).

To test the effectiveness of the preventive intervention program “Fairplayer.Sport” an alternative to traditional covariance analysis proposed by Sörbom (1978) was selected. This compares changes in outcomes between intervention and control groups on a structural level, as described in detail in Arbuckle (2016). As a first step a measurement model of level of aggression (AD_{*j*}) for all time points is built. Level of aggression represents a composite measure that consists of the two variables A_{1j} (relational aggression) and D_{2j} (negative behavior). In a second step, structural relations between latent constructs were modeled. Level of aggression at post-test (AD₂) was regressed on aggression level at pre-test (AD₁) and aggression level at follow-up (AD₃) was regressed on aggression level at post-test (AD₂). Next, the control variables team cohesion and trainer support were included (Kov X_{1,2}). Figure 2 shows the corresponding basic structural and measurement model. All further modifications are additional restrictions of parameters within this basic model. The fourth step included the test of measurement invariance of indicators at all time points (Geiser, 2011).

Strong invariance was tested by imposing equality restrictions regarding factor loadings ($\lambda_{11} = \lambda_{12} = \lambda_{13} \wedge \lambda_{21} = \lambda_{22} = \lambda_{23}$) and intercepts ($\alpha_{Y11} = \alpha_{Y12} = \alpha_{Y13} \wedge \alpha_{Y21} = \alpha_{Y22} = \alpha_{Y23}$). The last step included the test of latent mean differences between intervention and control group. This represents the main test of effectiveness of the program “Fairplayer.Sport.” Following recommendations by Sörbom (1978) the intercepts of the control group were restricted to the value of zero, such that the control group serves as the reference group for further comparisons with the intervention group. Statistically significant values above 0 inform the extent of intervention effectiveness. Obviously, degradation of model fit associated with these final equivalence restrictions have to be tested (Arbuckle, 2016).

Model fit was judged following recommendations from Geiser (2011) using common cut-off criteria suggested by Hu and Bentler (1999) regarding the non-significance of the chi-square test, the comparative fit index (CFI) $> .97$, the root mean square error of approximation (RMSEA) $< .05$, and the standardized root mean square residual (SRMR) $< .05$. Each successive more restrictive model was then compared to the previous, less restrictive models regarding model fit. Model differences were tested using chi-square difference tests and the Akaike information criteria (AIC). All analyses were run on the individual level. However, as participants of the present pilot evaluation study were members of groups (soccer teams) the nested data structure had to be considered in the analyses. Indeed, the computation of intraclass correlations revealed that up to 13% of variance in outcomes were attributable to differences between groups. Therefore, standard errors were corrected based on a procedure introduced by Asparouhov (2005) to account for the nested data structure and to avoid bias in resulting parameters.

3 | RESULTS

3.1 | Preliminary analyses

At pre-test, the intervention and the control group did not differ on outcome variables and covariates except for age ($t[143] = -2.23$; $p < .05$). Participants in the control group ($M = 12.37$ years, $SD = 0.98$) were slightly older than adolescents in the intervention group ($M = 11.98$ years, $SD = 1.18$). Age was therefore added as a covariate in further analyses.

Analyses of missing values revealed that 8.3 per cent of data at post-test and 37.5 per cent of data at follow-up were missing on outcome measures. Participants with missing data did not differ on outcome measures from those without missing data at pre-test. However, team cohesion was higher in the group with missing data ($t[127] = 2.44$; $p = .016$). The data was considered as missing at random (MAR), and missing values were estimated using a maximum-likelihood estimator with robust standard error estimation.

3.2 | Intervention effect

A multistep procedure was applied to test the intervention effect. The first step included the specification of the measurement model (M1). The amount of variance of aggression indicators, that was explained by the common factor, was satisfactory (relational aggression: $\rho_{Y1} = .628$ to $.931$; negative behavior: $\rho_{Y2} = .630$ to $.910$) (see Fornell & Larcker, 1981). Table 1 gives an overview of the model comparisons and sums up model fit indices (see Geiser, 2011). As seen, the measurement model (M1) showed a good model fit (chi-square test $p > .05$, CFI $> .97$, RMSEA $< .05$, and SRMR $< .05$). Including the regression paths between the measurement models in step 2 of the multistep procedure (M2) did not worsen model fit

TABLE 1 Model fit statistics for the measurement model (M1), the measurement model with regression paths (base model) (M2), the base model with covariates (M3), the previous model with strong measurement invariance (M4) and the final model M4 plus restrictions proposed by Sörbom (1978) (M5)

Model	Chi-square test			Chi-square difference test			Additional indices		
	χ^2	df	<i>p</i>	$\Delta\chi^2$	Δdf	<i>p</i>	RMSEA	CFI	AIC
M1	1.45	4	.83	—	—	—	.01	1.0	1195.08
M2	4.70	5	.45	3.45	1	.07	.01	1.0	1196.38
M3	34.29	32	.45	29.59	27	.33	.01	1.0	1735.28
M4	34.48	38	.63	0.19	6	.97	<.01	1.0	1728.96
M5	43.21	43	.46	8.73	5	.11	.01	1.0	1727.93

Abbreviations: χ^2 , chi-square value; df, degrees of freedom; *p*, level of significance; $\Delta\chi^2$, difference in chi-square values between neighbor models; Δdf , difference in degrees of freedom values between neighbor models; RMSEA, root mean square error of approximation; CFI, comparative fit index; AIC, Akaike information criterion.

($\Delta\chi^2[1] = 3.45, p = .45$). Regression parameters reveal the level of aggression at earlier time points is a strong predictor of aggression at later time points ($\beta_{21} = .86, SE = .10$ and $\beta_{32} = .71, SE = .11$). In the next step, covariates (team cohesion, trainer care, age) were added to the model (M3). This modification did not worsen model fit ($\Delta\chi^2[27] = 29.59, p = .45$). Bivariate correlations between level of aggression and covariates showed that older participants were more aggressive. The other covariates were only weakly related to the individual level of aggression.

Restrictions imposed to test for measurement invariance in the next model (M4) did not change model fit substantially ($\Delta\chi^2[6] = 0.19, p = .97$). In the final step, the parameters were fixed as suggested by Sörbom (1978), resulting in a non-significant change of model fit ($\Delta\chi^2[5] = 8.73, p = .11$). Due to the good model fit, this final model was used to check for the intervention effects by looking at the latent mean differences between intervention and control group regarding level of aggression. As Figure 3 and Table 2 show, there were no differences between intervention and control group at pre-test. At post-test the level of aggression was lower in the intervention group than in the control group ($\Delta\beta_0 = -5.154, p < .001, \text{Cohen's } d = 0.27$). This latent mean difference holds constant at follow-up, 3 months

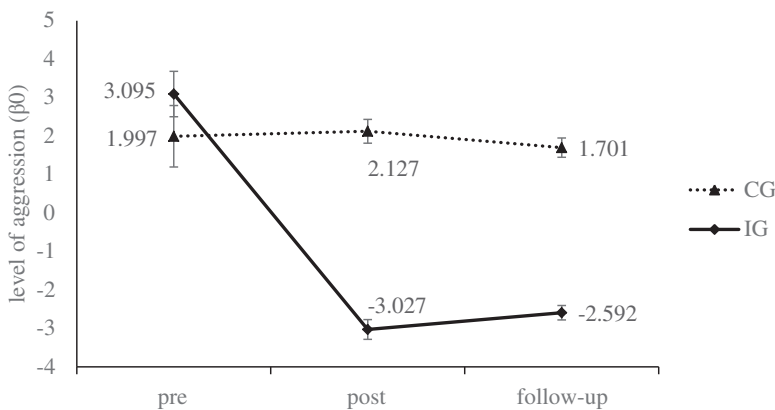


FIGURE 3 Standardized intercepts (β_0) and standard errors of the latent variable (level of aggression including relational aggression and negative behavior) for the waiting-control and the intervention group at pre-test, post-test, and follow-up. The Sörbom approach requires that the values of the control group have to be fixed at zero to serve as reference points. For a better graphical illustration of the results, the intercepts were computed in separate models without these restrictions. CG, control group; IG, intervention group

TABLE 2 Latent mean differences in level of aggression (including relational aggression and negative behavior) between waiting-control and intervention groups at pre-test, post-test, and follow-up

Time point	$\Delta\beta_0$	SE	P	Cohen's <i>d</i>
Pre	-1.098	1.775	<.536	0.05
Post	-5.154	1.594	<.001***	0.27
Follow-up	-4.293	0.926	<.001***	0.38

Abbreviations: $\Delta\beta_0$, difference between standardized intercepts, SE, standard error of difference.

*** $p < .001$.

after post-test ($\Delta\beta_0 = -4.293$, $p < .001$, Cohen's $d = 0.35$). As expected, these results provide evidence for the effectiveness of the preventive intervention program "Fairplayer.Sport" for young soccer players. In addition, effect sizes for Cohen's d (Cohen, 1988) were calculated based on the differences of latent means and standard errors. In sum, following recommendations from Cohen (1988), the intervention effect can be considered as small.

3.3 | Implementation findings

Results of interviews regarding implementation quality reveal that weather conditions were responsible for delays in the progress of the program implementation since the pilot evaluation trial of the program took place during winter months and most of the training sessions were held in open air. In general, the program elements were implemented as intended following the standardized manual. Rules and messages of all exercises were understood by the participants. However, according to trainers, attention and motivation of participating adolescents, especially during discussion of the meaning of the exercises, was sometimes low. There were also differences in the ratings of exercises. Some were judged as more interesting (e.g., cooperative games implemented in the program) than others (e.g., imposing additional rules as one form of exercise during the program implementation). Although during the implementation stage active participation of the regular team coaches was intended, unfortunately some of the regular coaches were sometimes absent from the program sessions.

4 | DISCUSSION

The main aim of the present study was to pilot test the effectiveness of the preventive intervention program "Fairplayer.Sport" in preadolescent soccer players in organized team sport. Using a randomized controlled design, the impact of the program on preadolescents' aggressive behavior (as a latent construct including measures of relational aggression and negative behavior) was tested. Results of the pilot testing revealed a reduction of aggressive behavior in the intervention groups compared to waiting-control groups (small effect size). This effect remained stable 3 months after program implementation. This finding is important as current reviews show that there is still a lack of effective programs and valuable effectiveness studies in the field. These promising results are comparable to results obtained from other evaluation studies related to universal preventive intervention programs aiming at improving social behavior and reducing aggressive behavior (e.g., Beelmann, Pflugstein, & Lösel, 1994; January, Casey, & Paulson, 2011; Pandey et al., 2018) or, for example, to improve an effective self-control style (Augimeri, Walsh, Donato, Blackman, & Piquero, 2018; Piquero, Jennings, Farrington, Diamond, & Gonzalez, 2016). One advantage of the present study was the assessment of different facets of aggression (relational, verbal, non-verbal), hence considering the complex nature of aggressive behavior in adolescence.

Regarding the attempts to use sports as a vehicle for promoting youth development and prevention of aggressive behavior, previous studies have suffered from rather low methodological design quality. The main weaknesses of studies in the field were selection biases regarding the composition of comparison groups, the lack of control or comparison groups, and the lack of follow-up measurements (Whitley et al., 2019). The present study represents one of the few controlled pilot evaluation studies testing the effectiveness of after-school prevention of aggressive behavior with a randomized assignment of whole teams to the intervention or the waiting-control group. Moreover, relevant contextual factors like team cohesion and trainer care were controlled for, so that positive effect may be attributable to program elements in more straightforward fashion. Together, the present study provides evidence that team sports contexts might promote a positive youth development by using appropriate training elements and exercises that are play oriented and well suited for children and adolescents. "Fairplayer.Sport" is based on an interdisciplinary approach combining knowledge from sports science and developmental psychology. Therefore, the program targets developmental steps relevant for children and adolescents and uses didactically appropriate exercises.

Assumptions about the underlying mechanisms explaining the effect of "Fairplayer.Sport" remain speculative for two main reasons: (1) at the present stage, this study represents the first controlled evaluation of the program and sample size was limited in this pilot study. The main aim of the present study was not to uncover the underlying mechanisms of program effectiveness, but rather to first gauge evidences of effectiveness. Therefore, the inclusion of additional (potentially explanatory) variables and the computation of more complex models, testing mechanisms responsible for the reduction of level of aggression was not the purpose here. (2) The program was delivered in consecutive steps that were not compared to each other in their effectiveness. Thus, it was not possible to delineate the target variables (e.g., perspective taking, empathy, self-concept, emotion regulation, cooperation) and corresponding exercises with respect to their unique contribution to the reduction of aggression.

4.1 | Limitations

The present pilot evaluation only marginally included female preadolescents and only a small sample, as well as a small number of sport clubs. Regarding the growing number of female soccer teams in organized sports, the high percentage of male participant in the present study did not reflect the actual population within organized team sports settings. The program sessions were delivered by external "Fairplayer.Sport" coaches and not by sports club coaches themselves. In some cases, sport club coaches (often) stayed away from "Fairplayer.Sport" training sessions, as the evaluation of implementation level revealed. Additionally, the outcomes are based on self-reports and may therefore be prone to biased information. A multi-perspective approach would yield more reliable data. Finally, we did not include local tests of misfit of our models. As Thoemmes, Rosseel, and Textor (2018) recommended, local tests of misfit might serve as an addition to global fit indices. They might be useful especially in situations when proposed models did not converge and after the fitting of models to actual data did result in a bad overall fit. Since our models fitted well, we decided to omit local tests of model misfit.

4.2 | Future directions

Beyond the preliminary evidence of the "Fairplayer.Sport" Program effectiveness reported here, future studies should inform about the mechanism(s) of change. The program's

impact on other developmental domains needs to be considered. Beside effects on preadolescents' behavior, program effects regarding sports coach and team variables (e.g., team climate) have to be investigated. In addition, further analyses might focus on the differential effect of the program on different facets of aggressive behavior instead of a composite measure. Apart from positive aspects on the children and adolescents themselves, the program "Fairplayer.Sport" might be effective in changing attitudes among regular coaches and improving team climate. However, as regular coaches only assisted the trained "Fairplayer.Sport" coaches during the pilot evaluation study, the probability of such a positive side effect was lowered. One major caveat resulting from this first pilot evaluation study was to establish a train-the-trainer approach to assure the implementation of the program with high sustainability. Additionally, before scaling up the implementation of the program, a randomized control trial (RCT) including larger sample size would be desirable. Forthcoming evaluations of "Fairplayer.Sport" should consider the following aspects: (a) Implementation quality has to be improved by a stronger focus on educating regular trainers in program contents of "Fairplayer.Sport" before the program will be executed with children and adolescents. (b) For dissemination and effectiveness purposes it seems helpful to rely more strongly on a multiplier approach where regular trainers implement the program by themselves. (c) Program structure has to be modified so that creating a positive group climate plays a more important role, so that contagion effects can be minimized by creating a positive initial group-level regarding the refusal of aggressiveness. Additionally, we want to mention that in the future, in general, program evaluation studies could also consider alternatives to RCTs to further probe the effects of the program (for a review see Hein & Weeland, 2019).

With this first evaluation study, we were able to present promising results that speak for the effectiveness of the "Fairplayer.Sport" program. Further—still pending—analyses will deal with the effect of the program in different developmental competence domains. A comprehensive implementation (roll out) of the program could prevent or curb aggressive behavior by young people in sports clubs without much effort and promote important (social) skills.

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