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CONTRIBUTIONS TO THE PERFORMANCE PROFILE OF ROMANIAN WOMEN'S RUGBY SEVENS PLAYERS

DOCTORAL THESIS ABSTRACT

Doctoral supervisor:

PROF. UNIV. DR. HABIL. *Adrian COJOCARIU*

PhD Student:

Mihaela-Gabriela BALAN (căs. SURMEI-BALAN)

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INTRODUCTION

Rugby sevens is a sport based on avoiding direct contact, where players employ various techniques such as kicking the ball, evading opponents, and sprinting in order to advance on the field and score points. Performance in this sport depends on key motor abilities, including muscular strength, speed, quick reaction time, and agility.

Monitoring body composition and conducting standardized assessments of physical fitness are essential for the optimal development of physical performance and for adapting to the specific demands of each playing position. The unique characteristics of rugby sevens, such as the short 7-minute halves, result in a high-intensity game with very brief one-minute intervals between halves. This sport demands dynamic movement, concentration, and rapid decision-making, such as passing the ball, advancing with it, or executing actions like diving or kicking to score or maintain possession.

Rugby sevens involves significant energy expenditure. Although it may appear to be a violent sport, it is distinguished by its dynamism and appeal, making it one of the most captivating contact sports. Its global growth is evidenced by the popularity of tournaments such as the World Rugby Sevens Series and Rugby Europe, which have attracted considerable interest.

The game combines individual physical effort with team collaboration to achieve performance goals, requiring a mix of physical and technical skills. Rugby consists of short, intense sequences involving sprints, tackles, and ball recoveries, interspersed with periods of moderate intensity, such as walking or standing still. Due to this alternation in intensity levels, the bioenergetic demands are met through both aerobic and anaerobic metabolic processes, and recovery capacity is essential for optimal performance.

At the female level, rugby sevens remains insufficiently explored, particularly in the case of junior players. However, in Romania, the number of junior teams has increased significantly due to the need to establish a national team. Participation in international U18 competitions has highlighted the importance of proper selection and training for achieving high performance. Players must possess speed, strength, endurance, and technical skills to handle and pass the ball safely—elements that are all part of the mixed-effort nature of the sport and crucial for match success.

International testing for female rugby sevens players correlates anthropometric data with physical performance metrics, thereby optimizing training and performance at all levels. Early athlete development plays a crucial role in achieving future performance outcomes. Analyzing the biomotor characteristics of Romanian athletes, both junior and senior, may contribute to the creation of a unified performance profile for female rugby players.

For effective athlete selection, a detailed profile should be defined, supported by rugby sevens-specific testing for women. These measures would allow for the identification and development of each player's potential, ultimately improving the selection and training process.

Keywords: women's rugby, biomotor profile, abilities, speed, strength, psychological factors

PART I- THEORETICAL FOUNDATION OF THE RESEARCH TOPIC

THEORETICAL CONCLUSIONS

Studies in the specialized literature emphasize the importance of athlete development and conditioning from an early age, supporting the idea that early training significantly influences future sports performance. Due to the specific characteristics of rugby sevens, athletes must possess a broad range of motor skills, enabling the body to withstand the physical demands of the game.

With the increasing popularity of women's rugby sevens, specialists have begun to examine this field in greater detail, as it is a rapidly developing sport. Consequently, there is a growing focus on analyzing specific biomotor characteristics to shape a performance profile for female rugby sevens players, thereby enhancing existing findings in the academic literature.

At the international level, it has been observed that testing and measurement protocols for female rugby sevens players follow a consistent pattern. The assessed parameters typically include sprinting speed, agility, upper body strength, lower body strength, and endurance.

Thus, it can be concluded that, based on the analysis of specialized studies, sports science professionals place strong emphasis on correlating anthropometric data with physical testing results in order to optimize training and achieve high-level athletic performance.

Studies on the physical and motor development of junior and senior female athletes have highlighted that physical effort should be adapted according to individual characteristics and age-specific particularities and should be directed toward achieving high performance. In the 14–18 age category, various studies have emphasized the benefits of participating in physical and sports activities during this developmental period, focusing on the harmonious physical development of the body, the optimization of general motor capacity, and the maintenance of an optimal state of health. Moreover, this period is essential for fostering an active lifestyle by cultivating an interest in the independent and systematic practice of physical exercise.

To achieve notable performances, rugby players must attain outstanding results in areas such as sprinting speed, upper and lower limb strength, and directional change ability. An important consideration is the correlation between performance in these tests, which serves as a key indicator in achieving elite performance levels.

Data collected from the specialized literature indicate that sprinting speed, acceleration capacity, and the ability to react quickly to game-specific changes are determining factors for

performance. These abilities can often make the difference between success and failure in competitive contexts.

Speed may serve as an important criterion for player selection even at the early stages of junior development. This is supported by the fact that, in rugby sevens, the number of players is reduced, and each player is required to cover a larger playing area.

With regard to senior-level female rugby players, the number of studies addressing psychological parameters in the academic literature is limited, especially when compared to studies focused on male players. Furthermore, studies examining junior female players are virtually nonexistent, both nationally and internationally.

The psychological parameters identified in the literature as having an impact on performance in female rugby players include: type of motivation, level of self-confidence, concentration, adaptability and self-regulation capacity, personality type, pre- and in-competition emotions, mental resilience, and the level and type of anxiety.

PART II – PERSONAL CONTRIBUTIONS

CHAPTER 3. PRELIMINARY STUDY – IDENTIFYING BIOMOTOR PARAMETERS IN FEMALE RUGBY SEVENS PLAYERS

THE PREMISES OF THE RESEARCH

The international development of women's rugby sevens requires the adaptation of national player selection strategies, emphasizing the importance of assessing biomotor potential in order to identify the most effective training methods for optimizing sports performance (Muller et al., 2022; Zabaloy et al., 2021).

The international literature on women's rugby highlights the critical role of a rigorous and evidence-based selection process as a key prerequisite for achieving elite performance. The optimization of biological potential, along with the early development of technical and tactical skills during the formative stages of junior athletes, are decisive factors in the long-term progression of athletic performance. In this context, such a perspective provides the theoretical and practical foundation for our research endeavor (Scantlebury et al., 2022; Robyn et al., 2021; Burger, 2020).

Further research is needed regarding the anthropometric and motor adaptations of female rugby players, using standardized test batteries. These should explore the relationship between motor abilities and competitive performance, contributing to the improvement of talent identification and development processes (Freitas et al., 2022; Scantlebury et al., 2022).

In the pursuit of physical performance in rugby, existing research highlights the essential role of sprinting speed, reaction time, and agility. These motor abilities are crucial for the effective execution of game-related tasks and directly impact both adaptability and the execution of technical-tactical actions (Martinaș et al., 2022; Loturco et al., 2019; Freitas et al., 2022).

PURPOSE, OBJECTIVES, TASKS, VARIABLES AND HYPOTHESES OF THE RESEARCH

The aim of this research was to develop a biomotor profile of female rugby players from the Moldova region and to identify optimal methods for evaluating motor and morphological parameters.

The statistical analysis was conducted according to the research variables, as summarized in Table 3.1.

Table 3. 1 Research Variables

INDEPENDENT VARIABLES	
Athletes' age category	
DEPENDENT VARIABLES	
Somatic Indices	Motor Indicators
Height (cm)	Lower limb explosive strength (cm, kg)
Body weight (kg)	Upper limb explosive strength (cm, kg)
Fat mass (kg)	Sprinting speed (s)
Skeletal muscle mass (kg)	Complex upper limb reaction time (ms)
BMI (kg/m²)	

Hypotheses of the preliminary Study

The hypotheses underlying the present research were as follows:

Hypothesis 1: We consider that there are differences in certain somatic and motor parameters between junior and senior female rugby players from the Moldova region.

Hypothesis 2: We consider that there are differences between the somatic and motor parameters of the junior and senior female rugby players in our study and those of players from other countries.

Hypothesis 3: We consider that there is a strong association between the somatic and motor parameters evaluated across the two categories, juniors and seniors.

Research Subjects

In the preliminary study, 23 female rugby players from the Moldova region were evaluated: 13 senior players with an average age of 23.23 ± 4.3 years, from the CS PoliTECHNICALa Iași team, winners of the 2023 National Championship, and 10 junior players with an average age of 15.9 ± 0.9 years, members of the CSS Bârlad team, winners of the 2023 Romanian Cup.

Preliminary Study Conclusions

Following the statistical analysis conducted, several statistically significant differences were identified between the two age categories, juniors and seniors, regarding certain somatic and motor parameters, thereby partially confirming Hypothesis 1.

Concerning running speed, data from the specialized literature highlight that junior and senior players from various countries recorded better 10-meter sprint times compared to the players in the present study, but performed worse over the 20-meter distance. Over the 40-meter distance, players from our study achieved both better and worse results compared to players from other countries, thus confirming Hypothesis 2.

The results obtained from the athletes in the current study indicated a good level of association between certain somatic and motor parameters in rugby players from both categories, juniors and seniors, thereby confirming Hypothesis 3.

We can affirm that the results from this study highlight that the physical and motor development of the athletes is a determining factor in achieving performance in women's rugby sevens.

CHAPTER 4. IDENTIFICATION OF THE BIOMOTOR PROFILE OF WOMEN'S RUGBY SEVENS PLAYERS – MAIN STUDY

RESEARCH PREMISES

Following the preliminary research, through the application of a test battery developed based on specialized literature, a series of somatic and motor parameters specific to rugby players were identified, both at the junior and senior levels. These data serve as an essential reference for guiding and substantiating the current study.

AIM, OBJECTIVES, TASKS, VARIABLES, AND HYPOTHESES

The aim of this research was to develop a biomotor profile of rugby players in Romania and to identify the optimal methods for assessing motor and morphological parameters.

The hypotheses underpinning the present study were as follows:

Main Hypothesis 1: We consider that there are differences among Romanian rugby sevens players regarding certain somatic and motor parameters.

Secondary Hypothesis 1.1: We consider that there are differences among rugby sevens players depending on the city of origin of their team, regarding certain somatic and motor parameters.

Secondary Hypothesis 1.2: We consider that there are differences between rugby players according to age category (juniors and seniors), in terms of certain somatic and motor parameters.

Main Hypothesis 2: We assume that there are differences in the results obtained by rugby sevens players in tests evaluating running speed and change of direction, with and without the ball.

Secondary Hypothesis 2.1: We assume that there are differences in the results obtained by junior rugby sevens players in tests evaluating running speed and change of direction, with and without the ball.

Secondary Hypothesis 2.2: We assume that there are differences in the results obtained by senior rugby sevens players in tests evaluating running speed and change of direction, with and without the ball.

Main Hypothesis 3: We consider that there are differences between the dominant and non-dominant limbs regarding reaction time and stationary ball passing among rugby sevens players.

Secondary Hypothesis 3.1: We consider that there are differences between the dominant and non-dominant limbs regarding reaction time and stationary ball passing among junior rugby sevens players.

Secondary Hypothesis 3.2: We consider that there are differences between the dominant and non-dominant limbs regarding reaction time and stationary ball passing among senior rugby sevens players.

Main Hypothesis 4: There are associations between the evaluated somatic, motor, and technical parameters among rugby sevens players.

Secondary Hypothesis 4.1: There are associations between the evaluated somatic, motor, and technical parameters among junior rugby sevens players.

Secondary Hypothesis 4.2: There are associations between the evaluated somatic, motor, and technical parameters among senior rugby sevens players.

Main Hypothesis 5: We consider that differences will be identified between the data obtained from the Romanian national teams regarding somatic, functional, and motor parameters and the results of other national teams reported in the specialized literature.

Secondary Hypothesis 5.1: We assume that differences will be identified between the results obtained by the junior national team and those of other national teams reported in the specialized literature.

Secondary Hypothesis 5.2: We assume that differences will be identified between the senior rugby sevens national team players and those reported in the specialized literature regarding certain somatic and motor characteristics.

Research Subjects

In this study, 105 rugby players participating in the 2024 edition of the Romanian National Championship were evaluated. The group included 35 senior players with an average age of 21.1 ± 4.8 years, representing the teams CS PoliTECHNICALa Iași, CSU Cluj, CS Agronomia București, and CS Știința București, and 70 junior players with an average age of 15.2 ± 1.5 years, from the teams CSS Bârlad, CSM Unirea Alba Iulia, RC Cristian Brașov, CS Leii Câmpia Turzii, CS PoliTECHNICALa Iași, CSM Pașcani, and CS Agronomia București.

RESULTS AND DISCUSSIONS

The results obtained from junior and senior rugby players in this study are used to create the performance profile of Romanian female rugby sevens players. To scale the results, we used the arithmetic mean and standard deviation from the athletes' data analysis. This scaling allows a comparative evaluation of performances and the identification of strengths and weaknesses within a team.

The values obtained by the rugby sevens players, according to age category, will be divided into three groups: low, good, and high results (Tables 4.48 - 4.58).

Table 4.1 Classification of results obtained by rugby sevens players – anthropometric data

WEIGHT (kg)			
	LOW	**GOOD**	**VERY GOOD**
JUNIORS CLUB	> 67,01	50,60 - 67,01	< 50,60
JUNIORS NATIONAL TEAM	> 66,63	52,62 - 66,63	< 52,62
SENIORS CLUB	> 68,94	54,54 - 68,94	< 54,54
SENIORS NATIONAL TEAM	> 69,79	55,75 - 69,79	< 55,75
Body Mass Index (BMI) (kg/m²)			
	LOW	**GOOD**	**VERY GOOD**
JUNIORS CLUB	> 24,45	19,08 - 24,45	< 19,08
JUNIORS NATIONAL TEAM	> 23,26	19,39 - 23,26	< 19,39
SENIORS CLUB	> 24,20	20,14 - 24,2	< 20,14
SENIORS NATIONAL TEAM	> 24,56	20,82 - 24,56	< 20,82
FAT MASS (kg)			
	LOW	**GOOD**	**VERY GOOD**
JUNIORS CLUB	< 11,31	11,31 - 19,19	> 19,19
JUNIORS NATIONAL TEAM	< 17,76	11,22 - 17,76	> 11,22
SENIORS CLUB	< 17,06	12,23 - 17,06	> 12,23
SENIORS NATIONAL TEAM	< 16,06	12,27 - 16,6	> 12,27
MUSCLE MASS (kg)			
	LOW	**GOOD**	**VERY GOOD**
JUNIORS CLUB	< 36,29	36,29 - 46,67	> 46,67
JUNIORS NATIONAL TEAM	< 38,23	38,23 - 47,42	> 47,42
SENIORS CLUB	< 39,99	39,99 - 49,2	> 49,20
SENIORS NATIONAL TEAM	< 40,75	40,75 - 50,7	> 50,70
SKELETAL MUSCLE MASS (KG)			
	LOW	**GOOD**	**VERY GOOD**
JUNIORS CLUB	< 21,65	21,65 - 27,83	> 27,83
JUNIORS NATIONAL TEAM	< 22,80	22,8 - 28,28	> 28,28
SENIORS CLUB	< 23,78	23,78 - 30,9	> 30,90
SENIORS NATIONAL TEAM	< 23,91	23,91 - 31,97	> 31,97

Table 4. 1 The classification of results obtained by rugby sevens players – running speed over different distances

RUNNING SPEED OVER THE DISTANCE OF 10 m (s)			
	LOW	GOOD	VERY GOOD
JUNIORS CLUB	> 2,08	1,74 - 2,08	< 1,74
JUNIORS NATIONAL TEAM	> 1,96	1,65 - 1,96	< 1,65
SENIORS CLUB	> 1,94	1,62 - 1,94	< 1,62
SENIORS NATIONAL TEAM	> 1,85	1,59 - 1,85	< 1,59
RUNNING SPEED OVER THE DISTANCE OF 20 m (s)			
	LOW	GOOD	VERY GOOD
JUNIORS CLUB	> 3,74	3,28 - 3,74	< 3,28
JUNIORS NATIONAL TEAM	> 3,71	3,13 - 3,71	< 3,13
SENIORS CLUB	> 3,56	3,08 - 3,56	< 3,08
SENIORS NATIONAL TEAM	> 3,40	3,07 - 3,4	< 3,07
RUNNING SPEED OVER THE DISTANCE OF 20-40 m (s)			
	LOW	GOOD	VERY GOOD
JUNIORS CLUB	> 3,52	2,62 - 3,52	< 2,62
JUNIORS NATIONAL TEAM	> 3,11	2,66 - 3,11	< 2,66
SENIORS CLUB	> 3,05	2,62 - 3,05	< 2,62
SENIORS NATIONAL TEAM	> 3,02	2,62 - 3,02	< 2,62
RUNNING SPEED OVER THE DISTANCE OF 40 m (s)			
	LOW	GOOD	VERY GOOD
JUNIORS CLUB	> 6,96	6,04 - 6,96	< 6,04
JUNIORS NATIONAL TEAM	> 6,34	5,8 - 6,34	< 5,80
SENIORS CLUB	> 6,55	5,8 - 6,55	< 5,80
SENIORS NATIONAL TEAM	> 6,38	5,74 - 6,38	< 5,74

Table 4. 2 Clasificarea rezultatelor obținute de jucătoarele de rugby în 7 – viteza de deplasare cu balonul pe diferite distanțe

RUNNING SPEED OVER THE 10 M DISTANCE WITH THE BALL (s)			
	LOW	GOOD	VERY GOOD
JUNIORS CLUB	> 2,11	1,81 - 2,11	< 1,81
JUNIORS NATIONAL TEAM	> 2,03	1,66 - 2,03	< 1,66
SENIORS CLUB	> 2,00	1,68 - 2	< 1,68
SENIORS NATIONAL TEAM	> 1,88	1,67 - 1,88	< 1,67
RUNNING SPEED OVER THE 20 M DISTANCE WITH THE BALL (s)			
	LOW	GOOD	VERY GOOD
JUNIORS CLUB	> 3,83	3,37 - 3,83	< 3,37
JUNIORS NATIONAL TEAM	> 3,78	3,19 - 3,78	< 3,19
SENIORS CLUB	> 3,66	3,26 - 3,66	< 3,26
SENIORS NATIONAL TEAM	> 3,52	3,22 - 3,52	< 3,22
RUNNING SPEED OVER THE 20-40 M DISTANCE WITH THE BALL (s)			
	LOW	GOOD	VERY GOOD
JUNIORS CLUB	> 3,38	2,81 - 3,38	< 2,81
JUNIORS NATIONAL TEAM	> 3,03	2,71 - 3,03	< 2,71
SENIORS CLUB	> 2,98	2,65 - 2,98	< 2,65
SENIORS NATIONAL TEAM	> 2,90	2,64 - 2,9	< 2,64
RUNNING SPEED OVER THE 40 M DISTANCE WITH THE BALL (s)			
	LOW	GOOD	VERY GOOD
JUNIORS CLUB	> 7,09	6,13 - 7,09	< 6,13
JUNIORS NATIONAL TEAM	> 6,54	5,82 - 6,54	< 5,82
SENIORS CLUB	> 6,56	5,92 - 6,56	< 5,92
SENIORS NATIONAL TEAM	> 6,37	5,96 - 6,37	< 5,96

Table 4. 3 Classification of the results obtained by the rugby sevens players – technical test

TECHNICAL _20M (s)			
	LOW	GOOD	VERY GOOD
JUNIORS CLUB	> 4,63	3,58 - 4,63	< 3,58
JUNIORS NATIONAL TEAM	> 4,17	3,36 - 4,17	< 3,36
SENIORS CLUB	> 4,16	3,29 - 4,16	< 3,29
SENIORS NATIONAL TEAM	> 4,07	3,27 - 4,07	< 3,27
TACKLING TECHNIQUE 10 M (s)			
	LOW	GOOD	VERY GOOD
JUNIORS CLUB	> 5,32	3,68 - 5,32	< 3,68
JUNIORS NATIONAL TEAM	> 5,17	3,08 - 5,17	< 3,08
SENIORS CLUB	> 4,52	3,66 - 4,52	< 3,66
SENIORS NATIONAL TEAM	> 4,19	3,53 - 4,19	< 3,53
OVERALL TECHNICAL PERFORMANCE (s)			
	LOW	GOOD	VERY GOOD
JUNIORS CLUB	> 9,55	7,66 - 9,55	< 7,66
JUNIORS NATIONAL TEAM	> 8,86	6,92 - 8,86	< 6,92
SENIORS CLUB	> 8,43	7,19 - 8,43	< 7,19
SENIORS NATIONAL TEAM	> 8,05	7,02 - 8,05	< 7,02

Table 4. 4 Classification of the results obtained by the rugby sevens players in the change of direction in response without the ball

CHANGE OF DIRECTION IN RESPONSE TO A STIMULUS (s)			
	LOW	GOOD	VERY GOOD
JUNIORS CLUB	> 2,78	2,33 - 2,78	< 2,33
JUNIORS NATIONAL TEAM	> 2,65	2,27 - 2,65	< 2,27
SENIORS CLUB	> 2,53	2,14 - 2,53	< 2,14
SENIORS NATIONAL TEAM	> 2,41	2,1 - 2,41	< 2,10
CHANGE OF DIRECTION IN RESPONSE TO TWO STIMULUS (s)			
	LOW	GOOD	VERY GOOD
JUNIORS CLUB	> 5,70	4,91 - 5,7	< 4,91
JUNIORS NATIONAL TEAM	> 5,51	4,56 - 5,51	< 4,56
SENIORS CLUB	> 5,25	4,51 - 5,25	< 4,51
SENIORS NATIONAL TEAM	> 5,06	4,54 - 5,06	< 4,54

Table 4. 5 Classification of the results obtained by rugby sevens players in change of direction with ball carrying

CHANGE OF DIRECTION IN RESPONSE TO A STIMULUS WHILE CARRYING THE BALL (s)			
	LOW	GOOD	VERY GOOD
JUNIORS CLUB	> 2,70	2,38 - 2,7	< 2,38
JUNIORS NATIONAL TEAM	> 2,68	2,34 - 2,68	< 2,34
SENIORS CLUB	> 2,61	2,16 - 2,61	< 2,16
SENIORS NATIONAL TEAM	> 2,44	2,15 - 2,44	< 2,15
CHANGE OF DIRECTION IN RESPONSE TO TWO STIMULI WHILE CARRYING THE BALL (s)			
	LOW	GOOD	VERY GOOD
JUNIORS CLUB	> 5,68	4,82 - 5,68	< 4,82
JUNIORS NATIONAL TEAM	> 5,44	4,49 - 5,44	< 4,49
SENIORS CLUB	> 5,27	4,5 - 5,27	< 4,50
SENIORS NATIONAL TEAM	> 5,07	4,46 - 5,07	< 4,46

Table 4. 6 Classification of the results obtained by rugby sevens players in explosive strength of the upper limbs

JUMP TEST_UPPER BODY (cm)			
	LOW	GOOD	VERY GOOD
JUNIORS CLUB	< 3,16	3,16 - 5,3	> 5,30
JUNIORS NATIONAL TEAM	< 3,61	3,61 - 5,71	> 5,71
SENIORS CLUB	< 7,13	7,13 - 10,46	> 10,46
SENIORS NATIONAL TEAM	< 7,28	7,28 - 10,53	> 10,53

Table 4. 7 Classification of the results obtained by the rugby sevens players in lower limb explosive strength

FREE JUMP (cm)			
	LOW	GOOD	VERY GOOD
JUNIORS CLUB	< 18,61	18,61 - 27,34	> 27,34
JUNIORS NATIONAL TEAM	< 20,61	20,61 - 30,94	> 30,94
SENIORS CLUB	< 24,25	24,25 - 32,33	> 32,33
SENIORS NATIONAL TEAM	< 26,19	26,19 - 33,06	> 33,06
COUNTERMOVEMENT JUMP (cm)			
	LOW	GOOD	VERY GOOD
JUNIORS CLUB	< 17,22	17,22 - 23,78	> 23,78
JUNIORS NATIONAL TEAM	< 18,30	18,3 - 26,3	> 26,30
SENIORS CLUB	< 22,16	22,16 - 29,71	> 29,71
SENIORS NATIONAL TEAM	< 23,07	23,07 - 30,71	> 30,71
SQUAT JUMP (cm)			
	LOW	GOOD	VERY GOOD
JUNIORS CLUB	< 16,65	16,65 - 23,38	> 23,38
JUNIORS NATIONAL TEAM	< 18,59	18,59 - 25,85	> 25,85
SENIORS CLUB	< 18,48	18,48 - 27,8	> 27,80
SENIORS NATIONAL TEAM	< 21,59	21,59 - 28,23	> 28,23

Table 4. 8 Classification of the results obtained by the rugby sevens players in standing pass length with the dominant and non-dominant limb

PASS WITH THE NON-DOMINANT LIMB (m)			
	LOW	GOOD	VERY GOOD
JUNIORS CLUB	< 9,51	9,51 - 13,2	> 13,20
JUNIORS NATIONAL TEAM	< 11,30	11,3 - 14,68	> 14,68
SENIORS CLUB	< 11,62	11,62 - 16,09	> 16,09
SENIORS NATIONAL TEAM	< 11,55	11,55 - 16,18	> 16,18
PASS WITH THE DOMINANT LIMB (m)			
	LOW	GOOD	VERY GOOD
JUNIORS CLUB	< 10,14	10,14 - 14,31	> 14,31
JUNIORS NATIONAL TEAM	< 11,57	11,57 - 15,87	> 15,87
SENIORS CLUB	< 12,82	12,82 - 17,00	> 17,00
SENIORS NATIONAL TEAM	< 12,96	12,96 - 16,99	> 16,99

Table 4. 9 Classification of the results obtained by the rugby sevens players in sport-specific endurance

BRONCO (min)			
	LOW	GOOD	VERY GOOD
JUNIORS CLUB	> 6,88	5,85 - 6,88	< 5,85
JUNIORS NATIONAL TEAM	> 6,36	5,65 - 6,36	< 5,65
SENIORS CLUB	> 6,09	5,33 - 6,09	< 5,33
SENIORS NATIONAL TEAM	> 6,88	5,24 - 5,88	< 5,24

Table 4. 10 Classification of the results obtained by rugby sevens players for reaction time to two stimuli of the dominant and non-dominant limb

REACTION SPEED OF THE NON-DOMINANT LIMB (ms)			
	LOW	GOOD	VERY GOOD
JUNIORS CLUB	> 356,91	259,46 - 356,9	< 259,46
JUNIORS NATIONAL TEAM	> 351,11	250,14 - 351,1	< 250,14
SENIORS CLUB	> 351,94	241,52 - 351,9	< 241,52
SENIORS NATIONAL TEAM	> 344,02	235,43 - 344	< 235,43
REACTION SPEED OF THE DOMINANT LIMB (ms)			
	LOW	GOOD	VERY GOOD
JUNIORS CLUB	> 368,25	265,05 - 368,3	< 265,05
JUNIORS NATIONAL TEAM	> 360,02	259,87 - 360	< 259,87
SENIORS CLUB	> 353,11	238,49 - 353,1	< 238,49
SENIORS NATIONAL TEAM	> 358,87	242,13 - 358,9	< 242,13

Conclusions on the Biomotor Profile

Hypothesis 1

The inter-club comparative analysis highlighted significant variations in physical strength and passing technique, especially among junior teams. Teams such as Bârlad, Alba, and Bucharest recorded superior results, indicating the need for specific training programs focused on strengthening these essential performance components. These differences reflect the influence of training methods applied at each club, emphasizing the importance of tailored interventions to standardize athletic development. At the senior level, the Iași team consistently outperformed others, while the Cluj senior team achieved lower results, thus confirming secondary hypothesis 1.1. Additionally, statistically significant differences between juniors and seniors in somatic and motor parameters support hypothesis 1.2, underscoring the importance of progressive, age-adapted development.

Hypothesis 2

The results show that ball handling negatively affects short-distance sprint speed by increasing running times, but it improves performance in change-of-direction tasks, partially confirming hypothesis 2.1 for junior players. For seniors, ball presence affects the initial acceleration phase but becomes insignificant over longer distances, indicating adaptation to game demands. Change of direction with the ball does not generate significant performance differences, suggesting efficient biomechanical integration. These findings partially support hypothesis 2.2 and highlight the need for training programs that simultaneously develop speed, coordination, and ball control.

Hypothesis 3

Analysis of dominant versus non-dominant limbs among juniors revealed marked functional asymmetry, with the dominant limb significantly outperforming in pass length ($p = 0.000$), partially confirming secondary hypothesis 3.1. Among senior players, significant differences were found only in pass length, not reaction time, thus partially confirming hypothesis 3.2.

Hypothesis 4

Correlations between technical tests and motor and somatic parameters showed significant relationships: speed and technical skills are strongly correlated. Among juniors, higher speed was associated with reduced passing accuracy, confirming secondary hypothesis 4.1. Among seniors,

technical performance is strongly influenced by speed and agility, whereas excessive explosive strength may negatively affect precision, confirming secondary hypothesis 4.2.

Hypothesis 5

Comparisons between Romanian national team results and international literature revealed both differences and similarities, partially confirming hypothesis 5. Juniors require improved training programs, especially focusing on speed and explosive strength development, to increase competitiveness. Underperforming clubs should prioritize endurance training and drills for tackling precision. Successful teams should maintain current regimens and optimize tactical strategies. Difficulties in change of direction, especially with multiple stimuli and the ball, are more pronounced in weaker teams, recommending the introduction of reaction, coordination, and balance exercises incorporating ball handling. Ball carrying negatively affects acceleration over short distances but not change of direction, indicating effective biomechanical adaptations. Technical development in juniors should include functional arm balance, while coordination and strength improve significantly with experience and training at the senior level.

CHAPTER 5. IDENTIFICATION OF CERTAIN CHARACTERISTICS OF THE PSYCHIC PROFILE OF WOMEN'S RUGBY SEVENS PLAYERS

RESEARCH PREMISES

Rugby sevens is a dynamic and demanding sport that requires not only exceptional physical abilities but also specific psychological traits (McAuliffe, 2021; Kerr, 2019; Dohme et al., 2019). Motivation represents an essential element in achieving sports performance, directly influencing the level of engagement, perseverance, and the athletes' desire to surpass their limits.

In rugby sevens, a sport involving speed, strength, and strategy, the motivation of the players plays an important role both in individual achievements and collective success. This study aims to investigate the factors underlying motivation among rugby sevens players, both juniors and seniors, highlighting types of motivation and ways in which it can be stimulated (Arribas-Galarraga, 2017; Campo et al., 2016).

Furthermore, motivation and confidence are fundamental aspects in the development of sports performance, significantly influencing commitment and the capacity to face competitive challenges. In performance rugby, across both age categories (juniors and seniors), these psychological dimensions contribute not only to individual progress but also to team cohesion and results achieved in competitions (Castro-Sánchez et al., 2019; King et al., 2019; Fernández-García et al., 2015).

Research Aim

The aim of this study is to analyze the levels of motivation and confidence among rugby players in Romania, outlining their psychological profile.

Research Hypotheses

The following hypotheses were formulated within the study:

Main Hypothesis 1: *We consider that Romanian rugby players exhibit high levels of motivation and confidence.*

Secondary Hypothesis 1.1: *We consider that Romanian junior rugby players exhibit high levels of motivation and confidence.*

Secondary Hypothesis 1.2: *We consider that Romanian senior rugby players exhibit high levels of motivation and confidence.*

Main Hypothesis 2: *There are differences in motivation and confidence levels among rugby players based on the city of origin of their team.*

Secondary Hypothesis 2.1: *We consider that among junior rugby players, differences in motivation and confidence will be identified depending on the city of the team's origin.*

Secondary Hypothesis 2.2: *Differences exist in motivation and confidence levels among senior rugby players, depending on the city of the team's origin.*

Main Hypothesis 3*: We consider that differences will be identified in motivation and confidence between club rugby players and those who are part of the national team.*

Secondary Hypothesis 3.1: *We consider that among junior athletes, differences in motivation and confidence will be found between club players and national team members.*

Secondary Hypothesis 3.2: *Senior players who are part of the national team will show different values compared to club players regarding levels of motivation and confidence.*

The results of this study will contribute to a better understanding of the psychological factors influencing the performance of rugby players, providing coaches and sports psychology specialists with relevant information to optimize mental training programs. Through the development of personalized strategies aimed at enhancing motivation and confidence, rugby teams can benefit from a significant improvement in performance and group cohesion.

Research Subjects

In this study, 97 rugby players participating in the 2024 edition of the Romanian National Championship were evaluated: 29 senior players with an average age of 21.1 ± 4.8 years from the teams CS Politehnica Iași, CSU Cluj, CS Agronomia București, and CS Știința București; and 68 junior players with an average age of 15.2 ± 1.5 years, members of the teams CSS Bârlad, CSM Unirea Alba Iulia, RC Cristian Brașov, CS Leii Câmpia Turzii, CS Politehnica Iași, CSM Pașcani, and CS Agronomia București.

Research Instruments Used

- **PAS Questionnaire:** Perceptions and Attitudes about Self (Annex 9.1) (Constantin et al., 2022).

- **IM Questionnaire:** Motivational Involvement (Annex 9.2) (Constantin et al., 2008a).

In outlining the psychological profile of the rugby players, we used three intervals: high values, medium values, and low values, by comparing the averages of the two categories, juniors and seniors, as well as the players who are part of Romania's national team, against the results generated by the individual reports from the PsihoProfile platform.

PSYCHOLOGICAL PROFILE CONCLUSIONS

Juniors

The analysis of response frequencies from the motivation and involvement questionnaire applied to juvenile-level rugby players reveals a generally high level of commitment to the sport. Most juniors demonstrated a strong intrinsic orientation, along with a heightened desire for self-improvement and active participation in both training and competition. Integrity, sincerity, honesty, and morality are fundamental values for all players, with no significant differences between cities. Statistically significant differences were only found in the areas of self-presentation characteristics, intrinsic motivation, and challenge, thus disproving secondary hypothesis 2.1.

Seniors

The results from the motivation and involvement questionnaire applied to senior rugby players indicate a consolidated motivational profile characterized by high intrinsic motivation, individual responsibility, and commitment to performance goals. The frequency of responses suggests conscious and mature engagement in the sport, highlighting a successful transition from the basic motivation typical of juniors to motivation oriented towards excellence and maintaining high-level performance.

Rugby promotes strong principles of integrity, sincerity, honesty, and morality, and these values are well established among senior players regardless of their city of origin. Minor differences between senior players depending on the city may reflect variations in training styles and competitive environments, but overall, the ethical values of the sport are deeply rooted across all analyzed regions.

Juniors National Team vs. Club Players

Juniors players in the national team have a more positive self-image and higher self-efficacy, indicating a superior level of confidence in their own abilities. The only statistically significant difference between club players and national team players was identified in the morality subscale, thus disproving secondary hypothesis 3.1.

Senior National Team vs. Club Players

Seniors players in the national team exhibit a higher level of extrinsic motivation, suggesting that rewards and social recognition are important factors in maintaining high performance. The tendency toward exaggeration is greater among national team players, which can be explained by high expectations and competitive pressure at the international level. The motivation of senior rugby sevens players results from a combination of internal and external factors, influenced by personal goals, training environment, and psychological support. Statistically significant differences were found between senior club players and national team players in extrinsic motivation, self-image, self-esteem, achievement, and self-deception characteristics, partially confirming secondary hypothesis 3.2.

FINAL CONCLUSIONS

The data obtained in this research suggest that the training level of rugby players can be influenced by the training methodologies used at each club, reinforcing the need for tailored interventions to standardize the development of athletic skills. These results reflect discrepancies in the preparation methods applied across different clubs and suggest the necessity of strategic adjustments regarding training structure. Therefore, coaches should adapt and optimize training programs, taking into account the specific differences identified between teams, to ensure a uniform and balanced development of players.

Additionally, the results highlight the importance of integrating ball handling into direction-change drills, offering valuable insights for improving motor performance in competitive rugby. At the same time, the need for specific sprint training strategies is emphasized, to counterbalance the negative impact of the ball on speed over short distances.

The study showed that ball handling significantly affects short-distance sprint speed among senior rugby players, especially impacting the initial acceleration phase due to the additional coordination required between upper and lower limbs. However, over longer distances, this effect becomes negligible, suggesting a progressive adaptation of the athletes to the specific demands of the game.

Regarding change of direction, the presence of the ball did not generate significant performance differences, indicating an efficient biomechanical adaptation to ball handling under dynamic conditions. This finding suggests that rugby players integrate ball control into their motor mechanisms, thereby minimizing its impact on performance.

The research results indicate statistically significant differences between rugby players according to age category (juniors and seniors), supporting the importance of progressive development of somatic and motor parameters throughout the sporting career.

Analysis of correlations between motor parameters highlights several moderate to strong associations among both junior and senior players.

When comparing the present study's results with data from the specialized literature, significant statistical differences exist between the performance of juniors and seniors from Romania's national teams and other representative international teams.

Rugby represents more than a sporting competition; it is a life experience where mental strength, emotional stability, and ethical principles are equally important as physical excellence. Motivation and self-perception can vary depending on competitive experiences, injuries, coaching changes, or athletic progress, and long-term monitoring could provide more relevant information about the dynamics of these variables.

Rugby promotes a solid set of ethical values, and this data shows that junior players assimilate these principles uniformly, regardless of their city of origin or performance level. Integrity, sincerity, honesty, and morality are fundamental values for all rugby players, both juniors and seniors.

DISSEMINATION OF RESULTS

The dissemination of the research results was carried out through writing and publishing scientific articles, presenting research reports and posters at various scientific events, as well as communicating the obtained data to coaches.

LIST OF PUBLISHED WORKS

1. **Surmei-Balan, M. G**., Cojocariu, A., & Martinas, F. P. (2025). Assessment of sprint speed in junior women's rugby 7's players. *Revista Romaneasca Pentru Educatie Multidimensionala, 17(1),* 384-404. https://doi.org/10.18662/rrem/17.1/957

2. **Surmei-Balan, M. G.**, Cojocariu, A., & Martinaş, F. P. (2025). Study on the evaluation of the explosive strength of women's rugby 7's players. *Sport And Society*, 498-503 https://doi.org/10.36836/22-24/11/2024

3. Martinaş F. P., Cojocariu A., & **Surmei Balan M. G.,** (2023). Assessment of speed in rugby players: forwards and defenders. *Ovidius University Annals, Series Physical Education & Sport/Science, Movement & Health*, 23.

4. Martinaş, F.P., Cojocariu, A., & **Surmei Balan, M.G.** (2023). Assessment of agility among rugby players. *9th International Conference of Universitaria Consortium - FEFSTIM: Physical Education, Sports and Kinesiotherapy – Active People for a Healthy Future, Timişoara*, 174-180 ISBN 979-12-80225-75-7 DOI 10.26352/HX19-FEFSTIM2023

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