Report of the 2nd Research of the PYSD project

Based on the results of previous research, the second experiment was designed to examine the impact of the application of the PYSD prevention model by parents and coaches on the resilience of young athletes and parent- and coach-athlete relationship. The research was conducted in three countries – Italy, Spain and Bulgaria.

Subjects

The study involved 60 children (ITA = 20, ESP = 20 and BUL = 20) of both boys and girls from Italy (ITA), Spain (ESP) and Bulgaria (BUL), their parents/guardians and coaches. The requirement for participating children in the research was that they were coached by the same coach at least six months before and during the study. Also, the parents had to accord with the participation of their child in the study.

Considering the epidemiological situation, during the implementation of the PYSD prevention model, the sample was reduced, and the data for the 51 subjects were analysed. Children who did not regularly train during the experimental period, and thus their parents, were excluded from further data processing. Table 1 shows the sample of subjects for whom complete data defined by the research were collected and further analysed.

Table 1. Sample's structure

	No. of athletes	Years (X ± SD)	Sport	No. of parents		No. of coaches	No. Tr./week
				M	F		
ITA	17	13 ± 1	swim	17	17	3	4
ESP	18	12 ± 2	bask	18	18	3	3
BUL	16	13 ± 0	foot	15	16	3	3

ITA – Italy, ESP – Spain, BUL – Bulgaria, No. – number, X – mean, SD – standard deviation, No. tr./week – number of training per week, M – mother, F – father, swim – swimming, bask – basketball, foot – football.

Variables

The research assessed the resilience of young athletes (SRS) monitored through indicators *Family Connection*, *School Connection*, *Community Connection*, *Participation in Home and School Life*, *Participation in Community Life*, *Self-Esteem*, *Empathy*, *Problem Solving*, *Goals and Aspiration* and *Pear Support*; involvement of their parents/guardians in their sports life (PISQ) through the indicators *Direct Behavior*, *Prise and Understanding* and *Active Involvement*, as well as their relationship with their coach (CART), monitoring the indicators *Commitment*, *Closeness* and *Complementarity*.

Instruments

For the second research, identical measuring instruments were used as in the preliminary study. The Student's Resilience Scale (SRS; Lereya et al., 2016) was used to assess the athletes' resilience level. The Parent Involvement in Sport Questionnaire (PISQ; Lee & MacLean, 1997) was used to evaluate parental involvement in the child's sports life and the Coach-Athlete Relationship Questionnaire (CART-Q) – athlete's version (Jowett & Ntoumanis, 2004), to assess the relationship of athletes with their coaches.

For qualitative analysis of the implementation of the PYSD prevention model by parents and coaches, the record list given in the appendix to this document was used (Annexes 1 and 2)

Procedure

The research was conducted from February 15 to March 31, 2021, and included implementing recommended PYSD measures by parents and coaches.

At the beginning of the research (PRE) and the very end (POST), young athletes completed the SRS, PISQ and CART-Q questionnaires. Also, parents and coaches got clear instructions on how to implement proposed measures of the PYSD prevention model. According to the examiner's instructions, parents and coaches filled in the record list information about actions they applied and weekly submitted them to the examiner. The list of proposed measures that parents and coaches should implement is given in the record lists in Annexes 1 and 2.

In each of the three countries that participated in the research, one, always the same examiner, collected PRE and POST results. Neither parents nor coaches had insight into the results of young athletes during the study.

Data analysis

The Shapiro-Wilk test was applied to assess the normality of the data's distribution. Following the obtained results, to determine the differences in SRS, PISQ and CART-Q before (PRE) and after (POST), applying the PYSD preventing model for each subsample separately (ITA, ESP and BUL) Wilcoxon's Signed Rank test was used.

According to the norms established in the preliminary research (above average [AA], average [AV] and below-average [BA]), for each indicator of each of the three assessed variables (SRS, PISQ and CART), as well as for the total score of the SRS (Fig. 1) and CART (Fig. 2), results of second research were categorised for each subject individually. To examine the differences between subsamples regarding the category (AA, AV and BA), for the variables SRS and CART, the chi-square independence test was applied.

SRS	BELOW AVERAGE	AVERAGE	ABOVE AVERAGE
Family connection	≤15	16-19	20
School connection	≤10	11-18	19-20
Community connection	≤13	14-19	20
Participation in home and school life	≤10	11-16	17-20
Participation in community life	≤5	6-9	10
Self-esteem	≤9	10-14	15
Empathy	≤5	6-9	9-10
Problem Solving	≤8	9-14	15
Goals and aspirations	≤5	6-9	10
Peer support	≤42	43-57	58-60
TOTAL	≤143	144-177	178-200

Fig. 1. SRS' norms established based on the results of the preliminary research.

CART	BELOW AVERAGE	AVERAGE	ABOVE AVERAGE
Commitment	≤12	13-19	20-21
Closeness	≤21	22-27	28
Complementarity	≤20	21-27	28
TOTAL	≤57	58-74	75-77

Fig. 2. CART's norms established based on the results of the preliminary research.

RESULTS

Qualitative analysis of data regarding the implemented measures shows that parents and coaches did not implement the actions to the same extent throughout the study. There is a noticeable trend that initially, the measures were implemented to a lesser extent (usually twice a week). Still, as the research progressed, both parents and coaches increased the scope of actions to more than twice a week. Also, during the entire study, some parents/coaches did not apply some of the proposed measures during the week. It is also interesting to note that the coaches implemented the measures regarding the Closeness indicator to the greatest extent (more than twice a week, during the entire research).

Examining the impact of implementing the PYSD prevention model on the athletes' resilience level and their relationship with parents and coaches, the research shows the following results. Regarding the variable SRS on the sample of children from Italy and Bulgaria, differences were noted for the indicator *Participation in Home and School life* (ITA, $z = 2.61$, $p = 0.008$; BUL, $z = 2.12$, $p = 0.34$) in terms of improving the results after the applied measures. There were no differences between PRE and POST regarding the variable SRS in the sample of children from Spain for none of the monitored indicators.

Regarding the participation of parents in children's sports life, differences were recorded only in the sample of children from Italy, for the indicator *Active Involvement of Father*, where children evaluated the participation of their fathers with significantly higher values after the implemented measures than at the beginning of the research ($z = 2,82$, $p = 0.005$).

The assessment of the coach-athlete relationship indicates that the implementation of measures had a positive effect on ITA and BUL subsample where differences were noted for the indicator *Complementarity* (ITA, $z = 2.80$, $p = 0.005$; BUL, $z = 2.70$, $p = 0.007$), as well as on the Total score of the ITA ($z = 2.87$, $p = 0.004$). On the other hand, in the ESP subsample, findings indicate that after implementing measures, the commitment to the coach, assessed through the indicator *Commitment*, significantly decreased ($z = 3.18$, $p = 0.001$).

Although the research did not show differences between subsamples concerning the categories before (SRS_{PRE}, $x^2 = 9.28$, p = 0.054; $CART_{PRE}$, $x^2 = 2.27$, $p = 0.69$) and after (SRS_{POST}, $x^2 = 3.12$, $p = 0.54$; $CART_{POST}$, $x^2 = 2.05$, $p = 0.73$) implementation of measures, for a clearer view of the research results it is useful to analyze the distribution of results PRE and POST by categories. Observing the variable SRS on the whole sample (N = 51), it is noticeable that before the implementation of the measures, 33% of children had a total SRS score above average (AA), average score (AV) had 49% of children and score below average (BA), 18% of children. After the implemented measures, the number of children with AA score decreased by 4% (29%), but at the same time, the percentage of

children with BA score decreased (POST = 10%), which increased the percentage of children with AV score (61%). Inspecting Table 2, which shows the results by categories PRE and POST for each subsample separately, it is noticeable that POST, BA decreased for each of the three subsamples, while in the sample of children from Italy, AA also increased by 6%. Thus, these results indicate a trend that implementing proposed measures increases the resilience level of young athletes.

Table 2. Distribution of the SRS and CART total score results by subsamples concerning the categories (AA, AV and BA).

Subsample		Category					
		AA		AV		BA	
		PRE	POST	PRE	POST	PRE	POST
SRS	ITA	23%	29%	59%	59%	18%	12%
	ESP	17%	17%	61%	72%	22%	11%
	BUL	63%	44%	25%	50%	13%	6%
CART	ITA	12%	13%	65%	70%	23%	12%
	ESP	28%	6%	50%	72%	22%	22%
	BUL	12%	19%	69%	62%	19%	19%

SRS – resilience level, CART– coach-athlete relationship, ITA – Italy, ESP – Spain, BUL – Bulgaria, AA – above average, AV – average, BA – below average, PRE – pretest, POST – posttest.

The coach-athlete relationship assessed by the variable CART before the implementing measures (PRE) had the following distribution by categories on the total sample: AA = 18%, AV = 60% and BA = 22%. The following results were obtained on posttest (POST): AA = 14%, AV = 68% and BA = 18%. After the implemented measures, the percentage of children who evaluated their relationship with the coach "below average" decreased (BA_{PRE} = 22% vs BA_{POST} = 18%), but also the percentage of children who evaluated relationship with the coach "above average" decreased by 4% (AA_{PRE} = 18% vs AA_{POST} = 14%). Insight into Table 2 shows that after the implemented measures, the Italy subsample decreased in BA and increased in AV and AA. Increasing the value of AA POST vs PRE was also noted in a sample of children from Bulgaria. Unexpected results were obtained on a sample from Spain. Namely, there is a noticeable decrease in the percentage of children who valued their relationship with the coach above average, which is certainly reflected in dropping a value of AA in a whole sample. However, in the authors' belief, such a result is not a reflection of the negative impact of implemented measures. Causes should be searched on the other side (for example, inconsistent implementation of measures can result from the entire epidemiological situation that leaves a mark on each individual and whose consequences will be seen only in the time ahead). In this regard, it can be concluded that there is also a trend indicating that correct implementation of the proposed PYSD prevention model leads to an improvement of the coach-athlete relationship.

CONCLUSION

The current research aimed to examine the impact of the proposed PYSD prevention model for parents and coaches on the resilience of young athletes and their relationship with parents and coaches. Following the obtained results, it can be concluded that the implementation of the proposed measures can positively impact the resilience's level of young athletes and the quality of the parent-athlete and coach-athlete relationship. Although the research did not show differences for several indicators, after implementing proposed measures, there is a trend of increasing the level of resilience of young athletes and their attitude of parental involvement in their sports activities and

the relationships with their coach. Qualitative analysis of the measures' implementation by parents and coaches showed that not all participants were consistent in their implementation, which in the opinion of the authors of this research was reflected in the final results. In this regard, to prevent youngsters from dropping out of the sport, the much-needed support of their parents and coaches is necessary, i.e. creating healthy parent-coach-athlete relationships.

During the experiment, the researchers encountered several obstacles caused by the pandemic of the COVID-19 virus infection, which caused the "locking" and suspension of sports and other activities in the countries participating in the study, making it difficult to implement the proposed measures and collect data. The start of the experimental phase was delayed several times, and the examiners could not complete collecting data for all subjects. Frequent "lockdown", quarantines due to illness or contact with COVID-19 infected, prevented sports clubs' smooth and continuous work. That affected the psychological, physical and social condition of the athletes themselves and their parents and coaches, and indirectly the results of this research. For this reason, this should be borne in mind when interpreting the findings of this study. The authors believe that the implementation of the experiment in controlled circumstances would significantly support the assumption of a positive impact of the PYSD model in the prevention of youngsters sport's dropout.

References:

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