



FUTURITY
OF SOCIAL SCIENCE

DOI: <https://doi.org/10.57125/FS.2024.06.20.05>

How to cite: Pushkina, N. (2024). Developing Social Skills Through Rhythmic Gymnastics in American sport. *Futurity of Social Sciences*, 2(2), 79-102. <https://doi.org/10.57125/FS.2024.06.20.05>

Developing Social Skills Through Rhythmic Gymnastics in American sport

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Received: February 17, 2024 | **Accepted:** May 28, 2024 | **Published:** June 5, 2024

Abstract: The research is aimed at substantiation of the role of rhythmic gymnastics in development of athletes' social skills in the context of American sports academy. The study focuses on the achievement of the following tasks: description of the advantages of rhythmic gymnastics as a sport discipline; outlining social skills that are developed through rhythmic gymnastics; explaining internal and external factors influencing the development of social skills through rhythmic gymnastics; evaluation of technologies/teaching methods/techniques used to develop social skills through rhythmic gymnastics. To investigate the development of social skills through gymnastics, the mixed-methods case study research was applied. The sample involved three groups of participants: pupils of Vitrychenko Gymnastics Academy (Illinois, USA); coaches and instructors; and parents of young athletes. The findings showed that rhythmic gymnastics enhances not only physical strength but also various social skills. They include: discipline, time management, responsibility, teamwork, communication, networking, patience, leadership, social confidence, and adaptability. the special attention was paid towards the factors influencing the development of social skills through rhythmic gymnastics. It was found that they can be divided into internal and external ones. Internal factors refer to personal motivation, self-confidence, emotional intelligence, self-discipline, adaptability, cognitive development, personal values, and previous experiences. External factors

concern coaching style, team dynamics, parental support, competition environment, peer influence, institutional support, and constructive feedback. The methodology in gymnastics was described in details. On the basis of coaches' preferences, training programs, and classroom observations it was found that team-buildings exercise, demonstration, role-playing, video analysis, peer coaching, group discussion, virtual competition, online learning, VR-based exercises, gamification, and digital mentorship are widely used to develop social skills through rhythmic gymnastics. The results can be implied to recognize the social benefits of rhythmic gymnastics and to development of more efficient curriculum to enhance pupils' social competencies as well as academic achievements.

Keywords: factors, educational process, technology, training program, coach.

Introduction

Currently, the promotion of national well-being is acknowledged as a domestic priority and country's value internationally (Wilson et al., 2022). It concerns various aspects of a nation's health, including physical, mental, and social well-being; and it is a crucial condition for fostering a successful society. Well-being enhances a quality of life for citizens, contributes to productive workforce, reduces healthcare costs, and enhances the quality of life for citizens. It also promotes social cohesion, and reduces economic and social challenges (Malm, Jakobsson, & Isaksson, 2019).

Considering this, governments in many countries focus on establishment of initiatives of sustainable development, stability, higher standard of living and improvement of health protection. Sport plays an important role in health protection by promoting physical activity. Regular participation in sports enhances cardiovascular health, strengthens muscles and bones, improves flexibility and coordination, and helps regulate body weight. Sports also contribute to mental health by reducing stress, anxiety, and depression; it increases cognitive function as well. Socially, regular sport activities build a sense of community, encourage teamwork, and build social connections.

In the USA, sport is promoted extensively through a well-established infrastructure that includes educational institutions, professional leagues, and community organizations (Bopp, Vadeboncoeur & Danso, 2023; Rutledge, 2023). Schools introduce various sports to pupils through obligatory physical education classes and extracurricular sports programs. High schools and colleges have different athletic programs overseen by the National Collegiate Athletic Association. Professional sports leagues significantly contribute to the promotion of sports through widespread media coverage, making physical exercises a central part of American culture.

Additionally, community and recreation centers across the country provide accessible facilities and organized sports programs for people of all ages. Government campaigns, such as the President's Council on Sports, Fitness & Nutrition, the Let's Move! Initiative, the National Youth Sports Strategy further support the promotion of sports, highlighting the importance of an active lifestyle for overall health and well-being and making it a part of the USA public diplomacy (Dubinsky, 2023).

Sports academies, started in the late 18th century, are presently highly popular in the USA, especially among young athletes seeking to enhance their skills and pursue competitive sports at higher levels. These academies offer specialized training programs led by professional coaches for future professional athletes. The first American gymnastics schools were established in the 19th

century, following the influx of German immigrants who brought with them a tradition of gymnastics known as Turnen (Wieser & Krüger, 2019).

One of the earliest and most influential gymnastics schools was founded by Friedrich Jahn, often referred to as the “Father of Gymnastics,” who opened the first Turnplatz (gymnastics field) in 1825 in Cincinnati, Ohio. Jahn's gymnastics philosophy emphasized physical fitness, national pride, and democratic ideals, and his influence helped popularize gymnastics as a form of physical education in the USA (Dubinsky, 2023; Wieser & Krüger, 2019).

Rhythmic gymnastics, a unique sport that combines elements of ballet, gymnastics, and dance, plays a vital role in physical fitness, skill development, and artistic expression. It enhances strength, flexibility, balance, and coordination, contributing to overall fitness and athletic performance (Bopp et al., 2023). Rhythmic gymnasts perform exercises using one or more instruments, such as a hoop, ball, clubs, ribbon, or rope, with a focus on grace, precision, artistry, and musical interpretation (Wieser & Krüger, 2019). Rhythmic gymnastics is known for its expressive and artistic nature, requiring athletes to synchronize their movements with the music while showcasing their agility and creativity. Being a part of the Summer Olympic Games since 1984, rhythmic gymnastics is a popular sport in the USA, with tens of thousands of participants of all ages across the country.

According to the recent findings, rhythmic gymnastics enhances not only physical strength but also social skills. Through group training and performances, rhythmic gymnasts learn teamwork, cooperation, and communication (Malm et al., 2019). Deineko, Shevchuk, & Arkhypova (2020) indicate that rhythmic gymnastics competitions provide the opportunities for social interactions among gymnasts to help to build confidence, leadership skills, and the ability to work effectively in a team, contributing to their overall personal development.

In addition, it was found that rhythmic gymnastics is an important topic for sports experts and scholars due to its unique combination of artistic expression and athletic performance. Scholars are interested in the physiological and biomechanical aspects of rhythmic gymnastics, studying how athletes achieve such high levels of flexibility, strength, and coordination (Armada Martínez et al., 2021). The sport's emphasis on aesthetics and creativity also makes it a subject of study in fields such as sports psychology, where researchers explore the mental aspects of performance (Deineko et al., 2020).

Research Problem

Rhythmic gymnastics is a competitive sport in which individuals or groups perform choreographed routines incorporating rhythmic and expressive movements with one or more apparatus (Wahyuniati et al., 2023). The scientific works demonstrate that gymnastics requires a high level of physical fitness, including strength, flexibility, and endurance (Vesela Ivanova, 2022). Bobo-Arce, Sierra-Palmeiro, Fernández-Villarino, and Fink (2021) describe the importance of regular training to develop the attributes, which are essential for executing complex skills and routines. Some scholars mention technical proficiency of gymnasts because they should perform at a high level in competitions (Deineko et al., 2020; Chiriac, Teodorescu & Bota, 2021). Mental firmness, ability to perform under pressure, and discipline are fundamental requirements for success in rhythmic gymnastics as well (Armada Martínez et al., 2021).

The analysis of methodology of teaching rhythmic gymnastics revealed two approaches: conventional and innovational (Latpova, 2023; Cui, 2023). The conventional approach is

characterized by a structured and systematic method of skill development. Coaches focus on teaching fundamental skills, such as body movements, jumps, leaps, and apparatus handling (Grygus et al., 2023). Conventionally, training is progressive, with gymnasts learning advanced techniques gradually as they master basic skills. Training is often organized around a structured curriculum, ensuring that gymnasts develop a comprehensive set of skills during the educational process. It was also found that when the conventional approach is applied, gymnasts receive specific training for each apparatus used in rhythmic gymnastics (Deineko et al., 2020).

At the same time, the innovative approach to teaching rhythmic gymnastics involves incorporating new and creative teaching methods to enhance skill development and performance (Cui, 2023). Wu and Liu (2021) showed that this approach suggests using information and communication technologies, such as video analysis or virtual reality (VR) instruments, to provide gymnasts with visual feedback and improve their understanding of technique. They may also use gamification techniques, turning skill development into interactive and engaging games (Wahyuniati et al., 2023). The innovative approach encourages gymnasts to explore their creativity and individuality contributing to the choreography and music selection. This approach also emphasizes cross-training and interdisciplinary approaches, incorporating elements from dance, yoga, and other disciplines to enhance gymnasts' physical and mental readiness (Marais et al., 2023).

It is worth mentioning that the special attention in the scientific literature is devoted to the problems of development of sportsmen's competences during the lessons of rhythmic gymnastics (Deineko et al., 2020; Latpova, 2023; Vesela Ivanova, 2022). Golenkova, Kravchuk, Sanzharova, Potop, and Filon (2023) insist that the discipline builds a variety of skills that enhance both athletic performance and personal growth. The findings demonstrate that it improves flexibility through extensive stretching and dynamic movements (Sterkowicz-Przybycień & Fundament, 2020).

Moreover, rhythmic gymnastics increases strength through a complex of special exercises (Golenkova et al., 2023). Coordination and balance are also key skills formed by means of rhythmic gymnastics, as gymnasts perform intricate movements that require precise control of their bodies (Latpova, 2023). In the research of C. Silva, L. Silva, Santos, Goldberg, Ramos, and Venancio (2019) it is stated that rhythmic gymnastics fosters creativity and artistic expression; it allows gymnasts to explore and convey emotions through their performances.

According to Mulyaningsih, Susanto, Sukoco, Suryobroto, and Ilmah (2023), rhythmic gymnastics improves cognitive skills because the brain is involved in complex problem-solving and coordination tasks. The sport activities require gymnasts to memorize and execute the movements that are based on precise timing, spatial awareness, and synchronization with music. This enhances memory and the ability to concentrate. Golenkova, Kravchuk, Sanzharova, Potop, and Filon (2023) explain that practice or competition require adaptability, critical thinking and decision-making skills that is why the training programs includes complex combination moves, performance analysis, and synchronization exercises. The artistic component of rhythmic gymnastics, which involves interpreting music and expressing emotions through movement, stimulates creativity and cognitive flexibility (Silva et al., 2019).

Therefore, the combination of physical and mental challenges in rhythmic gymnastics contributes to the development of a wide range of gymnasts' competences necessary for successful professional activity. In this context, it is important to reveal the peculiarities of developing social skills through rhythmic gymnastics because it provides the knowledge how athletic activities

enhance interpersonal abilities, cooperation, and emotional intelligence, which are essential for personal development and social adaptation of gymnasts.

Research Focus

The theoretical analysis of the problem related to the peculiarities of developing social skills through rhythmic gymnastics shows that it is integral component of scientific discourse as evidenced by numerous studies that explore the impact of sports and physical activities on social development (Golenkova et al., 2023; Mulyaningsih et al., 2023). A number of scholarly works examine how rhythmic gymnastics, with its emphasis on teamwork, communication, and collaboration, enhances social skills such as cooperation, empathy, and leadership (González-Valero et al., 2020). At the same time, it was found that some academic discussions describe the role of rhythmic gymnastics in promoting cultural exchange and social integration (Martín-Rodríguez et al., 2024).

As a result, the topic is studied as an interdisciplinary research and concerns sports science, psychology, and education (Yunus et al., 2024). These studies contribute to a broader understanding of how specific sports activities can influence and enhance social interactions and personal growth. This proves that rhythmic gymnastics is not just a physical exercise oriented towards development of strength and flexibility but holistic and enriching activity that aims at comprehensive development of young athletes.

Obviously, there is a need to carry out the detailed analysis of advantages that rhythmic gymnastics bring for personal development of gymnasts and reveal what social skills it forms. The outcome will contribute to introduction of effective training program oriented towards physical, mental, and social development of sportsmen.

Research Aim and Research Questions

The research aim is to substantiate the role of rhythmic gymnastics in development of athletes' social skills in the context of American sports academy.

Accordingly, the research is to answer the following research questions:

- 1) What are the advantages of rhythmic gymnastics as a sport discipline on the basis of stakeholders' perceptions?
- 2) What social skills are developed through rhythmic gymnastics?
- 3) What internal and external factors influence the development of social skills through rhythmic gymnastics in American sports?
- 4) What technologies/teaching methods/techniques are used to develop social skills through rhythmic gymnastics?

Literature Review

The development of social skills through sport is a broad topic presenting a wide spectrum of aspects and approaches (Mulyaningsih et al., 2023). In psychology, the focus is on how sports activities impact social and emotional development, including studies on teamwork, leadership, and communication skills (Armada Martínez et al., 2021). Here, one key aspect is the interaction with peers and authority figures, such as coaches and officials. These interactions provide opportunities for athletes to practice communication skills and develop empathy through understanding different perspectives (González-Valero et al., 2020).

Team sports, in particular rhythmic gymnastics, emphasize cooperation and teamwork, teaching individuals to work collaboratively towards a common goal (Kwon, 2024). This encourages the development of interpersonal skills, such as effective communication, conflict resolution, and leadership, as athletes learn to overcome the complexities of group dynamics (Cotterill, Loughhead, & Fransen, 2022).

Besides, the cultivation of emotional intelligence through sports is presented in the works of Rodriguez-Romo, Blanco-Garcia, Diez-Vega, and Acebes-Sánchez (2021). Athletes often experience a range of emotions during training and competition, including excitement, frustration, and disappointment. Learning to manage these emotions in a constructive manner is important for social interactions during competitions and in daily life. Sports help individuals develop emotional regulation skills and provide the opportunities for building self-awareness and emotional resilience (Millán-Sánchez et al., 2023).

From an educational perspective, sports play a vital role in the development of social skills among students (Silva et al., 2019). Participation in sports improves teamwork and cooperation, as individuals learn to work together towards a common goal (Malm et al., 2019). This collaborative effort promotes the development of communication skills, as athletes must effectively convey ideas to other members of the team (González-Valero et al., 2020). According to Golenkova, Kravchuk, Sanzharova, Potop, and Filon (2023), sports provide the opportunities to learn leadership skills, increase motivation to regular training, and improve self-consciousness. Sport science indicates that the development of social skills is a multifaceted process influenced by various factors (Vesela Ivanova, 2022).

The recent findings are oriented towards the possibilities of sport to reduce stress and anxiety, improve mood, and enhance self-esteem (Dimitriadou et al., 2022; Kovács et al., 2022). Also, sport science recognizes the impact of sports on cognitive development, which is closely tied to social skills (Silva et al., 2019). Physical activities are related to improved cognitive abilities, such as decision-making, problem-solving, and memory. The cognitive demands of sports, require athletes to possess the skills of strategizing, analyzing opponents, and adapting to changing situations.

With regard to rhythmic gymnastics, it not only promotes physical fitness but also plays a significant role in the development of various social skills. A number of works emphasize that rhythmic gymnastics is oriented towards the development of teamwork (González-Valero et al., 2020; Malm et al., 2019). Armada Martínez, Cavas-García, Díaz-Suárez, and Martínez-Moreno (2021) state that another important social skill developed through rhythmic gymnastics is communication.

Gymnasts must effectively communicate with their coaches and peers to understand choreography, receive feedback, and make some adjustments within the framework of training program. This enhances their verbal and non-verbal communication skills as well as the ability to apply extralinguistic tools. It was found that the sport discipline promotes leadership skills, develops confidence, decision-making abilities, and the ability to inspire and influence others (Kovács et al., 2022). Moreover, rhythmic gymnastics enhances social awareness and empathy through interactions with teammates and coaches (González-Valero et al., 2020).

A number of studies refer to teaching methodology in gymnastics which includes the strategies and approaches used by coaches and instructors to effectively teach gymnastics skills and techniques to athletes (Deineko et al., 2020). This methodology uses various principles and practices aimed at the optimization of educational process and enhancement of skill development in gymnasts

(Mizomov & Ochilova, 2022). The findings show that teaching methodology in gymnastics applied progression when coaches break down complex skills into smaller, more manageable components and gymnasts are able to master each component before progressing to more advanced skills (Chiriac et al., 2021).

Another important aspect, described by Starzak, Biegajło, Nogal, Niżnikowski, Ambroży, Rydzik, and Jaszczur-Nowicki (2022) is skill acquisition. It deals with the situation when a variety of teaching techniques are used to increase the efficiency of educational process (Suherman, Julia, & Supriyadi, 2024). This also provides the opportunities for repetition and practice (Bobo-Arce et al., 2021).

Other teaching techniques include: demonstration, verbal instruction (Ballabio, Perego, & Wang, 2023), video analysis (Oktariyana & Oktariyani, 2020), and feedback (Lamošová & Kyselovičová, 2022). Demonstration is a technique where a coach or an experienced gymnast performs a skill or movement to show learners the correct form, technique, and execution (Ballabio et al., 2023). Verbal instruction is used to explain the steps and techniques involved in performing gymnastics skills (Starzak et al., 2022). At the same time, coaches use video analysis to record and review gymnasts' performances. This allows to see the performance clearly and identify areas for improvement (Mödinger, Woll, & Wagner, 2022). Video analysis is also be used to compare performances with elite gymnasts to learn from their techniques (Oktariyana & Oktariyani, 2020). Feedback is an important component of the educational process since it helps gymnasts reinforces correct techniques and successful performances. Some researchers differentiate interactive feedback, involving a dialogue between coach and gymnasts (Fernandes et al., 2022).

Currently, many scholars pay the attention towards technology-assisted training in gymnastics (Cardinali et al., 2022; Mazurova et al., 2022). It involves using advanced tools and digital technologies to enhance the learning and performance of gymnasts (Çimen Polat, Çağın, & Sarol, 2024). This technology suggests using video analysis to review performances in slow motion, providing a detailed examination of techniques and identifying areas for improvement.

The implementation of VR tools helps to create the efficient educational environment, simulating competition settings or offering visual feedback on movements (Geisen, Fox, & Klatt, 2023). Motion capture systems track gymnasts' movements in real-time, providing precise data on body positions and mechanics. These systems are very effective in preventing injuries among gymnasts (Armstrong & Relph, 2021).

In addition, wearable technology, such as sensors and smart watches, monitors physiological data like heart rate and muscle activity, and helps coaches adjust training programs to individual needs of athletes (Paganelli et al., 2022; Sabry et al., 2022). The findings prove that incorporating these innovative technologies within the educational process makes gymnastics training more efficient, data-driven, and personalized, ultimately enhancing performance and safety (Bortoleto & Schweizer, 2024; Tao & Li, 2023). This once again confirms about the necessity to study the problem of development of social skills though rhythmic gymnastics and present the most effective teaching technologies sand techniques.

Research Methodology

General Background

To investigate the development of social skills through gymnastics, the mixed-methods case study research was applied that involves an in-depth, contextual analysis of a single event, or situation (Evans et al., 2021; Priya, 2021). The case study is widely used in sports science (Judge et al., 2021). The methodology was selected on the basis of specific criteria, particularly (1) focus on small group of individuals allowing for a detailed and in-depth analysis of their experiences. In the context of gymnastics, this approach enabled the researchers to examine how social skills develop in specific athletes during the certain period of time; (2) longitudinal perspective meaning the case study examines the development of social skills over an extended period.

This helped researchers observe the progression of social skill development in gymnasts from their initial involvement in the sport to more advanced stages after educational interventions; (3) contextual understanding emphasizing the context in which social skill are developed such as the coaching style, team dynamics, or competitive environment; (4) holistic approach considering internal and external factors that affect the development of social skill.

The case study aimed at the explanation of the development of social skills through gymnastics in American sport was organized as a systematic and thorough investigation in four stages. The first stage - research design - articulated the research questions and developed the research plan. Afterwards the literature review was conducted to examine the existing research and theoretical frameworks related to teaching rhythmic gymnastics, particularly the techniques used to develop social skills.

Then the data was collected and analyzed through various methods such as interviews, observations, document and audio-visual materials analysis, surveys as well as statistical analysis. The fourth stage deals with the results interpretation enabled synthesizing the outcomes and draw the conclusions about the research questions. Further, the coherent narrative was developed to prepare the recommendations for improvement of training program for gymnasts, in particular in Vitrychenko School.

Sample and Participants

The sample involved three groups of participants. The first group included 26 pupils of Vitrychenko Gymnastics Academy (Illinois, USA) aged between 8 and 15. The second group consisted of 8 coaches and instructors of the school that teach the following subjects: Basic gymnastics skills, Apparatus handling, and Choreography. The third group concern 12 parents of children who study at the Vitrychenko Gymnastics Academy.

Table 1 shows the demographic data of the survey participants. When conducting the research, the researchers addressed the ethical considerations to ensure the safety, rights, and well-being of all the participants. It is worth mentioning that the informed consent from the parents were obtained to considers the children's rights.

Table 1*Demographic data of the survey participants*

	Category	Number
First group		
Age	9 years	2
	10 years	4
	11 years	5
	12 years	4
	13 years	4
	14 years	5
	15 years	2
Gender	Female	26
	Male	0
Reason to go in for rhythmic gymnastics	Physical activity	13
	Making friends	4
	Popularity of gymnastics	3
	Recommendation of parents	6
TOTALLY		26 pupils
Second group		
Age	26-35 years	1
	36-45 years	2
	46-55 years	3
	over 55 years	2
Subject taught	Basic gymnastics skills	3
	Apparatus handling	2
	Choreography	3
Educational experience	less than 5 years	1
	6-10 years	4
	11-15 years	2
	15-20 years	1
	over 20 years	0
Professional experience	less than 5 years	2
	6-10 years	4
	11-15 years	2
	15-20 years	0

	over 20 years	0
	TOTALLY	8 coaches and instructors
Third group		
Age	30-35 years	3
	35-40 years	3
	41-45 years	4
	over 46 years	2
Gender	Female	10
	Male	2
Reason to send a child to rhythmic gymnastics classes	Health	3
	Development of coordination and motor skills	1
	Social interaction skills	2
	Participation in competitive activities	3
	Involvement of a child in professional sport	3
	TOTALLY	12 parents

Source: author's own development.

Instruments and Procedures

The case study research employed a variety of methods to gather the detailed data about the development of social skills through rhythmic gymnastics. To answer the first question the researchers applied one-on-one and group interviews with participants to study their experiences, perceptions, and behaviors towards rhythmic gymnastics. Also, direct observation of first group participants was used to gather the data on children's behaviors, interactions, as well as contextual factors of the educational environment. To answer the second research question semi-structured interviews was used. this type of interview involved open-ended questions to explore social skills formed at the lesson of rhythmic gymnastics, including teamwork, communication, empathy, confidence, discipline, motivation, and cooperation. This approach ensured comprehensive understanding of personal experiences and perceptions related to social skills development through the sport.

To answer the third research question the following methods were used: document analysis, structured questionnaire, and analysis of audio-visual materials. For instance, document analysis related to the review of the existing documents, such as training curriculum, coaches' reports, parents' emails, and official records of pupils' performances. Structured questionnaire helped to collect the quantitative data from three groups of participants and the methods allowed to compare the answers and outline the accurate list of internal and external factors influencing the development of social skills through rhythmic gymnastics.

At the same time, the analysis of audio-visual materials concerned the work with photographs, videos, and audio recordings to provide the additional information about the educational process. To answer the fourth research question the group interview was used to explore the efficiency of

teaching technologies and methods used within the educational process. It is important to state that each of these methods contributes to building a detailed picture of the case on development of social skills through rhythmic gymnastics as well as they allowed researchers to explore its complexities and find applicable solutions.

Data Analysis

In the case study research analyzing the development of social skills through rhythmic gymnastics, statistical analysis was utilized to interpret the data collected from various sources, such as interviews, observations, questionnaires, documents analysis, etc. The descriptive statistics enabled the researchers to summarize the overall changes in social skills like teamwork, communication, and emotional intelligence as well as indicate the influence of internal and external factors upon the development of social skills through rhythmic gymnastics. The statistical analysis contributed to validation of the findings and provided a detailed report how rhythmic gymnastics contributes to social skill development.

Results

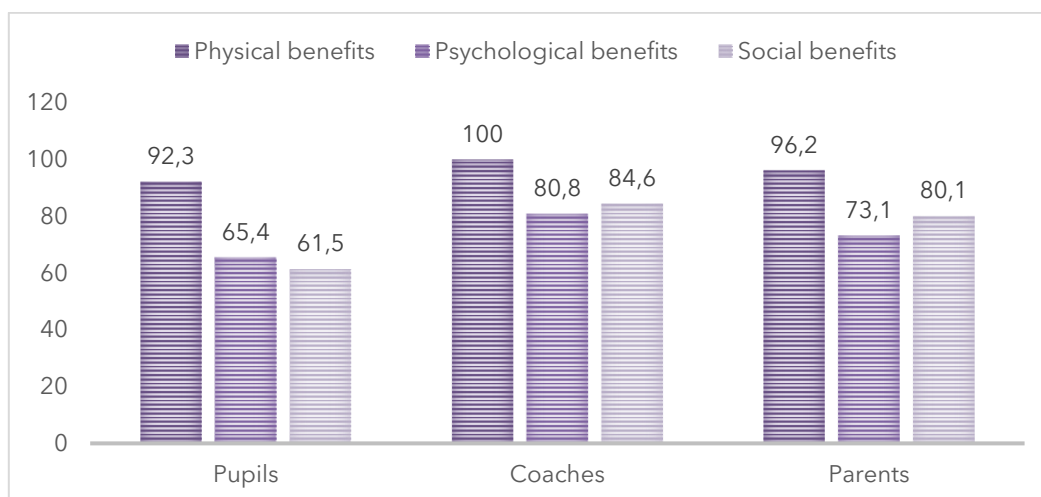
Advantages of rhythmic gymnastics as a sport discipline

The results showed that lessons on rhythmic gymnastics help pupils to develop physical, psychological, and social skills. All three groups of participants agree that rhythmic gymnastics brings physical benefits for pupils such as flexibility, strength, coordination, balance, endurance, and body awareness. At the same time, 65,4 % of pupils, 80,8 % of coaches and 73,1 % of parents think that the lessons of rhythmic gymnastics have psychological effect, particularly the gymnastics exercises help pupils develop self-confidence, emotional regulation, creativity, and self-expression.

Considering social skills, 61,5 % of pupils, 84,6 % of coaches, and 80,1 % of parents are confident that rhythmic gymnastics is beneficial. They revealed that the training process improves teamwork and collaboration, peer support and friendship, respect for competition rules, social integration. Also, it enhances leadership, communication, and decision-making abilities. Figure 1 shows the analysis of advantages that rhythmic gymnastics brings as a sport discipline.

Figure 1

Advantages of rhythmic gymnastics as a sport discipline



Source: author's own development.

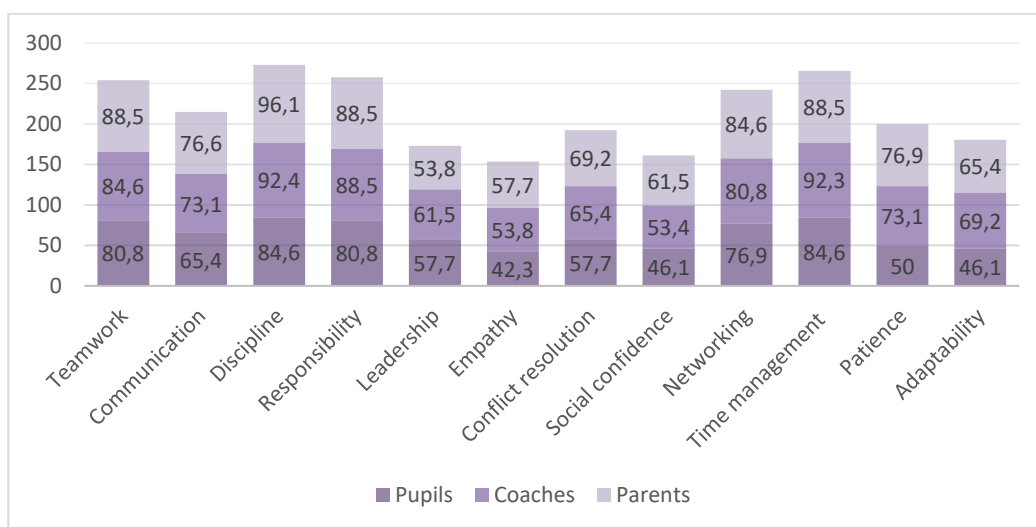
Social skills developed through rhythmic gymnastics

According to the case study research, rhythmic gymnastics promotes a number of social skills. Firstly, 96,1 % of parents, 92,4 % of coaches, and 84,6 % of pupils think that it develops discipline. 88,5 % of parents, 92,3 % of coaches, and 84,6 % of pupils consider that the lessons enhance time management. At the same time, 88,5 % of parents and coaches, and 80,8 % of pupils find rhythmic gymnastics helps to develop responsibility. Other social skills include teamwork, communication, networking, patience, leadership, social confidence, and adaptability.

Comparatively fewer participants (57,7 % of parents, 53,8 % of coaches, and 42,3 % of pupils) think that rhythmic gymnastics contributes to the development of empathy. Therefore, the study showed that participation in rhythmic gymnastics leads to the development of social skills, making it a comprehensive activity for personal and social growth. Figure 2 demonstrates the analysis of social skills developed through rhythmic gymnastics according to stakeholders' perceptions.

Figure 2

Social skills developed through rhythmic gymnastics



Source: author's own development.

Factors influencing the development of social skills through rhythmic gymnastics

The findings showed that there are two categories of factors influencing the development of social skills through rhythmic gymnastics. Internal factors refer to the personal attributes, traits, and individual characteristics of the gymnasts that affect their ability to interact effectively with others. They include: personal motivation, self-confidence, emotional intelligence, self-discipline, adaptability, cognitive development, personal values promoting positive social behaviors, and previous experiences in social and team environments that shape how gymnasts treat new social situations, form and maintain relationships within the team.

At the same time, external factors concern the environmental and situational elements outside the individual that impact their ability to develop and enhance social skills. The research revealed the following external factors influencing the development of social skills through rhythmic gymnastics: coaching style, team dynamics, parental support, competition environment, peer influence, institutional support, and constructive feedback from coaches, parents, and peers. Table 2 shows the analysis of factors influencing the development of social skills through rhythmic gymnastics.

Table 2*Factors influencing the development of social skills through rhythmic gymnastics*

Factors	Pupils	Coaches	Parents
Internal factors			
Personal motivation	65,4	96,1	88,5
Self-confidence	73,1	80,8	80,8
Emotional intelligence	53,8	76,9	84,6
Self-discipline	76,9	73,1	73,1
Adaptability	46,1	61,5	61,5
Cognitive development	53,8	73,1	65,4
Personal values	42,3	57,7	50,0
Previous experience	65,4	73,1	73,1
External factors			
Coaching style	80,8	84,6	88,5
Team dynamics	88,5	88,5	92,3
Parental support	88,5	96,1	92,3
Competition environment	76,9	92,3	69,2
Peer influence	73,1	76,9	73,1
Institutional support	76,9	69,2	84,6
Feedback	84,6	96,1	76,9

Source: author's own development.

Technologies/teaching methods/techniques used to develop social skills through rhythmic gymnastics

It was explained that technologies/teaching methods/techniques to teach rhythmic gymnastics concern a range of pedagogical methods and teaching strategies oriented towards the development of skills in this sport. This pedagogical category focuses on the systematic and structured approach to teaching rhythmic gymnastics, ensuring effective learning and skill formation among athletes. To study the use of different technologies/teaching methods/techniques, coaches' preferences were evaluated. The cumulative answers were generalized, where (+) means that the method is applied within the educational process and (-) means that the method is applied rarely or is not introduced while teaching rhythmic gymnastics at the school.

To verify the answers, training programs analysis and classroom observations were used. The case study research revealed that coaches prefer using team-buildings exercise, demonstration, role-playing, video analysis, peer coaching, group discussion, virtual competition, gamification, and digital mentorship. They consider these methods contribute to formation of social skills among pupils significantly. At the same time, the analysis of training programs showed that team-buildings exercise, demonstration, video analysis, peer coaching, group discussion, online learning, gamification, VR-based exercises, and interactive whiteboards are widely applied. And classroom observations proved that coaches and instructors use team-buildings exercise, demonstration, role-

playing, peer coaching, video analysis, interactive workshops, group discussion, gamification, and VR activities. Table 3 presents the analysis of technologies/teaching methods/techniques used to develop social skills through rhythmic gymnastics.

Table 3

Technologies/teaching methods/techniques used to develop social skills through rhythmic gymnastics

Technologies/teaching methods/techniques	Coaches' preferences	Training program analysis	Observation
Team-building exercises	+	+	+
Demonstration	+	+	+
Role-playing	+	-	+
Peer coaching	+	+	+
Video analysis	+	+	+
Interactive workshop	-	-	+
Group discussion	+	+	+
Online learning	-	+	-
Virtual competition	+	-	-
Gamification	+	+	+
VR tools	-	+	+
Digital mentorship	+	-	-
Interactive whiteboard	-	+	-

Source: author's own development.

Also, the strength and weaknesses of these technologies/teaching methods/techniques were analyzed to evaluate their efficiency and relevance for the educational process. It was found that a single method does not contribute to the development of social skills significantly. The participants insist that all technologies/teaching methods/techniques should be used in combination. Table 4 shows strengths and weaknesses of technologies/teaching methods/techniques used to develop social skills through rhythmic gymnastics.

Table 4

Strengths and weaknesses of technologies/teaching methods/techniques

Technologies/teaching methods/techniques	Strengths	Weaknesses
Team-building exercises	1) Promotion of collaboration; 2) Development of communication skills; 3) Building trust and strengthening team cohesion;	1) Time-consuming activity; 2) Requires additional resources; 3) Creates unequal participation.

	<ul style="list-style-type: none"> 4) Enhancement of leadership abilities; 5) Increasing motivation; <p>Formation of conflict resolution skills.</p>	
Demonstration	<ul style="list-style-type: none"> 1) Using visual tools to enhance understanding; 2) Using immediate feedback; 3) Increasing motivation and inspiration. 	<ul style="list-style-type: none"> 1) Creates unrealistic expectations among young athletes; 2) Limited interaction; 3) Does not cater to individual learning styles or preferences.
Role-playing	<ul style="list-style-type: none"> 1) Allows to actively engage in simulated social situations; 2) Skills practice in the structured educational environment; 3) Encouragement of critical thinking and decision-making; 4) Building confidence. 	<ul style="list-style-type: none"> 1) Using role stereotypes; 2) Depends on prior experience.
Peer coaching	<ul style="list-style-type: none"> 1) Encouragement of teamwork; 2) Enhancement of communication skills; 3) Facilitation of learning; 4) Fostering team culture. 	<ul style="list-style-type: none"> 1) Lack of experience or expertise among peers; 2) Potential misunderstandings; 3) Evaluation challenges.
Video analysis	<ul style="list-style-type: none"> 1) Allows to see various techniques and movements objectively; 2) Enhancement of self-awareness; 3) Improvement of technical skills; 4) Objective evaluation. 	<ul style="list-style-type: none"> 1) Technical challenges or poor video quality; 2) Limited context of team dynamics.
Interactive workshop	<ul style="list-style-type: none"> 1) Active participation of pupils; 2) Formation of a number of social skills, including communication, teamwork, leadership, and conflict resolution; 3) Provide practical experience in simulated or real-life scenarios; 4) Immediate feedback; 5) Encouragement of teamwork, cooperation, and mutual support among gymnasts. 	<ul style="list-style-type: none"> 1) Requires additional resources such as materials, space, and facilitator expertise; 2) Evaluation challenges.
Group discussion	<ul style="list-style-type: none"> 1) Promoting communication skills; 2) Facilitation of active listening; 3) Enhancement of critical thinking; 	<ul style="list-style-type: none"> 1) Requires conflict management skills among facilitators;

	4) Encouragement of collaboration.	2) Does not provide skill practice.
Online learning	1) Providing access educational materials; 2) Organization of self-paced learning.	1) Technical challenges; 2) Lack of immediate feedback; 3) Security and privacy concerns.
Virtual competition	1) Elimination of geographical barriers; 2) Encouragement to improve the performance under competition conditions; 3) Providing detailed feedback on gymnasts' performances; 4) Encouragement of innovative approaches to competition.	1) Technical challenges; 2) Absence of live audience; 3) Differences in equipment availability.
Gamification	1) Enhancement of engagement; 2) Practicing social skills such as teamwork, communication, leadership, and problem-solving in a fun and interactive manner; 3) Introduction of competitive elements.	1) Distracts gymnasts from focusing on essential aspects of skill development in rhythmic gymnastics.
VR tools	1) Simulation of real-world scenarios; 2) Creation of safe and controlled educational environment; 3) Introduction of personalized learning; 4) Increasing motivation.	1) Technical complexity; 2) Physical limitations; 3) Lack of social interaction.
Digital mentorship	1) Flexible schedule; 2) Individualized approach; 3) Facilitation of ongoing learning; 4) Creation of peer networking.	1) Dependency on technology; 2) Limited personal connections; 3) Possible time zone differences.
Interactive whiteboard	1) Facilitation of visual learning experiences; 2) Organization of collaboration through group activities, brainstorming sessions, and problem-solving tasks;	1) Dependency of technology; 2) Physical interaction limitations; 3) Content overload.

- 3) Real-time feedback;
- 4) Increasing motivation;
- 5) Formation of digital literacy.

Source: author's own development.

Therefore, rhythmic gymnastics as a sport discipline significantly contributes to the development of social skills, including teamwork, communication, discipline, responsibility, communication, time management, and emotional intelligence. Understanding the specific social benefits of rhythmic gymnastics help coaches and instructors optimize training programs and select the most efficient technologies/teaching methods/techniques, create positive educational environment, and promote holistic development of athletes. Obviously, the outcomes substantiate the broader impacts of sports on the development of social skills, improving training programs that oriented towards educational and personal growth of athletes.

Discussion

While studying the problem, it was defined that this discipline is a competitive sport where athletes individually or in groups perform choreographed routines incorporating rhythmic and expressive movements with one or more apparatus (Wahyuniati et al., 2023). The analysis of educational, psychological and sports science research showed that rhythmic gymnastics enhances not only physical strength but also social skills. It enhances teamwork, cooperation, and communication (Malm et al., 2019), builds confidence, leadership skills, and the ability to work effectively in a team (Deineko et al., 2020; Santos-Rosa et al., 2022). Other works proved that the sport develops creativity, innovation, and cognitive flexibility (Endrawan et al., 2023; Silva et al., 2019).

According to the contemporary scholars who studied the development of social skills through various sports, including rhythmic gymnastics, the problem is understood from psychological, educational and sports science perspectives. For instance, the psychological findings state that sports activities impact social and emotional development (Armada Martínez et al., 2021). Regular physical exercises contribute to the development of interpersonal skills, stress management, and flexibility (Cotterill et al., 2022; Oliveira et al., 2021). The special attention was paid towards the cultivation of emotional intelligence (Rodríguez-Romo et al., 2021) and emotional regulation (Millán-Sánchez et al., 2023).

Education experts indicate that social skills are formed within the educational process by means of various technologies, teaching methods, and techniques (Cui, 2023). The effective lessons enhance collaboration (González-Valero et al., 2020), decision-making, and problem-solving (Oktariyana & Oktariyani, 2020; Sierra-Palmeiro et al., 2019). The positive educational process contributes to the increase of motivation to regular training among pupils (Golenkova et al., 2023). And sport science shows that the development of social skills through rhythmic gymnastics is a complicated process influenced by various factors (Vesela Ivanova, 2022).

The survey results showed that lessons on rhythmic gymnastics help pupils to develop physical, psychological, and social skills. In this context, social skills were investigated in details and the findings demonstrated that they include discipline, time management, responsibility, teamwork, communication, networking, patience, leadership, social confidence, and adaptability. Besides, emotional regulation and emotional intelligence was one of the skills studied but comparatively fewer participants think that rhythmic gymnastics contributes to the development of empathy. Consequently, it was decided that rhythmic gymnastics is an important discipline since it able to

develop not only physical strengths and endurance, but a number of social skills that are important for future athletes in their successful competitive activity.

Regarding the factors influencing the development of social skills through rhythmic gymnastics, it was discovered that they can be divided into internal and external ones. Internal factors refer to the personal attributes, traits, and individual characteristics of the gymnasts that affect their ability to interact effectively with others. They include: personal motivation, self-confidence, emotional intelligence, self-discipline, adaptability, cognitive development, personal values promoting positive social behaviors, and previous experiences in social and team environments. External factors concern the environmental and situational elements outside the individual that impact their ability to develop and enhance social skills. They refer to coaching style, team dynamics, parental support, competition environment, peer influence, institutional support, and constructive feedback from coaches, parents, and peers. Unfortunately, in modern sports science literature the problem of factors influencing the development of social skills through rhythmic gymnastics is not sufficiently represented, especially factors that are applicable in the American context.

The methodology in gymnastics includes the strategies and approaches used by coaches to effectively teach sports skills and techniques to athletes (Deineko et al., 2020). The findings demonstrate that in gymnastics the methods of progression (Chiriac et al., 2021) and skill acquisition (Suherman et al., 2024) are widely used. Other teaching techniques include: demonstration, verbal instruction (Ballabio, Perego, & Wang, 2023), video analysis (Oktariyana & Oktariyani, 2020), and feedback (Lamošová & Kyselovičová, 2022). Besides, technology-assisted training in gymnastics is getting more spread among sports schools to improve the educational process (Cardinali et al., 2022; Mazurova et al., 2022). Involvement of various advanced tools and digital technologies enhances the learning and performance of gymnasts significantly (Çimen Polat et al., 2024).

The case study research was also oriented towards the analysis of technologies/teaching methods/techniques to teach rhythmic gymnastics. On the basis of coaches' preferences, training programs, and classroom observations it was found that the following technologies/teaching methods/techniques are used: team-buildings exercise, demonstration, role-playing, video analysis, peer coaching, group discussion, virtual competition, online learning, VR-based exercises, gamification, and digital mentorship. The examination of their strength and weaknesses proved that a single method does not contribute to the development of social skills and it is recommended to apply them combined to enhance the educational process.

Conclusions and Implications

Rhythmic gymnastics is a competitive sport in which individuals or groups perform choreographed routines incorporating rhythmic and expressive movements with one or more apparatus. It was revealed that gymnastics requires a high level of physical fitness, including strength, flexibility, and endurance. And regular training is essential for executing complex skills and routines. Studying the problems of development of sportsmen's competences during the lessons of rhythmic gymnastics, it was found that rhythmic gymnastics builds a variety of skills that enhance both athletic performance and personal growth. It improves flexibility, increases strength, coordination and balance. Also, rhythmic gymnastics fosters creativity and artistic expression, improves cognitive skills, enhances adaptability, critical thinking and decision-making skills. Participation in the sports improves teamwork and cooperation, develops communication skills, increase leadership and motivation. In addition, some works describe the possibilities of rhythmic gymnastics to reduce stress and anxiety, improve mood, and enhance self-esteem.

The development of social skills through rhythmic gymnastics depends on two groups of factors - internal and external. Internal factors (personal motivation, self-confidence, emotional intelligence, self-discipline, adaptability, cognitive development, personal values promoting positive social behaviors, and previous experiences in social and team environments) refer to the personal attributes, traits, and individual characteristics of the gymnasts that affect their ability to interact effectively with others. External factors (coaching style, team dynamics, parental support, competition environment, peer influence, institutional support, and constructive feedback from coaches, parents, and peers) concern the environmental and situational elements outside the individual that impact their ability to develop and enhance social skills.

Analyzing teaching methodology in gymnastics it was found that it includes various principles and practices aimed at the optimization of educational process and enhancement of skill development in gymnasts. The recent scientific works show that teaching methodology in gymnastics uses progression skill acquisition methods. These enable gymnasts to learn movements gradually and provide the opportunities for repetition and practice. At the same time, other techniques were described. They include: demonstration, verbal instruction, video analysis, and feedback. The special attention was paid towards technology-assisted training in gymnastics involving advanced tools and digital technologies. Currently, video analysis, VR tools, motion capture systems, and wearable technologies, such as sensors and smart watches, are widely used to adjust the training programs to individual needs of athletes and build their educational trajectories.

The results on the development of social skills through rhythmic gymnastics in the American context can be implied in different aspects. Firstly, recognizing the social benefits of rhythmic gymnastics can lead to the increased support of gymnastics academies and centers. In additions, the findings can be applied while educational policies or initiative prioritizing social development are being designed. It will help to integrate physical activities like rhythmic gymnastics within the curriculum to enhance pupils' social competencies as well as academic achievements. Obviously, the promotion of rhythmic gymnastics as a means to develop social skills can contribute to its broad social benefits. For instance, increasing empathy, cooperation, and leadership through sports can lead to the development of more community-oriented youth. Further, this can impact school environments positively, reducing bullying, and promoting inclusivity. In the United States, where the society is diverse, rhythmic gymnastics can serve as a valuable tool to educate patience, cultural awareness, and respect among young individuals.

Suggestions for Future Research

Further research should focus on several aspects to enhance the understanding of the research problems and its practical application. Firstly, it is necessary to conduct the analysis of long-term effect of rhythmic gymnastics on the development of social skills. These studies should examine how the sport influences pupils' social behaviors, academic performance, and personal development.

Additionally, the research should explore the specific social skills impacted by rhythmic gymnastics, such as leadership, conflict resolution, and empathy, providing a clearer picture of the sport's benefits. It can be resulted in elaboration of more targeted educational interventions during the lessons, including the creation of technology-assisted educational environment. The examination of innovative technologies, such as video analysis and VR in gymnastics training will help to keep pupils engaged and motivated. Additionally, it is necessary to conduct the comparative studies between traditional teaching techniques and innovative methods. Especially, it is important to understand how these methods affect different age groups.

Another important aspect for future research is the investigation of the role of coaching styles in the development of social skills among athletes. The evaluation of different coaching styles in rhythmic gymnastics is important because the approach selected influences the social, emotional, and physical development of gymnasts as well as motivates pupils to regular exercises. Actually, coaching styles range from authoritative to supportive and can influence how athletes perceive challenges, train, participate in competitions, and interact with peers. The analysis of various coaching methods can help identify the most effective strategies for the development of social skills such as teamwork, communication, and leadership.

Acknowledgements

None.

Conflict of Interest

None.

Funding

The author received no funding for this research.

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