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Are life skills development within sport associated with coping strategies in young Brazilian athletes?

O desenvolvimento de habilidades para a vida está associado às estratégias de coping em jovens atletas brasileiros?

Adson Alves da Silva[1]
https ://orcid.org/0000-0001-9197-1336
Nathan Leonardo Costa[1]
https ://orcid.org/0000-0001-6916-5944
Rammys Mendes da Silva[1]
https ://orcid.org/0000-0003-1521-272X
Vinicius da Cruz Sousa[1]
https ://orcid.org/0000-0003-0057-594X
Gabriel Lucas Morais Freire[1,2]
https ://orcid.org/0000-0003-0589-9003
José Fernando Vila Nova de Moraes[1]
https ://orcid.org/0000-0002-7394-7700
José Roberto Andrade do Nascimento Junior[1]
https ://orcid.org/0000-0003-3836-6967

[1] Federal University do Vale do São Francisco. Physical Education College. Petrolina, PE. Brazil.
[2] State University of Maringá. Physical Education College. Maringá, PR. Brazil.

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Corresponding author
Gabriel Lucas Morais Freire
Av. José de Sá Maniçoba, s/n, 56304-917, Centro, Petrolina (PE), Brazil.
E-mail: bi88el@gmail.com

Abstract – Playing sports during youth has been considered one of the main tools for the development of life skills. Thus, this cross-sectional study investigated the association between the development of life skills and coping strategies in 134 young athletes of both sexes in the state of Pernambuco, Brazil. The instruments used were the Sports Life Skills Scale and Coping Skills Inventory-28 (ACSI-28BR). Data analysis was performed using Pearson's correlation and Multiple Regression ($p<0.05$). The results showed a significant ($p<0.05$) and positive correlation between the life skills subscales and coping strategies. Multiple regression analyses found that total life skills development (a summative score of all eight life skills scores) was positively related to coping skills–providing support for the "pile-up" effect. It was concluded that a range of life skills development is positively associated with the coping strategies of young athletes, possibly helping these young people to show more confidence and motivation to achieve better performances in training and competitions.

Keywords: Positive Youth Development; Life skills; Coping skills; Sport values; Youth sport.

Resumo – *A prática de esportes durante a juventude tem sido considerada uma das principais ferramentas para o desenvolvimento de habilidades para a vida. Assim, esse estudo transversal investigou a associação entre o desenvolvimento de habilidades para vida e estratégias de coping em 134 jovens atletas de ambos os sexos do estado de Pernambuco, Brasil. Os instrumentos utilizados foram a Escala de Habilidades para a Vida Esportiva e Coping Skills Inventory-28 (ACSI-28BR). A análise dos dados foi realizada por meio da correlação de Pearson e Regressão Múltipla ($p<0,05$). Os resultados mostraram correlação significativa ($p<0,05$) e positiva entre as subescalas de habilidades para a vida e as estratégias de coping. Análises de regressão múltipla encontradas que o desenvolvimento total de habilidades para a vida (uma pontuação somativa de todas as oito pontuações de habilidades para a vida) foi positivamente relacionado as habilidades de coping- fornecendo suporte para o efeito de "empilhamento". Concluiu-se que uma gama de desenvolvimento de habilidades para vida está positivamente associada às estratégias de coping dos jovens atletas, possivelmente contribuindo para que esses jovens se mostrem mais confiantes e motivados a conseguirem melhores desempenhos nos treinos e competições.*

Palavras-chave: *Desenvolvimento Positivo de Jovens; Habilidades para vida; Estratégias de enfrentamento; Valores esportivos; Esporte para jovens.*

INTRODUCTION

Sports practice is one of the main promoters of the development of physical, psychic and social abilities during childhood and adolescence[1-3]. Eime et al.[3] in a systematic review observed that sports participation is associated with a variety of psychosocial benefits that include improved self-esteem, greater social interaction, acquisition of moral values and reduction of depressive symptoms. Thus, to perform activities within and outside the sports context, as well as to ensure the transition to adulthood in a healthy way, positively influencing adaptation, physical and mental health, adolescents need to develop life skills[4].

These skills are defined in literature as the skills needed to deal with the demands and challenges of everyday life[1-4]. Larson[5] observed that these life skills can be developed, learned, or refined through extracurricular activities, including music, drama and sports context. Scientific evidence proves that due to the high participation rates and its interactive, emotional, and socially involved nature, sports practice can foster the acquisition of these skills[6].

In this sense, the current literature has demonstrated that sports practice plays an essential role for the development of life skills in young people[6-8]. In addition, sport has been pointed out as a predictive variable for the development of different attributes related to life skills, such as mental endurance[9], recreational propagation of sport[10], leadership[11], moral values and social behavior[6] and motivation[12].

The relationship of individual and total life skills with other positive results in sport are supported by the concept of Benson et al.[13] structure for the theory and practice of youth development. Specifically, Benson et al.[13] proposed that individual life skills (e.g. leadership, communication, social skills, emotional skill, problem solving), together with total life skills, are important to bring about other positive results in participants. In terms of total life skills development, Benson et al.[13] proposed the idea of a "pile up" effect, with the more life skills young people possessing the better off they will be on a variety of other positive results. Research in sport and other domains provided support for the idea of a "stacking" effect of total life skills[6-8]. However, little is known about how the individual and total life skills developed through sport are related to the coping strategies of sports practitioners. Given the clear association between coping strategy and positive outcomes within the sports field[14], it is important to evaluate whether life skills developed within the sports context are associated with the coping strategy of young sports men.

Coping strategies, such as the ability to face or avoid stressful situations, especially unexpected ones, using behavioral and cognitive management mechanisms[15], are defined by the theoretical model developed by Lazarus and Folkman[15]. In sport, competition and social relations are among the main stressing agents. These, when not carefully administered, may favor early avoidance of sports practice[16]. The concern to understand the attitudes of young people in stressful situations can say a lot about how these young people are using coping strategies, so it is essential to investigate these variables within the sporting context.

Daumiller et al.[17] points out that high-performance athletes, with greater use of coping strategies, are at higher competitive levels when compared to other athletes, this fact allows deepening investigations with young athletes, analyzing coping strategies and their interaction with other variables, to understand how this interaction can contribute to their development. In this perspective, some

authors have contributed to the literature with research analyzing coping and relating it to other variables in the sports context. Nascimento Júnior et al.[18] analyzed the relationship between coping strategies and the traits of perfectionism in 182 professionalized and non-professionalized Brazilian soccer players, concluding that adaptive perfectionism influenced the coping strategies of professionalized athletes. Pons et al.[19] observed that efforts to cope with tasks by Spanish adolescents practicing collective sports were key elements in the relationship between competitive anxiety and commitment to sport.

In this scenario, little is known about the role of life skills on the cognitive and behavioral resources that young athletes use to deal with the adversities and stressful demands of the sports context. Thus, this study becomes relevant to the extent that it can provide significant information to coaches, psychologists and athletes about the importance of working and developing life skills in everyday life as a way to make the athlete able to use them to optimize their cognitive and behavioral resources. Therefore, the aim of the study was to investigate the associations between life skills over coping strategies in young athletes. The hypothesis is that the dimensions of life skills will be positively associated with coping strategies for young athletes.

METHODS

Study design

The present study is observational, descriptive with a cross-sectional design and characterized as an associative investigation. The study was developed and structured through the guidelines of the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) for observational research[20].

Participants

The study included 134 young athletes of both sexes, 70 males and 64 females, with a mean age of 13.47 ± 1.16 years, mean practice time of 42.07 ± 32.25 months and mean training time in current teams of 14.04 ± 13.31 months. All participated in the Student Olympiad of Petrolina in 2018 in the modalities of futsal (n=41), Handball (n=63) and Soccer (n=29). After a non-probabilistic sample selection by convenience, the eligibility criteria for inclusion of the subjects in the research were: 1) to be enrolled in the Petrolina Student Olympiad in 2018; and 2) to be in the team for at least three months. All participants were instructed by the researchers before the application of the instrument, signed the Ascent Form and their legal guardians signed the Free and Informed Consent.

Procedures

The criteria of Ethics in Research with Human Beings were adopted in this study according to Resolution No. 466/12 of the Brazilian National Health Council. This study is part of an institutional project aproved by the Research Ethics Committee of the Federal University of Vale do São Francisco

(Opinion No. 1,648,086). At first, authorization was requested to perform data collections with the young athletes, for the teachers/coaches responsible for the teams. The collections were carried out at the competition venues during the Petrolina Student Olympiad in 2018. The questionnaires were applied collectively, before and after the matches, without the presence of the coaches. During the completion of the questionnaires, the evaluators were present, close to the athletes, and asked the participants questions about the items of the questionnaires. Conversation between the participants was not allowed. The completion of the questionnaires lasted approximately 30 minutes.

Instruments

Life skills development

The Portuguese version[21] of the Life Skills Scale for Sport[22] was used to measure players' life skills development in their sport. This 43-item scale uses the stem "This sport has taught me to...." and is followed by items assessing: teamwork (7 items; "work well within a team/group"), goal setting (7 items; "set challenging goals"), time management (4 items; "manage my time well"), emotional skills (4 items; "use my emotions to stay focused"), interpersonal communication (4 items; "speak clearly to others"), social skills (5 items; "get involved in group activities"), leadership (8 items; "organize team/group members to work together"), and problem solving and decision making (4 items; "think carefully about a problem"). Participants responded to items on a scale ranging from 1 (*not at all*) to 5 (*very much*).

Coping strategies

The Brazilian version of the Athletic Coping Skills Inventory-28 validated to the Brazilian context by Miranda et al.[23] was used. This instrument has 28 items distributed into seven dimensions composed of four items each. The dimensions of the Brazilian version of the Athletic Coping Skills Inventory-28 were defined as follows: Peaking Under Pressure (measures the athlete's success under pressure), Freedom From Worry (measures how much the athlete does not worry), Coping With Adversities (measures the athlete's success when going through difficult times), Concentration (measures the athlete's ability to concentrate), Goals Setting/Mental Preparation (measures how much the athlete can formulate goals and prepare mentally), Confidence and Achievement Motivation (measures how confident and motivated the athlete is) and Coachability (measures the athlete's ability to evolve during training),. The items were answered on a Likert-type scale (from 0 = almost never to 3 = almost always), varying from 0 to 12 points the maximum score by subscale. The sum of all subscales was called Personal Coping Resource.

Data analysis

Preliminary data analyses, descriptive statistics, correlations, and standard multiple regression were conducted using SPSS version 23.0. All major

assumptions of the statistical tests conducted were met. Pearson's correlation was used to examine the relationship between life skills and coping strategies among youth sport participants. Multiple regression analysis was used to determine if the life skills combined influenced the coping strategies. For this analysis, there were no sufficiently strong correlations between variables that indicated problems with multicollinearity (VIF range = 1.92 to 2.84). Specifically, these VIF values were below the 5 or 10.

RESULTS

Table 1 presents the means, standard deviation, and correlations for all research variables. The average scores of the P-LSSS revealed that participants realized that they were developing the skills for life through their sports. The average scores between the highest and the lowest were as follows: Communication (M=3.96, DP=.86), teamwork (M= 3.91, DP=.70), goal setting (M=3.90, DP=.77), leadership (M=3.87, DP=.82), social skills (M= 3.86, DP=.83), time management (M= 3.79, DP= .86), emotional skills (M=3.72, DP=.95), Problem Solving (M=3.70, DP=.91) and the life skill total (M = 3.85, DP= .77).

Regarding coping strategies, the average ACSI-28BR scores revealed that young athletes realized that they were developing coping strategies through sport. The average scores between the highest and the lowest were as follows: Confidence/Motivation (M=2.12; DP=.57), Coping With Adversities (M=1.88; DP=.64), Goal Setting/Mental Preparation (M=1.87; DP=.87), Concentration (M=1.85; DP=.55), Peaking Under Pressure (M=1.79; DP=.71), Freedom From Worry (M=1.72; DP=.66), Coachability (M=1.51; DP=.51) and total strategies coping (M= 7.31; DP=1.54).

The results showed a significant ($p<0.05$) and positive correlation between the life skills subscales and coping strategies (r_{range} .17 to .28).

Table 2 presents the regression results, thus, the prediction of the dimension of life skills on the dimensions of coping of young athletes ($p<0.05$). The findings showed that life skills explained 6% of the dimension of coping "Goal setting/Mental preparation" ($R=0.34$; $R^2=0.06$; $F=2.042$; $p=0.04$). However, only Time Management was a signficant positive predictor ($\beta=0.39$; $p=0.008$) and Communication was a significant negative predictor (=-0.34; $p=0.018$). This indicates that good time management seems to help in setting goals and mentally preparing for the demands of sports practice. On the other hand, it seems that communication may not contribute to formulation of goals, as well as mental preparation of young athletes.

Table 3 presents the prediction of the total score of life skills on the dimensions of coping of young athletes ($p<0.05$). Results showed that the total scores of life skills explained 4% of the variance ($R=0.22$; $R^2=0.04$; $F=6.713$; $p=0.01$) and was a significant positive predictor ($\beta=0.09$; $p=0.011$) of the coping dimension "Peaking under pressure". Regarding the coping dimension "Free from Worry", life skills predicted 5% ($R=0.24$; $R^2=0.05$; $F=8.036$; $p=0.00$) and was a significant positive predictor ($\beta=0.24$; $p=0.005$). Moreover, life skills also predicted 2% of the variance ($R=0.18$; $R^2=0.02$; $F=4.580$; $p=0.03$) and wsa a significant positive predictor of the dimension "Confidence" ($\beta=0.18$; $p=0.034$). Lastly, life skills was also a significant positive predictor ($\beta=0.29$; $p=0.00$) and predicted 8% of the variance of the dimension "Coachability" ($R=0.30$; $R^2=0.08$; $F=12.869$; $p=0.000$).

Table 1. Pearson's Correlation between the dimensions of life skills and coping, mean values, standard deviation and Cronbach's alpha of dimensions.

Variables	Life Skills										Coping Strategies						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Teamwork	-	.64†	.58†	.53†	.45†	.59†	.42†	.48†	.74†	.13	**.23**†	.06	.03	.11	.05	**.18***	**.17***
2. Goal Setting			.70†	.62†	.55†	.65†	.61†	.54†	.82†	**.21***	**.22**†	.16	.11	.16	.15	**.28**†	**.27**†
3. Social Skills			-	.73†	.56†	.64†	.58†	.62†	.83†	**.27**†	**.24**†	.14	**.17***	**.17***	.14	**.28**†	**.31**†
4. Problem Solving				-	.56†	.67†	.65†	.62†	.81†	**.19***	**.21***	**.17***	.16	.14	**.22***	**.29**†	**.28**†
5. Emotional Skills					-	.72†	.63†	.57†	.76†	**.17***	**.25**†	.08	.02	.08	**.21***	**.21***	**.22**†
6. Leadership						-	.71†	.71†	.89†	.14	**.19***	.14	.14	.10	.12	**.19***	**.20***
7. Time Management								.72†	.79†	.15	.10	.08	.06	**.19***	**.20***	**.25**†	**.19***
8. Communication								-	.79†	.16	.12	.14	.15	.03	.10	**.27**†	**.18***
9. Total life skills score									-	**.22***	**.25**†	.15	.13	.15	.17	**.30**†	**.28**†
10. Performance under pressure										-	.36†	.46†	.34†	.28†	.35**	.33†	.72†
11. Free of worry											-	.09	.11	.15	.16	.42†	.52†
12. Coping with adversities												-	.46†	.25†	.51†	.13	.65†
13. Concentration													-	.34†	.37†	.18	.60†
14. Goals/Mental Preparation														-	52†	.24†	.62†
15. Confidence and Motivation															-	.25†	.69†
16. Coachability																-	.52†
17. Total Coping Scores																	-
Mean	3.91	3.90	3.86	3.70	3.72	3.87	3.79	3.96	3.85	1.79	1.72	1.88	1.85	1.87	2.12	1.51	7.31
Standard deviation	.70	.77	.83	.91	.95	.82	.86	.86	.67	.71	.66	.64	.55	.57	.57	.51	1.54
Cronbach's Alpha	.70	.85	.80	.75	.80	.88	.81	.82	.95	.69	.60	.62	.40	.50	.48	.10	.81

Note. **Significant Correlation: †$p < 0.01$; $p < 0.05$. – Pearson's Correlation.

Table 2. Linear regressions of the dimensions of life skills predicting coping strategies.

Predictors	Performance under pressure	Free of Worry	Coping with Adversities	Concentration	Goals / Mental Preparation	Confidence and Motivation	Coachability
	β (CI)	β (CI)	β (CI)	β (CI)	β (CI)	β (CI)	β (CI)
Teamwork	-.04 (-.28; .19)	.09 (-.12; .31)	-.10 (-.31; .12)	-.37 (-1.06; .31)	.09 (-.11; .26)	-.03 (-.22; .17)	.02 (-.14; .18)
Goal Setting	.08 (-.17; .33)	.07 (-.16; .30)	.20 (-.06; .40)	.13 (-.34; .57)	.07 (-.14; .25)	.05 (-.16; .48)	.14 (-.08; .27)
Social Skills	.21 (-.07; .43)	.10 (-.14; .32)	-.08 (-.29; .16)	-.28 (-.66; .18)	.18 (-.07; .32)	-.03 (-.22; .10)	.05 (-.14; .21)
Problem Solving a	.02 (-.20; .23)	.05 (-.16; .24)	.24 (-.03; .37)	.29 (-.15; .62)	-.05 (-.20; .14)	.25 (-.01; .74)	.17 (-.05; .24)
Emotional Skills	.00 (-.18; .18)	.17 (-.04; .29)	-.05 (-.20; .12)	-.35 (-.66; .09)	-.13 (-.22; .06)	.13 (-.06; .24)	.03 (-.10; .14)
Leadership	-.05 (-.30; .22)	.02 (-.22; .25)	.06 (-.19; .29)	.28 (-.29; .78)	-.01 (-.21; .20)	-.11 (-.29; .83)	-.23 (-.33; .03)
Time Management	.00 (-.23; .24)	-.18 (-.36; .07)	-.20 (-.37; .06)	-.17 (-.61; .30)	**.39 (07; .44)****	-.12 (-.10; .30)	-.01 (-.17; .16)
Communication b	.02(-.21; .25)	-.04 (-.25; .18)	.09 (-.14; .28)	.55 (-.01;.95)	**-.34 (-.41; .04)***	-.15 (-.29; .44)	.19 (-.05; .27)
R2	.010	.039	.005	.005	.059	.027	.075
F	1.160	1.681	1.078	1.078	2.042	1.455	2.354
DW	1.882	1.917	1.969	1.969	2.116	2.081	1.885

Note: Only the standardized regression coefficients lower than the significance level of 0.05 are in bold. B = standardized regression coefficient. CI = confidence interval of 95%. *p<0.05. **p<0.01. [a]problem solving and decision making. [b]interpersonal communication skills. DW = Durbin-Watson. R2= multiple determination coefficient. F= difference in linear models.

Table 3. Linear regressions of the total score of life skills predicting coping strategies.

Predictor	Performance under pressure	Free of Worry	Coping with Adversities	Concentration	Goals / Mental Preparation	Confidence and Motivation	Coachability
	β (CI)	β (CI)	β (CI)	β (CI)	β (CI)	β (CI)	β (CI)
Total Life skill score	**.22 (.05; .41)***	**.24 (.07;.40)****	.14 (-.02; .30)	.10 (-.05; .22)	.16 (-.01; .28)	**.18 (.01; .30)***	**.29 (.10; .35)*****
R2	.041	.050	.013	.004	.019	.026	.082
F	6.713	8.036	2.798	1.511	3.550	4.580	12.869
DW	1.876	1.843	1.976	2.156	2.095	2.200	1.909

Note: Only the standardized regression coefficients lower than the significance level of 0.05 are in bold. B = standardized regression coefficient. CI = confidence interval of 95%. *p<0.05, **p<0.01, ***p<0.001. DW = Durbin-Watson. R2= multiple determination coefficient. F= difference in linear models.

DISCUSSION

The present investigation observed the association between the development of life skills with coping strategies in young Brazilian athletes. The findings here cited are extremely relevant, given that more scientific evidence is needed regarding the role of psychological variables in the context of young athletes.

To begin with, based on the average scores, the findings revealed that young athletes perceived that they were developing life skills through their respective modalities (Table 1). These findings allow us to infer that the sports program in which young people are inserted favors the development of life skills. Similar findings are observed in collective sports practitioners[6,8,12] and practitioners of school physical education[7]. In this scenario, the findings of the present study corroborate with those found in the literature, demonstrating that sports practice plays a fundamental role in the development of life skills[6-8,12].

Regarding coping strategies, our results were generally consistent with the past literature[15-19]. Silva et al.[24] in a cross-sectional study regarding coping strategies in young Brazilian soccer players, demonstrated that young athletes who were in the transition phase of their career, but had not signed a professional contract, used limited coping strategies and seemed more exposed to stress. Silva et al.[24] observed coping strategies in young Brazilian soccer players and found that young people who were professionalized in the modality used more effective coping strategies than when compared to non-professionals. In this perspective, the findings of the present study are in line with the literature, demonstrating that young athletes perceive their coping strategies through sports practice[15-19,24].

Regarding the hypothesis presented in the study, our findings support that total life skills were positively associated with coping strategies in young athletes (Table 1 and 3). These results are supported by the conceptual structure of Benson et al.[13] which argues that the individual or active life skills that young people learn will be positively related to other positive outcomes (e.g., mental endurance, resilience, coping strategies). Cronin and Allen[25] observed, in young British sportsmen practicing individual and collective modalities, that the sum of all dimensions of life skills was related to psychological well-being outcomes. Thus, the findings of the present investigation corroborate with those found in the literature, demonstrating that the effect of stacking skills for life is a percussor in coping strategies among sports practitioners [7,25].

Regarding the association of individual life skills with the dimensions of coping strategies (Table 2), the findings demonstrate that time management was positively associated with goals/mental preparation. In this sense, it is possible to infer that the ability to manage time between school, training and personal activities is more evident in young people who have goals and mental preparation. Thus, the young people who have this control of the time well developed seem to favor the development of goals and mental preparation for their activities and, consequently, lead adolescents to act with more pro activity in their daily demands inside and outside the sports context[6-8,25].

On the other hand, communication skills presented a negative association with goals and mental preparation (Table 2). These findings allow the understanding that communication does not seem to favor the perception of adolescents regarding goals and mental preparation of activities inside and outside the sports context. Overall, our results indicate that a sports program focused on educational and social aspects can promote several positive outcomes, such as the development of life skills and coping strategies[26,27]. As such, coaches and parents should be encouraged to create an environment in sport that helps

to develop participants' life skills and promote coping strategies. In terms of unexpected communication-related discoveries, it is difficult to know why the development of these life-specific skills was negatively associated with goals and mental preparation. Thus, future studies should try to replicate and investigate such discovery with young participants in sports of different modalities and at different levels of competition.

Although the results of this study provide important contributions to the literature regarding the relationship between the perception of life skills development and coping strategies in young athletes, some limitations need to be considered. First, athletes belonging to a single training center and a small number of modalities were evaluated, which does not represent the reality of the country's youth sports. However, the sample may be considered relevant because the young athletes of an important competition in the country were analyzed. Secondly, the sample composition, since it was composed only of practitioners of collective sports, the inclusion of individual modalities in the study could allow us to analyze and compare the predictions between the constructs according to the type of modality. In addition, a sample with a higher number of participants would statistically allow more daring prediction analysis, including predictions considering on gender and time of practice. Another limitation refers to the design used to analyze the relationship between life skills and coping strategies, since the results are based on cross-sectional data, not allowing causality inferences. Thus, future investigations should continue to explore the relationships between these variables, analyzing young athletes from other regions of the country and using longitudinal models in order to establish new evidence on the impact of life skills and coping strategies over time.

CONCLUSION

It can be concluded that a range of life skills development (e.g. communication, social skills, leadership, problem solving) are positively associated with the coping strategies of young athletes. More precisely, they seem to contribute to a good performance when athletes are pressured in sports situations, as well as, when they are free of worries, in addition to possibly contributing to these young people being more confident and motivated to achieve better performance in training and competitions. Thus, it is essential that sports coaches provide positive sports experiences that develop life skills and coping strategies of athletes and help bring other positive results to young people.

COMPLIANCE WITH ETHICAL STANDARDS

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Ethical approval

Ethical approval was obtained from the local Human Research Ethics Committee of Federal University do Vale do São Francisco and the protocol (no. 1.648.086) was written in accordance with the standards set by the Declaration of Helsinki.

Conflict of interest statement

The authors have no conflict of interests to declare.

Author Contributions

Conceived and designed the experiments: AAS, NLC, RMS and VCS. Performed the experiments: AAS, NLC, RMS and VCS. Analyzed the data: AAS, NLC, RMS and VCS Contributed reagents/materials/analysis tools: AAS, NLC, RMS, VCS, GLMF, JRANJ. Wrote the paper: AAS, NLC, RMS, VCS GLMF, JFVNM, JRANJ.

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