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# **АДАПТАЦІЙНІ МОЖЛИВОСТІ ДІТЕЙ ТА МОЛОДІ**

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**Адаптаційні** можливості дітей та молоді: збірник наукових праць XV Міжнародної науково-практичної конференції, присвяченої 105-річчю з дня заснування кафедри фізичної реабілітації, біології і охорони здоров'я та 60-річчю створення лабораторії функціональної діагностики імені професора Т. М. Цонєвої Державного закладу «Південноукраїнський національний педагогічний університет імені К. Д. Ушинського» (Одеса, 19–20 вересня 2024 року, Ч. 2) / голов. ред. А. І. Босенко. Одеса: Університет Ушинського, 2024. 328 с.

У збірнику наукових праць конференції представлені роботи широкого кола фахівців з сучасних проблем фізичного виховання і спорту. В статтях розкриваються медико-біологічні, фізіолого-гігієнічні, психолого-педагогічні та валеологічні основи розширення адаптаційних можливостей дітей та молоді, зміцнення їх здоров'я, а також питання підготовки фахівців за відповідними напрямками.

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**Stepanova V.S., Godziev M.A., Gushcha S.G., Plakida O.L.**

**APPLICATION OF INNOVATIVE TECHNOLOGIES IN THE  
SYSTEM OF HABILITATION OF CHILDREN WITH PSYCHOLINGUISTIC  
DELAYED DEVELOPMENT**

***Annotation.** In recent years, Ukraine has seen an increase in the total number of children with delayed psycholinguistic development. Gaming systems are becoming increasingly popular as a method of therapy for these conditions, but require evidence-based medical justification. The work is devoted to the approbation of the use of the interactive system "BRYOLIGHT" in the complex of rehabilitation of children with a delay in psycholinguistic development.*

***Elena-Andreea Trandafirescu,***

***Vladimir Potop***

**THE HIDDEN GAME IN WOMEN'S FOOTBALL: A COMPARATIVE  
ANALYSIS OF PERCEPTUAL, COGNITIVE, PSYCHOMOTOR, AND  
PHYSICAL SKILLS BY POSITIONAL ROLE**

***Abstract***

*The purpose of this paper was to compare perceptual, cognitive, psychomotor, and physical skills among female football players in relation to their field positional role. The study involved 20 players, with a mean age of 15.2 years. The findings offer a detailed understanding of role-specific attributes and provide coaches with a comprehensive tool for assessing players' skills, complementing traditional visual observations.*

**Key words:** *player characteristics, skills, positional role, women soccer, female football.*

## **Introduction**

Women's football is football, and the sport is dedicated to leading a transformative change for both women's football and the role of women within the sport, as noted by Nadine Kessler, UEFA's head of women's football (UEFA, 2019). In this dynamic realm of sport, psychology should be recognized for its pivotal role in enhancing athletic performance and guiding athletes toward their optimal potential. In team sports players must navigate rapidly changing situations by perceiving, processing stimuli, making quick decisions, and executing actions accurately. Skills play an important role in elevating women's football, and holistic development is increasingly recognized as essential, addressing both physical and mental aspects of performance (Beavan, 2021; Bergmann, Gray, Wachsmuth & Höner, 2021; Roca, Ford & Memmert, 2020).

The expression "hidden game", as employed by the authors in the title of this paper, refers to fundamental personal skills that are believed to significantly influence a player's effectiveness and success. These core abilities are believed to interact in complex ways that could influence performance and warrant continued investigation. Skilled soccer players that excel at recalling and recognizing patterns of play is largely due to their advanced perceptual skills, such as visual processing, which enable them to anticipate and react effectively to the fast-paced dynamics of the game (Ehmann et al., 2022; Kumar & Arumugam, 2020; Williams, 2000). Cognitive abilities and psychomotor skills are essential for performing complex tasks under high-pressure conditions (Bergmann, Gray, Wachsmuth & Höner, 2021; Paśko, Śliz, Paszkowski, Zieliński, Polak, Huzarski & Przednowek, 2021; Lisenchuk et al., 2019). Additionally, physical attributes are foundational to overall athletic performance. By examining these components in detail, this analysis aims to offer a comprehensive understanding of the diverse skill set necessary for success in women's football. It contributes to the

broader discussion on the development and achievements of female athletes, while also addressing the significant gap between cutting-edge research and its practical application in sports coaching, as noted by Farrow, Baker, and MacMahon (2023, p. 1).

## **Material and Methods**

### **Participants**

Participants were drawn from the women's football teams of ACS Champions Football Club FC Argeș, located in Argeș County, Romania. Parental consent was obtained prior to initiating the research, in line with the Declaration of Helsinki. Additionally, approvals from both the coaches and the club management were secured before beginning the testing. The research received approval from the Ethics Committee of the Doctoral School of Physical Education and Sport Science (ID: 14/21.06.2024), National University of Science and Technology Politehnica Bucharest, University Center Pitești, Pitești, 110254 Romania.

### **Research Design**

The research, conducted in August 2024, aimed to estimate the development of participants' core personal skills. The goal was to identify common aspects that could offer insights into player profiles. The AAB (Self-Assessment of Basic Abilities) questionnaire was used as the data collection tool to evaluate perceptual, cognitive, psychomotor, and physical skills. This instrument facilitates the estimation of fundamental personal abilities through self-reporting methods, based on E.A. Fleishman's model as outlined in the "Handbook of Human Abilities" (Fleishman & Reilly, 1992). The AAB Questionnaire features 52 items that describe and exemplify each of the 52 aptitudes from the Fleishman model, as well as 4 control items designed to gauge the tendency to exaggerate. For each item, respondents should thoroughly examine the aptitude description and the provided examples to evaluate their own performance accurately. The participants then estimate, through self-reporting, the development level of each aptitude on a five-point scale (**PsihoProfile, 2023**). By aggregating the self-reported ratings, the AAB questionnaire facilitates the estimation of developmental levels across four general skill categories (scored from 1 to 10) and

14 specific skill categories (scored from 1 to 5). These categories include perceptual skills (visual and auditory), cognitive skills (verbal, creative, reasoning, mathematical, memorization, spatial, and attentional), psychomotor skills (fine manipulation, movement control, speed, and reaction time), and physical skills (physical strength and coordination). The test was administered by a licensed psychologist. Instructions were provided before subjects received the questionnaire and a link with the test was distributed to the subjects via e-mail. All females football players (N=20) were requested to provide their opinions in an entirely independent manner. The average completion time for the online questionnaire is approximately 20 minutes. Results were structured and tabulated. ANOVA, Levene Test, Descriptive statistics, and Cronbach's Alpha were computed using DATAtab statistics software (DATAtab Team, 2023). To test the hypothesis, the level of significance was set at 0.05.

## Results

The mixed model ANOVA showed that there was a significant difference between the groups of the first factor Perceptive Skills, Cognitive Skills, Psychomotor Skills and Physical Skills in relation to the dependent variable,  $p = .009$  (Table 1).

**Table 1 – Analysis of Variance (ANOVA) Results**

		Sum of squares	df	Mean Square	F	p	$\eta^2$	$\eta^2_p$
Perceptive Skills, Cognitive Skills, Psychomotor Skills, Physical Skills		44.24	3	14.75	4.28	.009	0.08	0.21
Player position		28.44	3	9.48	0.53	.667	0.05	0.09
RM Factor x Player position		43.62	9	4.85	1.41	.212	0.08	0.21

Also, the model showed that there was no significant difference between the groups of the second factor Player position in relation to the dependent variable,  $p =$

.667 and it showed that there was no interaction between the two variables Player position and Perceptive Skills, Cognitive Skills, Psychomotor Skills and Physical Skills in relation to the dependent variable,  $p = .212$ . The effect size for skill categories is moderate and suggests that about 21% of the variance in these skills is attributable to differences among the skill types. The analysis reveals no significant main effect of player position. The effect size for player position is small, indicating that player position accounts for only 9% of the variance in skills is accounted for by the player's position.

Levene's Test was used for further analysis (Table 2). A test statistic (F) of 1.86 is obtained, with degrees of freedom 15 and 64. The p-value was 0.045.

**Table 2 – Levene Test Results**

Test	F	df1	df2	p
Levene's Test (Mean)	1.86	15	64	.045

Typically, a p-value threshold of 0.05 is used to determine statistical significance. Since the p-value of 0.045 is less than the conventional alpha level of 0.05, it indicates statistically significant evidence to reject the null hypothesis of equal variances. This suggests that the variances among the groups are likely different.

Descriptive statistical data provided a comprehensive breakdown of specific skills categorized by player position (**Figure 1**).

**Goalkeepers**, age mean **14.33**, excel in spatial awareness, with a perfect mean score of **5**, which is crucial for covering the goal and tracking the ball. Their visual skills, with a mean of **4.67**, enable them to anticipate shots and monitor the game effectively. They also have strong memorization skills, scoring **4.33**, which helps them recall strategies and make quick decisions. However, they could benefit from improving their rational decision-making, as they have a mean score of **2**, and enhancing verbal communication skills, where they score **2.67**. Improving attention skills, with a mean of **2.67**, could also help reduce errors during the game.



**Midfielders**, age mean **15.11**, show impressive physical strength, scoring **4.11**, which allows them to excel in physical contests and maintain endurance throughout the match. They have good physical coordination, with a mean of **3.78**, aiding in dribbling and passing. Their movement control, scoring **3.22**, enables them to maneuver effectively in tight spaces. However, they could improve their spatial awareness, as they score **2.11**, to better anticipate movements on the field. Enhancing verbal skills, with a mean of **2.44**, could improve team organization, and there is also room for improvement in creativity, where they score **2.89**.

**Defenders**, age mean **15.17**, are very strong physically, with a mean score of **4.33**, allowing them to withstand challenges and protect the goal. Their auditory skills are good at **3.33**, helping them react quickly to instructions.

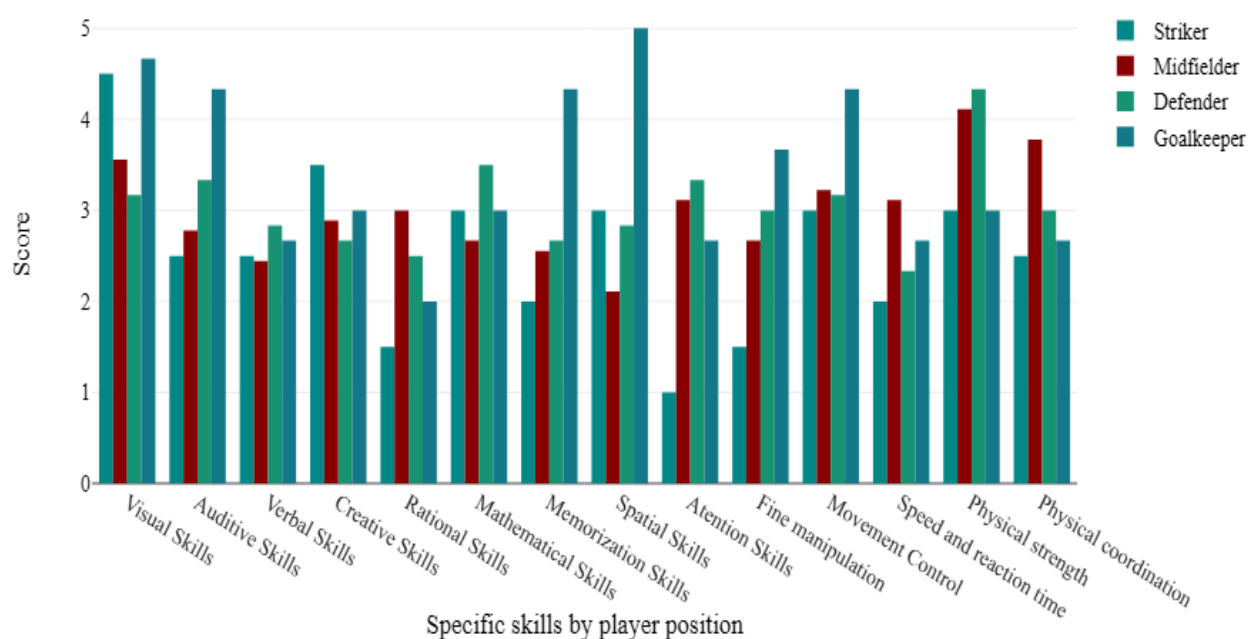


Figure 1. Specific skills by player position

They also possess good mathematical skills, scoring **3.5**, which helps in anticipating and intercepting plays. However, defenders could enhance their rational decision-making, with a mean score of **2.5**, and improve speed and reaction time, where

they score **2.33**. Additionally, there is potential for more creativity in initiating offensive plays, as they score **2.67** in creative skills.

**Strikers**, age mean **17**, have excellent visual skills, scoring **4.5**, which allows them to identify and seize scoring opportunities. They also display good creativity with a mean of **3.5**, helping them develop unique ways to break down defenses. Their mathematical skills, with a score of **3**, enable them to calculate angles and timing effectively. However, strikers could work on fine manipulation skills, as they score **1**, to better control the ball. Improving rational decision-making, with a mean of **1.5**, can help them choose the best scoring options under pressure. Additionally, they could enhance their movement control, where they also score **1.5**, to maintain balance and agility in dynamic situations.

The Cronbach's Alpha value was calculated based on 19 items (age, general skills categories, specific skills categories). Cronbach's Alpha numerical values range from 0 to 1 (**Streiner, 2003**), with higher values representing better reliability. The Cronbach's Alpha value was 0.89, indicating high internal consistency among the items in our data set.

## Discussion

Given the growing popularity and participation in women's football globally, there is a significant demand for scientific research focused on female players across different age groups, nationalities, competitive levels, and positional roles (Martínez-Lagunas, Niessen, & Hartmann, 2014). The variations in our study highlight the influence of both role-specific demands and developmental stage on the overall skill set of young female football players (Beavan, Spielmann, Altmann & Härtel, 2023). Overall, while the athletes generally exhibit strong foundational skills, particularly in areas such as physical strength, visual acuity, and spatial awareness, there appears to be potential for improvement in cognitive and fine motor skills across several positions. Addressing these areas could contribute to a more balanced and effective team performance. To enhance the accuracy of this findings were cross-checked and confirmed by the psychologist in consultation with two coaches from the women's

football team from which the participants were selected. The outcome of our study accurately reflected the actual conditions and requirements on the field.

### **Limitations of the study**

The small study sample may limit the generalizability of the findings, highlighting the need for a larger and more diverse sample to validate and extend these results. The results of the AAB Questionnaire, which rely on subjective self-reports, are recommended to be used as a guideline and should be cross-referenced with other relevant information. Additionally, limitations associated with the software used in this study, as noted by its creators, must be acknowledged.

### **Conclusion**

The finding in this article can serve as a reflective heuristic to educate about the specific skill sets associated with various playing positions in women football and to gain insights into their strengths and areas for improvement. This detailed analysis of positional roles could be beneficial to athletes and coaches by aligning more closely with training objectives and potentially leading to a shorter adaptation period as players transition into specific positions. By providing a more comprehensive understanding of players' skills, the study complements traditional visual observations used by coaches, potentially enhancing coaching effectiveness and supporting the development of training approaches that better address both individual and team needs.

For future research, it may be important to consider expanding sample sizes, diversifying the age range of participants, and integrating both the personal experiences of athletes and sports staff (through qualitative interviews, participative observations, and focus groups) and quantitative performance measures to enhance the accuracy and generalizability of the findings in real-world contexts. Furthermore, longitudinal studies and a focus on psychological factors could provide deeper insights into skill development and its impact on performance in women's soccer. Also, we concur with the recommendations concerning the objective evaluation of the role of emotional intelligence (EQ) in women's soccer, as discussed by Popovych et al. (2023), and its impact on performance. This holistic approach may help in developing a well-being

ecosystem for women's football, thereby ensuring the sustainability of the game and enhancing players' overall well-being, longevity, and performance (FIFA, 2023).

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## **ПРИХОВАНА ГРА В ЖІНОЧОМУ ФУТБОЛІ: ПОРІВНЯЛЬНИЙ АНАЛІЗ СПРИЙНЯТТЯ, КОГНІТИВНИХ, ПСИХОМОТОРНИХ ТА ФІЗИЧНИХ НАВИЧОК ЗА ПОЗИЦІЙНОЮ РОЛЮ**THE HIDDEN GAME IN

*Анотація.* Мета цієї роботи полягала в тому, щоб порівняти перцептивні, когнітивні, психомоторні та фізичні навички жінок-футболісток у зв'язку з їх позиційною роллю на полі. У дослідженні взяли участь 20 гравців із середнім віком 15,2 року. Отримані результати пропонують детальне розуміння рольових атрибутів і надають тренерам повний інструмент для оцінки навичок гравців, доповнюючи традиційні візуальні спостереження.

**Ключові слова:** характеристика гравця, майстерність, позиційне амплуа, жіночий футбол, жіночий футбол.

*Наукове видання*

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