MULTILATERAL TRAINING METHOD AS A PROACTIVE EDUCATIONAL STRATEGY TO PREVENT BULLYING IN ADOLESCENTS

Gianpiero Greco, Elena D’Arcangelo, Roberto De Ronzi

1Ministry of the Interior, Department of Public Security, State Police, Italy
2Italian Judo Wrestling Karate and Martial Arts Federation, Rome, Italy
3WJJF-WJJKO, Milan, Italy
4National Educational Sports Centre, Rome, Italy

Abstract:
To date, there is no standard definition of bullying, however, it can be characterized as a type of aggression, systematic and repeated, and based upon an imbalance of power in relationships through repeated verbal, physical and/or social behaviour that intends to cause physical, social and/or psychological harm. Youth with higher levels of resilience and self-efficacy are less likely to engage in aggressive behaviours or be victims of bullying. Previous anti-bullying approaches have often achieved no reduction in bullying behaviour. Therefore, the purpose of this study was to examine the effect of 12 weeks of extracurricular multilateral training on the risk for students (14-16 years) to be involved in bullying. Sixty male students were allocated to an experimental group (n = 30) that performed psychoeducational activities combined with physical exercise training and team games (90 min, 2d·week⁻¹) or control group (n=30). Before and after the intervention, we used CYRM-28 that assessed individual capacities and resources, relationship with primary caregiver, contextual factors and total resilience, and SEQ-C that measured academic, social, emotional, and total self-efficacy. Four participants from the experimental group withdrew. Significant improvements of crucial relevance were found for the resilience and self-efficacy scales (p < 0.05) in the experimental group. We found that extracurricular multilateral training may improve the resilience and self-efficacy in...
adolescents and make them less likely to engage in aggressive behaviour or be bullied. Multilateral training method should be considered as an effective alternative to the anti-bullying approach, highlighting the crucial role of the Physical Education professionals in the promotion of proactive educational strategies to prevent bullying.

**Keywords:** special education; resilience; self-efficacy; physical exercise; victimization

1. Introduction

Bullying is a controversial issue, however, there is no standard definition of bullying (Rigby, 2008), and it is difficult to establish a definition inclusive of all bullying behaviours (Lines, 2008). Research suggests bullying can be characterized as (1) a type of aggression (Pellegrini, 2004), (2) systematic and repeated (Olweus, 1993), and (3) based upon an imbalance of power (Bouman et al., 2012). These behaviours occur both directly and indirectly and can lead to negative social consequences. Examples of commonplace power differences in school include being able to physically hurt others, numerical (group) superiority, being more confident or assertive than others, having greater verbal dexterity, having superior social or manipulative skills, and having greater status and corresponding capacity to impose will on others (Rigby, 2008). Antibullying strategies are the main approach addressing bullying in schools (Farrington & Ttofi, 2009) and claim substantial support to address bullying. However, antibullying approaches are often found to achieve no reduction or observe increases in bullying behaviour (Moore & Woodcock, 2017a; Rigby, 2002).

Resilience is a complex construct (Kaplan, 2006) that is defined as the attainment of positive outcomes, adaptation, or developmental milestones in the face of significant adversity, risk, or stress (Goldstein & Brooks, 2006). Different conceptualisations describe resilience as (a) a protective process; (b) the interaction of protection and risks; and (c) a conceptual tool within predictive models (Elias, Parker, & Rosenblatt, 2006). The operational definition of resilience varies and has included: hardiness, optimism, competence, self-esteem, social-skills, achievement, and absence of pathology in the face of adversity (Prince-Embury, 2007). The research examining the relationship between bullying and resilience is not extensive (Sapouna & Wolke, 2013), and findings include: (a) students with a strong resilience profile were less likely to engage in aggressive behaviours or be bullied than those who reported fewer developmental strengths (Donnon, 2010); (b) bullying appeared to decrease if social skills were improved in victims, and those nonchalance strategies and emotional regulation were useful (Lisboa & Killer, 2008); and (c) resilience to bullying was improved if the student had a peer or family member with whom to disclose (Bowes, Maughan, Caspi, Moffitt, & Arseneault, 2010; Rivers & Cowie, 2006).

Some authors showed that the practice of physical activity is an excellent means for the transmission of values (Portolés & González, 2015) and helps to promote prosocial attitudes (González et al., 2016), so it can be useful in prevention and treatment of
bullying. Young people can develop resilience and self-efficacy through participation in physical activity and sport (Bandura, 2012; Schiraldi 2011). Furthermore, the youth—particularly males—with higher social self-efficacy are somewhat more likely to resist pressure to engage in risky behaviours, such as delinquent behaviour and being victimized (Ludwig & Pittman, 1999). However, it seems that the amount of physical activity carried out and the type of sport practised can act as regulators in the victimization caused by bullying (Cascales & Prieto, 2019). For example, moderate physical activity that is geared towards disciplines such as football or athletics implies greater victimization in all dimensions while one oriented towards traditional martial arts or popular games involves lower victimization rates (Macarie & Roberts, 2010). Also, in a recent systematic review, it was mentioned that few studies relate bullying to physical activity and sport (Baena & Bosca, 2018; Holt, 2016).

Accordingly, we may speculate that the multilateral training method, which includes psychoeducational activities combined with physical exercise training and team games, may be an effective anti-bullying alternative approach (Hartmann, 2003). Therefore, the purpose of this study was to examine the effects of 12 weeks of an extracurricular multilateral training program on the risk for students to be involved in bullying (bully and victim), through the analysis of the resilience and self-efficacy variables. It was hypothesized that multilateral training method would improve the resilience processes and perceived self-efficacy.

2. Material and Methods

2.1 Study design
The study was a 12-week high school-based intervention that has been evaluated using a randomized controlled study. Data were collected and recorded at baseline (Pre-test) and after 12 weeks (Post-test). After pre-test and randomization, the experimental group received multilateral training. The control group received the same training program after the post-intervention assessment. The design has been facilitated by use of standardised tests, which increase the validity and reliability of data as such instruments have been developed and normalised using larger samples and have been piloted to ensure test items measure what is intended (Cohen & Swerdlik, 2005).

2.2 Participants
Sixty male adolescents (mean age, 14.59 ± 0.71; range, 14-16 years;) from two local high schools were recruited to participate in the study. The socioeconomic status of all participants was reported as middle. Power calculations were conducted to determine the sample size required to detect changes in the dependent measures resulting from multilateral training. An a priori power analysis (Faul, Erdfelder, Lang, & Buchner, 2007) with an assumed type I error of 0.05 and a type II error rate of 0.10 (90% statistical power) was calculated and revealed that 46 participants in total would be sufficient to observe medium ‘Time x Group’ interaction effects. The following inclusion criteria were applied:
a) male gender, b) aged between 14 to 16 years, and c) not involved in regular exercise during the last two years. Participants were excluded if they had a chronic paediatric disease or had an orthopaedic condition that would limit their ability to perform the exercise. All participants and their parents received a complete explanation in advance about the purpose of the experiment and the parents provided written consent to the study. The study was conducted in accordance with the Declaration of Helsinki, and the protocol was approved by the local Ethics Committee. The study was conducted from September to December 2019.

2.3 Procedures
The recruitment occurred from schools within an area of proximity to where one of the researchers was working. The school staff distributed information and consent forms to all students to be recruited and their parents. Participants were verbally reminded that participation was voluntary, that they could discontinue the survey at any point, and that their responses were confidential and anonymous. Participants were instructed regarding (a) not writing their names on the survey, (b) how to respond to rating scales, and (c) how to correct responses. Participants were not given definitions of bullying, resilience, or self-efficacy to not bias their responses. Surveys were then provided to participants.

Randomisation into experimental (n = 30; age 14.54 ± 0.71 years) and wait-list control group (n = 30; age 14.63 ± 0.72 years) occurred after pre-intervention assessments. Participants were pair-matched based on age and the randomization was carryout by Research Randomizer, a program published on a publicly accessible official website (www.randomizer.org). The researchers were blinded to this randomisation of experimental and control group allocations. Fifty-six participants completed the post-intervention assessment, and four participants of the experimental group did not complete the study for unknown reasons.

2.4 Measures
To evaluate the effects of the multilateral training method, two standardised psychometric instruments were used: Child and Youth Resilience Measure (CYRM-28) (Liebenberg, Ungar, & Van de Vijver, 2012; Ungar & Liebenberg, 2011), and the Self-Efficacy Questionnaire for Children (SEQ-C) (Muris, 2001; Suldo & Shaffer, 2007).

The CYRM-28 is a 28-item instrument that measures various aspects of children’s and adolescents’ resilience. The scale provided a total resilience scale (α = 0.86) and three subscales including an individual capacities and resources scale (α = 0.84), relationship with primary caregiver scale (α = 0.84), and contextual factors scale (α = 0.83). Items are scored on a 5-point Likert scale with 0 = not at all, 1 = a little, 2 = somewhat, 3 = quite a bit, and 4 = a lot. The CYRM-28 is designed as a screening tool to explore the resources (individual, relational, and contextual) available that bolster resilience competence in the face of adversity. Individual resources are individual personal skills (e.g., I am aware of my own strengths), individual peer support (e.g., I feel supported by my friends), and
individual social skills (e.g., I know where to go in my community to get help). Relational resources are physical caregiving (e.g., My caregiver(s) watch me closely) and psychological caregiving (e.g., I talk to my caregiver(s) about how I feel). Contextual resources are spiritual (e.g., Spiritual beliefs are a source of strength for me), educational (e.g., Getting an education is important to me), and cultural (e.g., I am proud of my ethnic background). Higher scores indicate a greater presence of resilience processes.

The SEQ-C is a 24-item instrument that measures various aspects of children’s and adolescents’ self-efficacy. The scale provided a total self-efficacy scale and three subscales: (1) academic self-efficacy (eight items) which is concerned with the perceived capability to manage one’s academic affairs (e.g., “How well can you study when there are other interesting things to do?”); (2) social self-efficacy (eight items) which has to do with the perceived capability for dealing in an effective way with other people (e.g., “How well can you become friends with other children?”); and (3) emotional self-efficacy (eight items) which pertains to the perceived capability of coping with negative emotions (e.g., “How well can you control your feelings?”). The SEQ-C scales have good cross-cultural validity (Minter & Pritzker, 2017) and showed a reliable to highly reliable internal consistency (α = 0.78-0.85). Items are scored on a 5-point Likert scale with 0 = not at all, 1 = a little, 2 = somewhat, 3 = quite a bit, and 4 = very well. A total self-efficacy score can be computed by summing all items. A high score in this questionnaire shows high self-efficacy in the specific function in question.

2.5 Multilateral training program
The program was performed on-site at participating schools. Participants received multilateral training program for about 90 minutes, two extracurricular sessions per week, with a total of 24 training sessions. Each session was supervised by the primary investigator and conducted by two physical activity professionals for the developmental age and sports coaching specialists. Also, the mode, frequency, intensity, duration, and progression in an individual exercise log were recorded to ensure adequate training. Each training session started with a few minutes of psychoeducational activities that were also covered over the session; subsequently, a brief dynamic warm-up program, mainly consisting of callisthenics-type exercises, was performed; finally, a cool-down program, consisting of static stretching exercises, completed the session. The conditioning phase of the multilateral training program included cardiovascular endurance, resistance training, flexibility, and team-building activities. Flexibility was trained using both dynamic and static stretches, during the warm-up or cool-down phase of each training session. During the first four weeks, the training primarily consisted of preconditioning. From the fifth week onwards, we gradually increased the intensity and volume of the training. For effective training, the principles of overload and specificity were addressed (Haff & Triplett, 2016). The multilateral training program contents are shown in Table 1.
Table 1. Sample multilateral training extracurricular session by the experimental group.

<table>
<thead>
<tr>
<th>Psychoeducational activities</th>
<th>Warm-up</th>
<th>Cardiovascular endurance</th>
<th>Resistance training</th>
<th>Team building</th>
<th>Cooldown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topics included:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Respect, goal-setting,</td>
<td>Arm swings</td>
<td>Running</td>
<td>Jump squats</td>
<td>Volleyball</td>
<td>Static stretching:</td>
</tr>
<tr>
<td>self-concept and self-esteem,</td>
<td>Trunk twisting</td>
<td>Walking</td>
<td>Lunges</td>
<td>Basketball</td>
<td>Achilles’ tendon/calf</td>
</tr>
<tr>
<td>courage, resilience, bullying and peer pressure, self-care and caring for others, values, and optimism and hope.</td>
<td>High marching</td>
<td>Circuits</td>
<td>Push-ups</td>
<td>Handball</td>
<td>stretches</td>
</tr>
<tr>
<td></td>
<td>Stride jumping</td>
<td>Sprint intervals</td>
<td>Pull-ups</td>
<td>Soccer</td>
<td>Skier’s stretches</td>
</tr>
<tr>
<td></td>
<td>High knees</td>
<td>Agility (i.e., the ladder exercise)</td>
<td>Curl-ups</td>
<td>Modified forms of the previous team games</td>
<td>Quadriiceps stretches</td>
</tr>
<tr>
<td></td>
<td>Side bending</td>
<td></td>
<td>Half squats</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Side stretching</td>
<td></td>
<td>Long jumps</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Skipping leg swings</td>
<td></td>
<td>Planks</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Backwards sprinting</td>
<td></td>
<td>Medicine ball tosses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guidelines</td>
<td>Duration: 10 minutes</td>
<td>Guidelines</td>
<td>Duration: 10-20 minutes</td>
<td>Guidelines</td>
<td>Guidelines</td>
</tr>
<tr>
<td></td>
<td>Perform each exercise for 60 s, 1 set</td>
<td>Guidelines</td>
<td>1-2 sets of 8–15 repetitions with 45 sec of slow walking between each exercise</td>
<td>Duration: about 20 minutes.</td>
<td>Duration: Total duration: 10 minutes. Overload: stretch beyond resting length but not beyond pain-free ROM.</td>
</tr>
</tbody>
</table>

2.6 Data Analysis
Statistical analyses were carried out using SAS JMP® Statistics (Version <14.3>, SAS Institute Inc., Cary, NC, USA, 2018). Data were presented as group mean values and standard deviations and checked for assumptions of normality that were confirmed with visual observation of univariate histograms, Q-Q plots and skewness and kurtosis values. A multivariate analysis of variance (MANOVA) was conducted to detect group differences at baseline. A two-way ANOVA (group (experimental/control) × time (pre/post-intervention)), with repeated measures on the time dimension, was conducted to examine the effect of the multilateral training on all examined variables. When ‘Group x Time’ interactions reached the level of significance, group-specific post hoc tests (i.e., paired t-tests) were conducted to identify the significant comparisons.

Partial eta squared ($\eta^2$) was used to estimate the magnitude of the difference within each group and interpreted using the following criteria: small ($\eta^2 < 0.06$), medium ($0.06 \leq \eta^2 < 0.14$), large ($\eta^2 \geq 0.14$). Effect sizes for the pairwise comparisons were determined by Cohen’s $d$ and interpreted as small ($0.20 \leq d < 0.50$), moderate ($0.50 \leq d < 0.79$) and large ($d \geq 0.80$) (Cohen, 1992). The standardized Cronbach’s alpha coefficient (Cohen, Manion, & Morrison, 2011) was used as a measure of the reliability of the psychological tests (reliable: $0.70 \leq \alpha < 0.80$; highly reliable: $0.80 \leq \alpha \leq 0.90$). Statistical significance was set at $p < 0.05$. 
3. Results

Four participants from the experimental group withdrew and thus fifty-six students completed the study. No injuries or other health problems were noted in the participants over the 12 weeks. All the participants of the experimental group showed satisfaction and reported wanting to continue practising physical activity afterwards. The groups did not differ significantly at baseline in all the dependent variables ($p = 0.926$). Table 2 shows the group changes in total resilience and self-efficacy and related subscales after 12 weeks.

**Table 2**: Changes in resilience and self-efficacy scales after 12-week multilateral training program

<table>
<thead>
<tr>
<th>CYRM-28 Resilience scales</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual capacities and resources</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>Post-test</td>
<td>$\Delta$</td>
<td>Baseline</td>
<td>Post-test</td>
<td>$\Delta$</td>
<td></td>
</tr>
<tr>
<td>2.92 (0.52)</td>
<td>3.07 (0.52)$^*$</td>
<td>0.14 (0.15)</td>
<td>3.11 (0.70)</td>
<td>3.12 (0.65)</td>
<td>0.01 (0.24)</td>
<td></td>
</tr>
<tr>
<td>Relationship with primary caregiver</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>Post-test</td>
<td>$\Delta$</td>
<td>Baseline</td>
<td>Post-test</td>
<td>$\Delta$</td>
<td></td>
</tr>
<tr>
<td>3.06 (0.65)</td>
<td>3.18 (0.59)$^*$</td>
<td>0.13 (0.20)</td>
<td>3.01 (0.66)</td>
<td>2.95 (0.63)</td>
<td>-0.06 (0.18)</td>
<td></td>
</tr>
<tr>
<td>Contextual factors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>Post-test</td>
<td>$\Delta$</td>
<td>Baseline</td>
<td>Post-test</td>
<td>$\Delta$</td>
<td></td>
</tr>
<tr>
<td>2.55 (0.67)</td>
<td>2.72 (0.64)$^*$</td>
<td>0.17 (0.23)</td>
<td>2.53 (0.84)</td>
<td>2.42 (0.66)</td>
<td>-0.10 (0.38)</td>
<td></td>
</tr>
<tr>
<td>Total resilience</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>Post-test</td>
<td>$\Delta$</td>
<td>Baseline</td>
<td>Post-test</td>
<td>$\Delta$</td>
<td></td>
</tr>
<tr>
<td>2.84 (0.39)</td>
<td>2.99 (0.37)$^*$</td>
<td>0.15 (0.12)</td>
<td>2.88 (0.48)</td>
<td>2.83 (0.40)</td>
<td>-0.05 (0.16)</td>
<td></td>
</tr>
</tbody>
</table>

**SEQ-C Self-Efficacy scales**

<p>| | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic self-efficacy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>Post-test</td>
<td>$\Delta$</td>
<td>Baseline</td>
<td>Post-test</td>
<td>$\Delta$</td>
<td></td>
</tr>
<tr>
<td>2.58 (0.70)</td>
<td>2.88 (0.59)$^*$</td>
<td>0.31 (0.74)</td>
<td>2.70 (0.65)</td>
<td>2.67 (0.61)</td>
<td>-0.03 (0.18)</td>
<td></td>
</tr>
<tr>
<td>Social self-efficacy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>Post-test</td>
<td>$\Delta$</td>
<td>Baseline</td>
<td>Post-test</td>
<td>$\Delta$</td>
<td></td>
</tr>
<tr>
<td>2.58 (0.64)</td>
<td>2.69 (0.55)$^*$</td>
<td>0.12 (0.33)</td>
<td>2.63 (0.61)</td>
<td>2.60 (0.62)</td>
<td>-0.03 (0.18)</td>
<td></td>
</tr>
<tr>
<td>Emotional self-efficacy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>Post-test</td>
<td>$\Delta$</td>
<td>Baseline</td>
<td>Post-test</td>
<td>$\Delta$</td>
<td></td>
</tr>
<tr>
<td>2.46 (0.51)</td>
<td>2.73 (0.45)$^*$</td>
<td>0.27 (0.45)</td>
<td>2.53 (0.57)</td>
<td>2.47 (0.57)</td>
<td>-0.07 (0.25)</td>
<td></td>
</tr>
<tr>
<td>Total self-efficacy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>Post-test</td>
<td>$\Delta$</td>
<td>Baseline</td>
<td>Post-test</td>
<td>$\Delta$</td>
<td></td>
</tr>
<tr>
<td>2.54 (0.33)</td>
<td>2.77 (0.26)$^*$</td>
<td>0.23 (0.28)</td>
<td>2.62 (0.27)</td>
<td>2.58 (0.29)$^*$</td>
<td>-0.04 (0.12)</td>
<td></td>
</tr>
</tbody>
</table>

**Notes**: Values are presented as mean (± SD); $\Delta$: pre- to post-training changes; $^*$Significant ‘Group x Time’ interaction: significant effect of the intervention ($p < 0.05$). *Significantly different from pre-test ($p < 0.05$).

3.1 Resilience

**Individual capacities and resources**: A significant ‘Time x Group’ interaction ($F_{1,54} = 6.09, p = 0.017, \eta^2_p = 0.10$) and main effect of ‘Time’ ($F_{1,54} = 7.21, p = 0.001, \eta^2_p = 0.12$) were found, but no significant main effects of ‘Group’ was detected.

**Relationship with primary caregiver**: Statistical analysis revealed only a significant ‘Time x Group’ interaction ($F_{1,54} = 14.15, p < 0.001, \eta^2_p = 0.21$), whereas no significant main effect of ‘Time’ or ‘Group’ were detected.

**Contextual factors**: A significant ‘Time x Group’ interaction ($F_{1,54} = 10.25, p = 0.002, \eta^2_p = 0.16$) was found but not significant main effects of ‘Time’ or ‘Group’.
Total resilience: A significant ‘Time x Group’ interaction ($F_{1,54} = 27.36, p < 0.001, \eta^2_p = 0.34$) and main effect of ‘Time’ ($F_{1,54} = 5.97, p = 0.018, \eta^2_p = 0.10$) were found, but no significant main effects of ‘Group’ was detected.

The post-hoc analyses revealed a significant increase in scores from pre- to post-test for experimental group in: Individual capacities and resources ($p < 0.001, d = 0.99$), Relationship with primary caregiver ($p = 0.002, d = 0.61$), Contextual factors ($p = 0.001, d = 0.73$) and Total resilience ($p < 0.001, d = 1.27$).

3.2 Self-Efficacy

Academic self-efficacy: A significant ‘Time x Group’ interaction ($F_{1,54} = 6.03, p = 0.017, \eta^2_p = 0.10$) was found, but no significant main effects of ‘Time’ or ‘Group’ were detected.

Social self-efficacy: A significant ‘Time x Group’ interaction ($F_{1,54} = 4.59, p = 0.037, \eta^2_p = 0.08$) was found but not significant main effects of ‘Time’ or ‘Group’.

Emotional self-efficacy: Statistical analysis revealed a significant ‘Time x Group’ interaction ($F_{1,54} = 12.15, p = 0.001, \eta^2_p = 0.18$) and a significant main effect of ‘Time’ ($F_{1,54} = 4.42, p = 0.040, \eta^2_p = 0.08$), whereas no significant main effect of ‘Group’ was detected.

Total self-efficacy: A significant ‘Time x Group’ interaction ($F_{1,54} = 24.41, p < 0.001, \eta^2_p = 0.31$) and a significant main effect of ‘Time’ ($F_{1,54} = 11.19, p = 0.001, \eta^2_p = 0.17$) were found. No significant main effect of ‘Group’ was detected.

The post-hoc analyses revealed significant improvements from pre- to post-test for experimental group in: Academic self-efficacy ($p = 0.043, d = 0.41$), Social self-efficacy ($p = 0.041, d = 0.34$), Emotional self-efficacy ($p = 0.006, d = 0.60$) and Total self-efficacy ($p < 0.001, d = 0.82$). Also, the control group showed worsening after 12 weeks in Total self-efficacy ($p = 0.043, d = 0.35$).

4. Discussion

The purpose of this study was to examine the effects of 12 weeks of an extracurricular multilateral training program on the risk for male students to be involved in bullying (bully and victim), through the analysis of the resilience and self-efficacy variables. The results provided valid and reliable evidence that psychoeducational activities, combined with physical exercise training and team games, could be an effective alternative method to improve wellbeing including resilience and self-efficacy (Hartmann, 2003). Besides, interventions using this approach should promote an individual’s ability to cope with the effects of bullying. Significant improvements were found in the experimental group for levels of the overall resilience and resilience sub-factors, as well as for total self-efficacy and self-efficacy subscales. Therefore, our hypothesis has been confirmed and the results agree with previous studies showing the effectiveness of the multilateral training program in promoting the prosocial attitudes (González et al., 2016) and transmission of values (Portolés & González, 2015), and in developing resilience and self-efficacy (Bandura, 2012; Schiraldi, 2011) in young people. Furthermore, the non-competitive nature of the multilateral training could involve lower victimization rates caused by
bullying (Cascales & Prieto, 2019; Macarie & Roberts, 2010), and the higher social self-efficacy could allow resisting pressure to engage in risky behaviours (Ludwig & Pittman, 1999).

For the experimental group, positive changes in resilience showed a moderate to large effect size for all subscales and total resilience. This is an important achievement because students who report higher levels of resilience may be less likely to engage in aggressive behaviour or be bullied (Donnon, 2010; Lisboa & Killer, 2008; Rigby, 2008). Significantly improved relationships with primary caregivers have been particularly important, as family factors, including warm relationships and positive home environments, are associated with increased resilience to bullying (Bowes et al., 2010). It has been shown that resilience to bullying behaviours is improved when people can reveal their experiences to a family member (Rivers & Cowie, 2006). Furthermore, significant improvements in the resources individual, relational and contextual available support resilience competence in the face of adversity (Fischetti, Cataldi, Di Terlizzi, & Greco, 2019; Goldstein & Brooks, 2006; Kaplan, 2006; Naglieri & LeBuffe, 2006; Prince-Embry, 2007) and, thus, bullying (Bowes et al., 2010; Donnon, 2010; Greco, Cataldi, & Fischetti, 2019b; Lisboa & Killer, 2008; Rivers & Cowie, 2006; Sapouna & Wolke, 2013).

This study showed increases with a large effect size for total self-efficacy and with small to moderate effect for the subscales. However, the control group exhibited decreases for total self-efficacy with small effect size and this suggests that intervention had a greater effect on self-efficacy outcomes (Bandura, 2012). Since the victims of bullying report lower self-efficacy than non-victims (Moore & Woodcock, 2017b), the result that total self-efficacy improved for the experimental group and decreased for the control group suggests that the intervention could improve participants’ abilities to cope with bullying (Ludwig & Pittman, 1999). Also, externalising and antisocial behaviours amongst youth are of pressing concern and considered a major public health problem (Krug, Mercy, Dahlberg, & Zwi, 2002), and the multilateral training could be an effective alternative intervention to for the externalising behaviours treatment. Our results agree with studies that suggested that motor and sports activities improve psychological (Fischetti, Latino, Cataldi, & Greco, 2019) and physical fitness (Fischetti & Greco, 2017; Greco, Cataldi, & Fischetti, 2019a), cognitive functions (Aschieri, 2016) and, specifically, executive functions in youth (Calzone & Di Santo, 2016; Diamond & Lee, 2011), and reduce externalising behaviours (Zhou et al., 2007).

Some limitations may limit the results of the current study. Given that the study only examined male participants from two high schools, the findings should be interpreted cautiously, as they may be the result of a localized effect. Also, as noted in the literature review, both bullying and resilience are complex constructs and lack an agreed academic definition. This presents questions in terms of whether the definitions used in the current study adequately operationalise the constructs. Future research should expand the definition of resilience and bullying. Finally, psychoeducational activities may have had a confounding effect on combined physical exercise training. However,
Psychoeducational activity is naturally carried out by an experienced coach during physical and sports education sessions, so we can consider this limit irrelevant.

This study has some important strengths, i.e. it proposes an alternative approach to educational policy and suggests that instead of focusing resources towards eliminating bullying behaviours, the policy should focus on promoting mental health through developing wellbeing. Furthermore, the results obtained are of crucial relevance (i.e. moderate to large effect size) and reinforce those previously found in a few studies that relate bullying to physical activity and sport (Baena & Bosca, 2018; Holt, 2016). Future research should examine the multilateral training program’s effects on different population samples and consider the students with a certain vulnerability (e.g., deficient gross motor skills) as it could diminish bullying (Bejerot, Plenty, Humble, & Humble, 2013; Healy, 2014).

5. Conclusion

Findings suggested that a multilateral training method based on psychoeducational activities, combined with physical exercise training and team games, may improve the resilience and self-efficacy in male adolescents, and make them less likely to engage in aggressive behaviour or be bullied. Evidence supports that anti-bullying policies are inconsistent; therefore, the multilateral training method should be considered as an alternative practice to improve individual ability to cope with the effects of bullying and an effective alternative to the anti-bullying failing approach of the institutions. Consequently, we must highlight the fact that the role of Physical Education professionals is noteworthy in the promotion of proactive educational strategies to prevent bullying through training sessions and competitions, which allow working in conflict resolution, i.e. avoiding sport competitive (Hand, 2016; López-Castedo, Álvarez, Domínguez, & Álvarez, 2018).

Funding
No sources of funding were used to assist in the preparation of this manuscript.

Conflicts of interest
The author declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Authors’ contribution
Gianpiero Greco designed the study, carried out the statistical analysis, interpreted the data, wrote, and revised the manuscript. Elena D’Arcangelo interpreted the data and wrote the manuscript. Roberto De Ronzi designed the study, interpreted the data, wrote, and revised the manuscript. All authors contributed intellectually to the manuscript, read the manuscript, and approved the submission.
References


Multilateral Training Method as a Proactive Educational Strategy to Prevent Bullying in Adolescents

Gianpiero Greco, Elena D’Arcangelo, Roberto De Ronzi

European Journal of Physical Education and Sport Science - Volume 6  |  Issue 9  |  2020


Gianpiero Greco, Elena D'Arcangelo, Roberto De Ronzi
MULTILATERAL TRAINING METHOD AS A PROACTIVE EDUCATIONAL STRATEGY TO PREVENT BULLYING IN ADOLESCENTS