Advancing positive youth development: integrating the 12CS framework into volleyball training programs

Fomento del desarrollo positivo de los jóvenes: integración del marco de las 12C en los programas de entrenamiento de voleibol

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How to cite in APA

Sovensi, E., Kusmaedi, N., Ma'mun, A., & Mulyana. (2025). Advancing positive youth development: integrating the 12CS framework into volleyball training programs. *Retos*, *68*, 2008–2020. https://doi.org/10.47197/retos.v68.113686

Abstract

Introduction: This research explored the integration of the expanded 12Cs PYD model, which included commitment, consistency, comprehensiveness, collaboration, and competition, into volleyball training to enhance the transfer of life skills into daily life.
Purpose: The study aimed to evaluate the effectiveness of integrating the 12Cs model into volleyball training programs, particularly in improving PYD outcomes through the transfer of life skills to real-world applications.
Method: The study method used an experimental approach involving 45 volleyball athletes aged 15-19 years from Lubuklinggau, Indonesia, who were divided into three groups: (1) training with 12Cs transferred into daily life, (2) training with 12Cs without transfer into daily life, and (3) a control group with standard volleyball training. Measurements were taken before and after the treatment using validated 12Cs PYD questionnaires. Statistical analysis, including Welch and Brown-Forsythe tests, was used to assess differences between groups.
Result: The results showed a significant increase in PYD outcomes for the group that received 12Cs training with transfer into daily life, particularly in social competence, confidence, connection, and positive character development. This group demonstrated the highest average score increase compared to the other groups, emphasizing the importance of transfer into daily life to maximize PYD outcomes.
Conclusion: The integration of the 12Cs model into sports-based programs, focusing on transfer into daily life, effectively enhanced PYD. Volleyball became a strategic medium for integrating the 12Cs model for youth development.

Keywords

Positive youth development; 12Cs framework; sport-based programs; volleyball training; youth development.

Resumen

Introducción: Esta investigación exploró la integración del modelo ampliado 12Cs PYD, que incluye el compromiso, la coherencia, la amplitud, la colaboración y la competencia, en el entrenamiento de voleibol para mejorar la transferencia de habilidades para la vida en la vida cotidiana.
Propósito: El estudio tuvo como objetivo evaluar la eficacia de la integración del modelo 12Cs en los programas de entrenamiento de voleibol, en particular en la mejora de los resultados PYD a través de la transferencia de habilidades para la vida a las aplicaciones del mundo real.
Método: El método de estudio utilizó un enfoque experimental en el que participaron 45 atletas de voleibol de entre 15 y 19 años de Lubuklinggau, Indonesia, que fueron divididos en tres grupos: (1) entrenamiento con las 12Cs transferidas a la vida cotidiana, (2) entrenamiento con las 12Cs sin transferencia a la vida cotidiana, y (3) un grupo de control con entrenamiento estándar de voleibol. Se tomaron medidas antes y después del tratamiento utilizando cuestionarios 12Cs PYD validados. Se utilizó el análisis estadístico, incluidas las pruebas de Welch y Brown-Forsythe, para evaluar las diferencias entre los grupos.
Resultados: Los resultados mostraron un aumento significativo en los resultados PYD para el grupo que recibió la formación 12Cs con transferencia a la vida cotidiana, en particular en la competencia social, la confianza, la conexión, y el desarrollo del carácter positivo. Este grupo demostró el mayor aumento de la puntuación media en comparación con los otros grupos, lo que subraya la importancia de la transferencia a la vida diaria para maximizar los resultados PYD.
Conclusión: la integración del modelo de las 12Cs en programas basados en el deporte, centrándose en la transferencia a la vida diaria, mejoró eficazmente el PYD. El voleibol se convirtió en un medio estratégico para integrar el modelo de las 12Cs en el desarrollo de los jóvenes.

Palabras clave

Desarrollo juvenil positivo; marco de las 12Cs; programas basados en el deporte; entrenamiento de voleibol; desarrollo juvenil.

Introduction

Positive Youth Development (PYD) focused on nurturing children's and youth's strengths, operating on the belief that every young person holds the potential for positive growth and development (Lerner et al., 2005). The development of the PYD concept contributed to the reduction of negative behavioral problems among teenagers today (Kendellen et al., 2016). These results aligned with the principles of PYD, which emphasized the development of confidence, competence, and connection, especially in underserved communities where structured youth engagement was greatly needed (Holt et al., 2017: Strachan et al., 2018). Within the PYD framework, successful growth was seen as the journey towards becoming fully functional adults, equipped with the skills and competencies necessary to reach one's potential while also positively impacting society (Weiss et al., 2021).

PYD specifically focused as a facilitator to facilitate youth development (Brink & Wissing, 2012). Furthermore, studies on the development of PYD followed the progression of time, where youth became the main indicator, and youth was linked to engagement in youth trends and meaningful contributions to society (Burkhard et al., 2020). This indicated that PYD could evolve to achieve the overall goals for an individual's life, helping to regulate one's life decisions and actions, and thus manifested in one's behavior. This meant that the success of a young person was not only focused on their individual achievements but also on their ability to make a meaningful contribution to their family and community.

Numerous researchers emphasized the significance of deliberate strategies in fostering positive youth development (Bean & Forneris, 2016: Côté & Hancock, 2016: Vierimaa et al., 2012). In line with this opinion, PYD described as a deficit approach concept that could reduce negative behavioral problems among teenagers today (Kendellen et al., 2016). One way to achieve positive youth development is through sports. PYD through sports was a strength-based approach that was widely adopted and focused on developing life skills in young participants because sports provided a valuable environment for teenagers to develop both as athletes and individuals (Kochanek & Erickson, 2020) (McKinnon et al., 2022) (Bates & Hylton, 2021). This was due to the fact that organized sports and sports-based programs proved to be effective methods for fostering positive youth development (Chinkov & Holt, 2016). Moreover, sport-based youth development programs can cultivate intentional self-regulation, enabling young people to apply these skills in other aspects of their lives. (W. Lee et al., 2021). Psychological factors such as experiences, family support, and community involvement also directly contributed to PYD (Wiium & Dimitrova, 2019).

At present, the paradigm regarding sports had shifted from the development of sport (which was part of sport-sport outcomes) to development through sport (which was part of development societal outcomes) (2018). This had implications for the purpose of sports development becoming a medium for social development, holistic personal potential, societal impact, citizenship, and significantly influencing sustainable development (Jones et al., 2021; Rossi & Jeanes, 2016; Simon Rofe, 2021). Furthermore, this paradigm shift leveraged sports as a tool to enhance health quality, promote gender equality, alleviate poverty, improve education, strengthen community, and address various social welfare issues (A. M. Astle, 2014; Lyras & Welty Peachey, 2011).

The shift in sports development paradigms undoubtedly influenced the growth of PYD through sports. This aligns with the idea that PYD would evolve to meet the requirements of its specific field of study and the regions it serves. (Bates & Hylton, 2021). Until now, PYD had evolved from PYD 3Cs (Côté & Hancock, 2016) to 7Cs (competence, confidence, character, connections, caring, contributions, and creativity) (Dimitrova et al., 2021). However, this still did not cover all aspects found in sports activities. The research results showed that young people who routinely engaged in group sports, such as basketball and badminton, could develop their competence, character, confidence, caring, and connections (2022). Furthermore, sports programs for PYD required planning and integration into a well-structured and intentional training process (Bean & Forneris, 2016). Additionally, participation in youth sports could yield positive psychological, social, and physical benefits. However, variations in youth sports were influenced by factors such as the type of sport, level of competition, team dynamics, and gender, making it a highly diverse field (Newman, Lower-Hoppe, et al., 2021). Furthermore, it was suggested that future research should be conducted in various languages to enhance the data on the impact of incorporating sports in community and school programs to achieve broader social objectives (Ponciano Núñez et al., 2023).

This research attempted to integrate the PYD concept into sports programs by adding five new dimensions, commitment, consistency, comprehensiveness, collaboration, and competition, to the previously established PYD framework, expanding it into a 12C model. While existing studies have primarily focused on the 5Cs or 7Cs models, this study introduces a novel and holistic approach by applying the 12Cs model specifically within volleyball training contexts. Consequently, the PYD concept used became 12Cs, based on the positive 5Cs PYD model and then developed into 7Cs (Dimitrova et al., 2021). In integrating 12Cs, the researchers adopted concepts from the principles of integration in life skills learning, which included focusing on one component per session, conveying the component's goals at the beginning of the activity, applying learning strategies to implement the component throughout the learning process, and conducting reflection and discussion after the learning activity (Kendellen et al., 2016).

This innovation represents a significant contribution to the PYD literature, as it offers a more comprehensive framework for facilitating youth development through sports. Notably, the study is among the first to contextualize the 12Cs integration in Indonesia, particularly through volleyball. This sport has received less attention in PYD research than soccer or basketball. By intentionally embedding life skills into coaching practices and transferring them into adolescents' daily lives, this model is a strategic innovation for youth development in underserved or developing regions. Through this integration process, participants were expected to better understand and gain valuable lessons from the provided program. The addition of 12Cs was based on the development of PYD as part of human development ecology and integrated with individuals through developmental regulations, thus always having the potential for change. This was a fundamental strength of a science that adapted to its times. These changes could become better or worse and characterize the developmental trajectory of each individual (Burkhard et al., 2020).

Although the benefits of sports for adolescent development have been widely documented, most existing studies focus on general outcomes or apply earlier PYD models, such as the 5Cs or 7Cs, without expanding into more holistic frameworks like the 12Cs. Moreover, studies that evaluates the implementation of such an expanded PYD model in the context of specific sports, particularly volleyball, remains scarce. This gap is especially evident in developing countries like Indonesia, where volleyball is popular but underutilized in structured youth development programs. Thus, there is limited empirical evidence on how integrating all 12Cs into a sports-based training program can contribute to the broader goals of PYD. This study addresses that gap by introducing and testing a comprehensive 12Cs PYD model through volleyball training in an Indonesian context, offering new insights into the design, implementation, and effectiveness of PYD interventions tailored to local youth needs and cultural relevance. The sports program used was volleyball because based on the fact that volleyball was one of the popular sports in Indonesia and quickly developed after soccer and badminton.

Method

Design

The research employed an experimental study method, selected to examine the cause-and-effect relationship between the independent and dependent variables. This approach involved manipulating the independent variable, applying treatments, and controlling other variables, in line with the fundamental principles of experimental research. The study involved the following variables: the independent variable, which included two approaches to volleyball coaching and development,one incorporating the 12Cs PYD principles into daily life and the other without this incorporation. The dependent variable was the 12Cs PYD itself. The research aimed to observe changes in the achievement of the 12Cs PYD by comparing the results before and after the implementation of the treatments.

Procedure

This research design included a control group and two treatment groups. The purpose of having a control group was to compare the changes or effects of the treatment with a group that did not receive it. This approach enabled researchers to assess the effectiveness or impact of the treatment or intervention by comparing results between the control group and the treatment groups. By using randomization to

assign participants to either the control or treatment groups, this design helped minimize placement bias that could affect the research outcomes. In this study, participants were randomly allocated to one of the two treatment groups.

The following is a graphic representation of the research design used multiple treatment and control with pretest (Shadish William R., 2002).

Figure 1. Structure Research Design

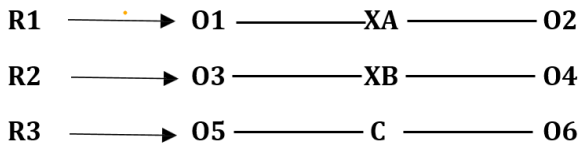

Table 1. Explanation

R_1	=	Randomize volleyball coaching and development with the application of 12Cs transferred into daily life.
R_2	=	Randomize volleyball coaching and development with the application of 12Cs non-transferred into daily life
R_3	=	Randomize control that only receives volleyball coaching without 12Cs intervention
$O_1/O_3/O_5$	=	Pretest
X_A	=	12Cs intervention transferred into daily life
X_B	=	12Cs intervention non-transferred into daily life
C	=	Volleyball training without 12Cs intervention
$O_2/O_4/O_6$	=	Posttest

There were three groups involved in the research design Multiple Treatment and Control with Pretest. Group R1 was the group that received volleyball coaching with the application of 12Cs which were then transferred into daily life. Group R2 also received volleyball coaching with the application of 12Cs, but without a focus on transfer into daily life. Meanwhile, Group R3 was the control group that only received regular volleyball coaching without the 12Cs intervention.

In the pretest stage (O1), all groups were measured on the variables to be tested before treatment was given. Next, in the intervention stage, Group R1 received the 12Cs intervention with a focus on transfer into daily life (XA), while Group R2 received the 12Cs intervention without a focus on transfer (XB). Group R3 (C) did not receive the 12Cs intervention.

After the treatment was completed, posttest measurements (O2) were taken for all groups to observe changes in the measured variables. By using this design, researchers could compare the differences in outcome variable changes between the control group and the treatment groups with and without 12Cs PYD transfer. Thus, this research design allowed researchers to evaluate the effects of different treatments on these groups and see whether the 12Cs intervention with or without transfer could provide a significant impact compared to the control group.

Participants

The participants in this study involved a total of 45 volleyball athletes in Lubuklinggau City, South Sumatra, Indonesia, aged 15-19 years, divided into 3 volleyball clubs. The first group comprised athletes from JVC (Jaya Volleyball Club), the second group consisted of athletes from AVC (Anugrah Volleyball Club), and the third group consisted of athletes from Macan Amula Volleyball Club. The age range of participants in this study was between 15 and 19 years. Adolescence is a critical phase in human development, occurring between childhood and adulthood. Generally, the adolescent age period ranges from around 13 to 19 years (Steinberg, 2005). In the context of this study, the adolescents who were the subjects of the research were aged between 15 and 19 years.

The participants were divided into three different groups, with each group consisting of 15 people. This study used a random sampling technique, with 15 samples taken per group. Using a per-group sampling of 15 people ensures that each academic group is represented in the sample by an equal number, thus reducing bias and allowing for better generalization to the broader population (Creswell & Creswell,

2022). This technique allowed for random selection from each group within the population being studied (Mackiewicz, 2018).

Instrument

The researchers adopted existing instruments but developed them further according to contemporary advancements. The instrument used in this study was a Positive Youth Development (PYD) questionnaire developed based on the 12Cs model. This model builds upon the foundational 5Cs framework Lerner (2005) introduced, which includes competence, confidence, character, connection, and caring. These five components represent core developmental assets in adolescents, encompassing their abilities, self-perception, moral values, social bonds, and empathy.

Subsequent studies expanded the 5Cs to 7Cs by including contribution and creativity. These additional dimensions reflect a young person's ability to give back to their community and think innovatively to solve problems. These skills are increasingly recognized as essential for thriving in a dynamic and collaborative world. To further enrich this framework and make it more applicable to the Indonesian context, particularly within structured sports programs such as volleyball coaching, this study introduced five new components: commitment, consistency, comprehensiveness, collaboration, and competition. Together with the original seven, these formed the 12Cs model to guide program design and evaluation.Subsequently, the instrument was validated by expert judgment and tested on students and active players in sports according to their preferred sports branch. Validity and reliability tests were conducted first to determine the number of valid test items and the reliability value of the instrument using the JASP software version 0.18.03. The reliability test results showed that the instrument could be trusted and was good to be used as a tool for collecting PYD data.

Data Analysis

In this study, the proposed hypothesis aimed to determine whether there were differences in the effect between the three experimental groups (A1, A2, and A3) on the improvement of PYD 12Cs. The difference in effect between the three experimental groups was determined based on the posttest results and the improvement value achieved by the players by comparing the 12Cs measurement results at the time of pretest and posttest. The null hypothesis (H_0) stated that there were no significant differences between groups A1, A2, and A3, whereas the alternative hypothesis (H_1) proposed that there were significant differences in influence between the three groups.

Results

The first step involved testing the normality of data in each group and the homogeneity of variances between groups. The normality test results were tested using Kolmogorov-Smirnov, which showed that the three datasets were normally distributed (Table 2). Next, the homogeneity of variances could be tested using Levene's test, which showed that the Gain data variance was not homogeneous (Table 3). Thus, hypothesis testing was performed using Robust Tests of Equality of Means with Welch and Brown-Forsythe tests. With this approach, data analysis provided a clear understanding of the experimental influence on the improvement of PYD 12Cs, and helped determine whether the three experimental groups yielded statistically different results.

Table 2. Normality Test Results Kolmogorov-Smirnov[a]

	Statistic	df	Sig.
Pretest	.113	45	.187
Posttest	.089	45	.200*
Gain	.104	45	.200*

Table 3. Test of Homogeneity of Variances Result

		Levene Statistic	df1	df2	Sig.
Pretest	Based on Mean	2.463	2	42	.097
Posttest	Based on Mean	1.413	2	42	.255
Gain	Based on Mean	4.649	2	42	.015

Based on the descriptive data presented in Table 4, at the pretest stage, the average score for the group with results transferred into daily life was 308.60 with a standard deviation of 18.69, while the group without transfer into daily life had an average score of 302.13 with a standard deviation of 27.01. The control group had an average score of 306.47 with a standard deviation of 17.40. Overall, the average score for all groups at the pretest stage was 305.73, with a standard deviation of 21.14. At the posttest stage, the group with transfer into daily life had an average score of 335.00 (standard deviation of 14.05), showing an increase compared to their pretest scores. The group without transfer into daily life also showed an increase with an average score of 321.40 (standard deviation of 21.95). The control group showed an average score of 312.00 (standard deviation of 16.40), which also slightly increased compared to the pretest. The overall average score for the posttest stage was 322.80, higher than the average pretest score.

Furthermore, when looking at the gain (average score increase), the group with transfer into daily life had an average increase of 26.40 (standard deviation of 9.49), which was the highest increase among the groups. The group without transfer into daily life had an average increase of 19.27 (standard deviation of 8.65), while the control group showed the smallest increase with an average of 5.53 (standard deviation of 3.70). Overall, the average gain for all groups was 17.07 (standard deviation of 11.56). This data indicated that the intervention with transfer into daily life had a more significant impact on score improvement compared to the group without transfer and the control group. This was evident from both the average posttest scores and the gain values.

Table 4. Description of integration 12Cs measurement results

Descriptives									
		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Min	Max
						Lower Bound	Upper Bound		
Pretest	Transferred to daily life	15	308.60	18.69	4.83	298.25	318.95	256.00	331.00
	non-transferred into daily life	15	302.13	27.01	6.97	287.18	317.09	261.00	357.00
	Control Group	15	306.47	17.40	4.49	296.83	316.10	259.00	330.00
	Total	45	305.73	21.14	3.15	299.38	312.09	256.00	357.00
Posttest	Transferred to daily life	15	335.00	14.05	3.63	327.22	342.78	305.00	360.00
	non-transferred into daily life	15	321.40	21.95	5.67	309.25	333.55	289.00	369.00
	Control Group	15	312.00	16.40	4.23	302.92	321.08	272.00	338.00
	Total	45	322.80	19.82	2.95	316.85	328.75	272.00	369.00
Gain	Transferred to daily life	15	26.40	9.49	2.45	21.14	31.66	15.00	49.00
	non-transferred into daily life	15	19.27	8.65	2.23	14.48	24.06	6.00	34.00
	Control Group	15	5.53	3.70	0.96	3.48	7.58	0.00	13.00
	Total	45	17.07	11.56	1.72	13.60	20.54	0.00	49.00

Based on Table 5, the results of the Robust Tests of Equality of Means analysis showed that at the pretest stage, the results of the Welch and Brown-Forsythe tests indicated no significant differences between the group means as the significance values (Welch: $p=0.76$; Brown-Forsythe: $p=0.70$) were much greater than 0.05, indicating that the average pretest scores of all groups were not significantly different. At the posttest stage, the results of the Welch ($p<0.01$) and Brown-Forsythe ($p<0.01$) tests showed significant differences between the group means. The significance values less than 0.05 indicated that the intervention had different impacts on the groups, resulting in significantly different posttest scores.

Furthermore, in the gain analysis, the Welch ($p<0.01$) and Brown-Forsythe ($p<0.01$) tests also showed very significant differences between the groups. This indicated that the level of score increase (gain) among the groups had significant variations, with one group showing a higher increase compared to the others. Thus, there were significant differences in posttest and gain scores, indicating that the intervention had different impacts on the groups. The group with transfer into daily life showed a higher increase compared to the other groups.

Table 5. Results of the Robust Tests of Equality of Means Analysis

		Statistic[a]	df1	df2	Sig.
Pretest	Welch	0.28	2.00	27.26	0.76
	Brown-Forsythe	0.35	2.00	35.83	0.70
Posttest	Welch	8.49	2.00	27.22	0.00
	Brown-Forsythe	6.35	2.00	36.65	0.00
Gain	Welch	40.73	2.00	23.44	0.00
	Brown-Forsythe	28.34	2.00	32.12	0.00

a. Asymptotically F distributed.

Based on the results of the Multiple Comparisons using the Scheffe test, it showed that at the pretest stage, there were no significant differences between the groups. All significance values (p) were greater than 0.05, indicating that the initial average scores for all groups were not significantly different. This confirmed that the initial conditions of each group were equal. Next, for the posttest, the group with transfer into daily life vs. the group without transfer: The average score difference was 13.60, but not significant (p=0.12). The group with transfer into daily life vs. the control group: The average score difference was 23.00, which was significant (p=0.00). This indicated that the transfer into daily life had a significant impact compared to the control group. The group without transfer vs. the control group: The average score difference was 9.40, but not significant (p=0.36). At the posttest stage, the group with transfer into daily life showed significantly higher scores compared to the control group, but not significantly compared to the group without transfer.

Next, based on the Gain, the group with transfer into daily life compared to the group without transfer showed an average gain difference of 7.13, approaching significance (p=0.05). The group with transfer into daily life compared to the control group showed an average gain difference of 20.87, which was significant (p=0.00). The group without transfer vs. the control group: The average gain difference was 13.73, which was significant (p=0.00). Thus, the group with transfer into daily life showed significant improvement compared to the control group and approached significance compared to the group without transfer. Additionally, the group without transfer also showed significant improvement compared to the control group. These results support the effectiveness of transfer-based interventions into daily life in improving outcomes compared to the control group.

Table 6. Multiple Comparisons Result using the Scheffe test

Dependent Variable	Group Comparison	Mean Difference	Std. Error	Sig.	95% CI Lower Bound	95% CI Upper Bound
Pretest	Transferred vs Non-transferred	6.47	7.84	0.71	-13.42	26.35
Pretest	Transferred vs Control	2.13	7.84	0.96	-17.75	22.02
Pretest	Non-transferred vs Transferred	-6.47	7.84	0.71	-26.35	13.42
Pretest	Non-transferred vs Control	-4.33	7.84	0.87	-24.25	15.58
Posttest	Transferred vs Non-transferred	23.0	2.0	0.0	17.05	28.94
Posttest	Transferred vs Control	20.87	2.0	0.0	14.92	26.82
Posttest	Non-transferred vs Transferred	-23.0	2.0	0.0	-28.94	-17.05
Posttest	Non-transferred vs Control	-2.13	2.0	0.96	-7.08	2.82
Gain	Transferred vs Non-transferred	7.13	2.82	0.05	0.01	14.25
Gain	Transferred vs Control	20.87	2.82	0.0	14.72	27.02
Gain	Non-transferred vs Transferred	-7.13	2.82	0.05	0.01	14.25
Gain	Non-transferred vs Control	-13.73	2.82	0.0	-20.88	-6.58
Gain	Control vs Transferred	-20.87	2.82	0.0	-27.02	-14.72
Gain	Control vs Non-transferred	-13.73	2.82	0.0	-20.68	-6.58

Discussion

The findings of this study demonstrate that integrating the 12Cs model into volleyball training, especially when accompanied by the intentional transfer of values into daily life, significantly impacts the

development of Positive Youth Development (PYD). The group receiving the treatment with daily-life transfer (Group R1) showed a statistically significant improvement in their PYD scores compared to both the group without transfer (R2) and the control group (R3). The Scheffé test results confirmed that these improvements were statistically significant and practically meaningful, particularly in domains such as confidence, competence, and connection.

These outcomes have been supported by other studies that revealed that PYD adoption increased young athletes' chances for positive development and may be the starting point for a longer-term commitment to youth sports (Moore et al., 2021: Weiss et al., 2013). This was because PYD conducted through sports was a common approach used to promote life skills acquisition in youth participants (Kochanek & Erickson, 2020). Interventions with a PYD lens were often implemented through participation in sports programs to promote various physical or psychosocial benefits through sports (Bruner et al., 2023). Moreover, sports could make the best contributions to positive youth development (Danish et al., 2005).

Sports-based programs that emphasize the application of sports skills in real contexts can provide greater benefits for strengthening PYD. Participation in organized sports increases self-esteem, confidence, emotional regulation, prosocial behavior, bravery, and mood (Appelqvist-Schmidlechner et al., 2023). Additionally, the use of sports in youth development programs can transfer meaningful experiences that are highly productive for personal and social growth (Oh, 2024). Then, through sports-based programs, youth experience general joy, learning and new sports experiences, as well as a sense of belonging, respect, teamwork, and leadership, and apply them in daily life (Whitley et al., 2016). Learning transfer enhances the growth of life skills like conflict resolution, leadership, cooperation, and decision-making. This directly contributes to the main dimensions of PYD, such as competence, confidence, character, and social connections.

Sports-based programs that allow youth to learn, practice, and apply skills in real contexts tend to result in more sustainable positive behavior changes. This aligns with the PYD approach, which focuses on developing positive assets and active participation of youth in social environments (Newman, Magier, et al., 2021). Additionally, sports-based programs can protect children from negative influences and daily threats, and maximize adolescent development towards a brighter future (Marheni et al., 2022). Additionally, these programs give young people who face obstacles the opportunity to engage in activities that support long-term health, improve socioeconomic outcomes, improve quality of life, and encourage positive development (Warner et al., 2019). This study reaffirms that sports when delivered through structured, intentional frameworks like the 12Cs model, can serve as powerful platforms for youth development. The results strongly support the proposition from PYD literature that structured sports-based interventions, especially those that encourage the explicit transfer of life skills, can accelerate developmental gains.Goal-oriented youth sports programs can enhance intentional self-regulation and global self-esteem, facilitating ISR development, while simultaneously enabling the transfer of these skills from sports to other areas of life (W. Lee et al., 2021). This program can help develop skills such as playing well and becoming more active, relating well and improving social skills, coping well and becoming better problem solvers, and dreaming well and having clearer goals (O. Lee et al., 2017).

PYD programs with a transfer-to-daily-life approach may encourage participants to practice sports values (fair play, teamwork, and responsibility) in daily life, impacting social relationships and community involvement. These results support the importance of investing in sports programs designed to transfer skills to daily life. Such programs can be strategic tools to support youth capacity building at community and national levels. It is important to recognize that the structure and delivery of sports programs significantly impact their quality and the developmental outcomes for youth (Weiss et al., 2013; Marttinen et al., 2019). Programs operating in various environments use different strategies to align with community needs, including program design changes, recruitment, joint participation, and parental investment (Wegner et al., 2022).

Additionally, it relates to the relationship between program members in facing challenges in terms of travel, resource limitations, and conflicting goals (Camiré et al., 2013; Palheta et al., 2021). Both separately and in conjunction, staff and parental/caregiver assistance can forecast youth life skills and transfer of learning outcomes (Newman et al., 2020). Community-based sports PYD programs should provide life skills development and transfer activities, train staff in facilitative coaching techniques, and work with important social agents like coaches, teachers, and parents/caregivers in a variety of learning and transfer contexts in order to maximise learning (Newman & Anderson-Butcher, 2021).

These results provide strong evidence that sports-based programs designed with a transfer-to-daily-life component have great potential to support PYD. These programs help young people acquire important skills, attitudes, and values to face various risk factors in their communities (Petitpas et al., 2017). By helping youth apply sports skills in daily life, these programs can strengthen social competence, increase self-confidence, build social connections, and support positive character development. Such programs are not only learning tools but also strategic investments in youth development. The following are crucial components of physical activity and youth development program design: matching program objectives to students' individual needs; carrying out project activities outside of the regular school setting; working with students to choose activities, establish objectives, and evaluate progress; cultivating good relationships between mentors, leaders, and students; giving young people the chance to work together and support one another; and establishing organised pathways for ongoing participation in extra projects or activities (Armour et al., 2013).

Conclusions

This research highlights the significant impact of integrating the 12Cs model into volleyball training programs, especially when emphasizing the transfer of life skills into everyday contexts. By adding dimensions of commitment, consistency, comprehensiveness, collaboration, and competition to the existing PYD framework, the 12Cs model offers a stronger and more holistic strategy to support PYD. The research results show that interventions designed to transfer learned skills to real-world applications result in substantial improvements in key PYD outcomes, such as increased social competence, confidence, stronger social connections, and positive character development. This approach goes beyond traditional training models that lack a focus on skill transfer, making it a promising way to optimize youth development through sports.

The research highlights the unique role of volleyball, one of the most popular sports in Indonesia, as a medium to promote holistic youth development. More than just physical exercise, these sports-based programs have proven to be effective educational platforms to equip youth with essential life skills, enabling them to face challenges, contribute to their communities, and build a sustainable future. The 12Cs framework reflects the evolution of PYD strategies by addressing contemporary challenges faced by youth and adapting to the diverse contexts in which they live. By providing structured opportunities for learning, reflection, and application, this approach ensures that young participants can internalize and translate their experiences into meaningful behaviors.

The potential of such programs can be maximized, and future implementation should focus on adjusting program content to meet the unique cultural, social, and developmental needs of specific communities, equipping coaches and mentors with the skills to design and conduct training sessions that intentionally develop life skills and their real-world application, strengthening partnerships with parents, educators, and community leaders to create an ecosystem that supports sustainable youth development, and evaluating the long-term effects of skill transfer to ensure the lasting impact of PYD interventions.

This research contributes to the growing evidence that sports-based programs are powerful tools for social development. When designed intentionally and based on comprehensive frameworks like the 12Cs, these programs go beyond their role as recreational activities to become strategic investments in building a resilient, competent, and socially engaged future generation. Although this research provides valuable insights into the integration of the 12Cs framework in volleyball training programs, it is not without limitations. The relatively small sample size of 45 participants divided into three groups limits the statistical power of this study and may not fully reflect the diversity of youth experiences. Short-term assessments through pretest and posttest measurements also raise questions about the sustainability of observed PYD improvements over time, as longitudinal data were not collected.

Another limitation lies in the potential variability in program implementation, as reliance on trained facilitators can introduce inconsistencies that affect program outcomes. The focus of the research on quantitative outcomes also potentially overlooks qualitative insights into participants' experiences, which could enrich the understanding of the intervention's impact. These limitations highlight the need for future research to expand the scope and enhance methodological rigor, ensuring broader application and deeper understanding of PYD through sports-based interventions.

Future research should explore the long-term impacts of the 12Cs PYD intervention to determine whether the observed life skill gains are retained over time and continue to influence behavior beyond the training period. Longitudinal studies involving follow-up evaluations at 6 and 12 months post-intervention would be instrumental. Moreover, researchers are encouraged to apply the 12Cs framework to other sports disciplines (e.g., basketball, martial arts, athletics) to examine its adaptability and effectiveness across different team dynamics and cultural settings. Comparative studies across urban vs. rural populations or male vs. female athletes could also reveal differential impacts and inform more inclusive program designs. In terms of methodology, future studies may benefit from mixed-methods approaches that combine quantitative measures with qualitative insights, such as interviews, journals, and focus groups, to capture the depth and nuances of life skill development through sports.

Acknowledgements

This article is part of a doctoral dissertation in Department of Sport Education Postgraduate Programs carried out by the first author at the Universitas Pendidikan Indonesia, Indonesia. We would like to express our deepest thanks to the Education Financing Service Center (PUSLAPDIK) and the Education Found Management Institute (LPDP) of the Republic of Indonesia for providing the Indonesian Education Scholarship (BPI) so that the first author was able to process this academic degree. And also Universitas PGRI Silampari, Faculty of Economics and Business, Physical Education, Health and Recreation Study Program as the author's Home Base Which supports developing the author's personal competence as a lecturer.

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