# THE INFLUENCE OF COORDINATIVE CAPACITIES DEVELOPMENT OVER THE GAME QUALITATIVE INDICES OF THE 16-17 YEARS OLD RUGBY PLAYERS

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**Keywords**: coordinative capacities, video analysis, game qualitative indices, rugby.

**Annotation:**

This article reflects the experimental argumentation of coordinative capacities development influence over sports mastery level and competitive activity of junior rugby players in the training process. According to assumption regarding the use of ways of development of coordinative capacities of junior rugby players within sport training, that will influence direct over qualitative indices game, it was developed the experimental program which was proposed to the experimental group, which includes methods and specific ways to the targeted development of the coordinative capacities, while the bystander group followed the traditional training. The both of the groups were checked through the video method, official matches from internal championship at the beginning and ending of pedagogical experiment, the dates being processed mathematical –statistically and presented in tabular and graphical form. Analyzing final results, we can assert that the submitted hypothesis at the beginning of researches was justified, which allowed the ascending of sports mastery, the improvement of the game qualitative indices in the competitive activity through the implementation of ways of directed development of the coordinative capacities in the training process of junior rugby players of 16-17 years old.

## Introduction

Junior's sport training is a process of training and education of the athletes, regarding their participation at the sports contests, with a high degree of efficiency and great performance for their training. Sports training represent the main way of athletes training regarding their participation at the contests and the realization of planned performance [6]. The training of rugby players highlights on the one or the other components of the sports training (motor, technical-tactical,

psychological) using new methodologies of the game efficiency increase in the competitive activity [5].

In previous researches [2, 3, 4] it has been demonstrated experimentally, that the development ways of coordinative capacities used in the training with the 16-17 years rugby players has influenced significantly not only the level of coordinative capacities development, but also the motor and technical-tactical training level increasing the sports mastery of these ones.

From what we mentioned above , it was formulated the research hypothesis, according to which the use of targeted ways of development of junior rugby players coordinative capacities within the sports training that will definitely influence over the game qualitative indices in the competitive activity.

***The research methodology and organization***

The purpose of research consists in the increase of sports mastery, which is expressed through the growth of motor and technical-tactical indices and the increase of the game qualitative indices of the junior rugby players in the training process based on the directed development of the coordinative capacities.

*The goals of research*: the analysis and synthesis of branch of literature regarding the problem of junior rugby players training; the application of experimental program for directed development of coordinative capacities at the junior rugby players of 16-17 years old; the experimental argumentation of program application efficiency of directed development of coordinative capacities over competitive activity of the 16-17 years rugby players through the method of video analysis.

For the execution of proposed goals, it was applied a complex of research methods, being in a strong affinity, permanently and temporarily, during the period of research: the analysis of scientific-methodic literature, pedagogical observation, pedagogical experiment, video analysis of the official matches, statistical-mathematical methods, graphical-tabular method.

*The organization of research. The research was effectuated in three phases:*

First phase involved the following activities: the analysis of specialty literature, developed during the period of research; pedagogical observation, video analysis and the process of the game qualitative indices of the official games (8 matches of the experimental group and 8

matches of bystander group)of the teams from researched groups, before the basic experiment;

Second phase of the research involved the organization of the basic experiment which participated two groups involved in the experiment (SSSRAR - Blumarine – experimental group (n=20), and UTM Chişinău – bystander group (n=18). The experimental program elaborated by us was implemented in experimental group, which includes methods and ways specific to the directed development of coordinative capacities, while the bystander group followed the traditional training.

The third phase of the research involved the video analysis and the process of the game qualitative indices of the official games (8 matches of the experimental group and 8 matches of the bystander group) after the ending of the basic experiment at both groups involved in the experiment.

***The annual program of training*** [1] was established in accordance with the competitive calendar available in the moment of developing the basic pedagogical experiment. The applied ways, for the increase of sports mastery of the junior rugby players, were elaborated through the perspective of coordinative capacities development within the micro-cycle and distribution therefore: within the developed trainings during the days of Monday and Friday – those for the development of coordinative capacities, plus those appropriate for technical and tactical and individual training; during Tuesday and Thursday, each week braced with the development of motive activities; during Wednesday and Saturday braced with exercises of force ways.

To highlight the influence of coordinative capacities development ways over sports training and of the competitive activity of researched groups, it was video analyzed the games within the rugby championship from the Republic of Moldova. It were highlighted the collected points, the techniques of collection points, the game constant moments (touches and scrums), game fixing points (mauls and rucks), the attack and guard individual technical methods (passes and kicks, tackles and opponent's blocking), as well as the entry and loss of the ball's possession, but the results were processed mathematical-statistical and entered in the chart (Chart 1).

***Chart 1. The dynamics of the competitive activity indices of the experimental and***

| Nr. crt. | Game actions | Before the experiment ($n = X_{med}$ 8games) | | | | | | After the experiment ($n = X_{med}$ 8games) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Achieved | | P | Mistakes | | P | Achieved | | P | Mistakes | | P |
| | | EG | BG | | EG | BG | | EG | BG | | EG | BG | |
| 1 | Points | 9,25 | 7,8 | >0,05 | - | - | - | 16,3 | 10,2 | <0,05 | - | - | - |
| 2 | Tries | 1,64 | 1,4 | >0,05 | - | - | - | 2,5 | 1,6 | <0,05 | - | - | - |
| 3 | Conversion, kicks at the gate | 2 | 1,8 | >0,05 | 1,2 | 1 | >0,05 | 2,9 | 2,6 | >0,05 | 0.64 | 0,98 | >0,05 |
| 4 | Touches | 11,38 | 9,28 | >0,05 | 4,2 | 3,8 | >0,05 | 13,7 | 11,2 | <0,05 | 2,8 | 3,6 | <0,05 |
| 5 | Scrums | 10,38 | 11,2 | >0,05 | 2,8 | 3 | >0,05 | 12,1 | 10,2 | <0,05 | 1,2 | 1,8 | >0,05 |
| 6 | Rucks | 28,63 | 27,3 | >0,05 | 11,8 | 12,4 | >0,05 | 35,7 | 28,2 | <0,05 | 5,8 | 9,2 | <0,01 |
| 7 | Mauls | 4,38 | 5,4 | >0,05 | 1,4 | 1,5 | >0,05 | 7,8 | 6,2 | <0,05 | 1 | 1,4 | <0,05 |
| 8 | Passes | 50,38 | 46,5 | >0,05 | 14,6 | 13,2 | >0,05 | 67,7 | 52,4 | <0,01 | 11,6 | 12,2 | <0,05 |
| 9 | Kicks | 17,38 | 18,4 | >0,05 | 6,8 | 7,2 | >0,05 | 21,7 | 19,3 | <0,05 | 5,2 | 6,8 | <0,05 |
| 10 | Tackles | 23,38 | 22,4 | >0,05 | 11,2 | 12,2 | >0,05 | 32,2 | 25,2 | <0,01 | 8,6 | 10,2 | <0,05 |
| 11 | Opponent's blocking | 24,63 | 21,38 | >0,05 | 6,8 | 6,2 | >0,05 | 26,5 | 21,8 | <0,05 | 5,5 | 6,2 | <0,05 |
| 12 | The entry of ball's possession | 21,38 | 18,4 | >0,05 | - | - | - | 29,7 | 22,3 | <0,01 | - | - | - |
| 13 | The loss of ball's possession | 18,38 | 20,38 | >0,05 | - | - | - | 16,5 | 19,8 | <0,05 | - | - | - |

***bystander groups after video analysis of the official games (n=32)***

Firstly we analyzed the influence of the training experimental program directed towards the development of junior rugby players' coordinative capacities and its impact over the number of collected points, as well as their collection in the game (Fig. 1).

According to the dates from the chart at the beginning of the pedagogical experiment, the experimental group gained an average of 9,25 points, as after the ending of the experiment, the average to reach an average of 16,3 points, being a high enough result for this age. According to the statistical dates the number of increased points at the ending of the experiment is statistically significant (P<0,05). In bystander group, who participated in the same championship, at the ending of the pedagogical experiment, it is noticed statistically also a significant difference (P< 0,05), but the number of registered points is relatively smaller than those from the experimental group. Thus, at the beginning of

the experiment the bystander group registered a number of 7,8 registered points, but at the ending of this one reached an equivalent result 10,2 points.

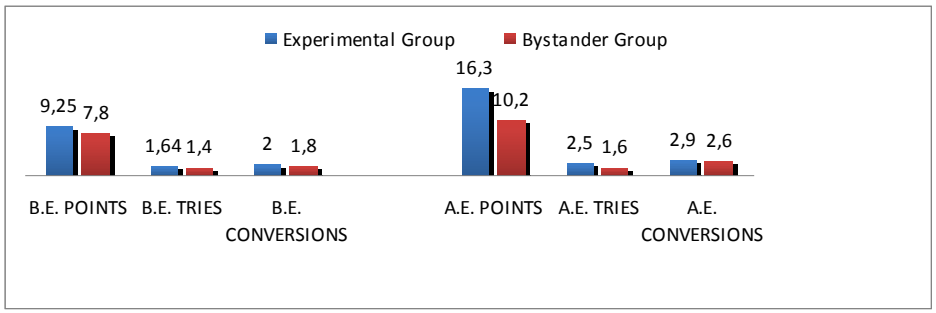


**Fig.1 The dynamics of the point's collection indices of junior rugby players involved in the pedagogical experiment**

Consequently, the implementation of experimental program in the training of junior rugby players had a clear influence over the number of enrolled points in official games, this indicator being actually determined in a peculiar game or generally within a contest.

The next researched indicator was "tries", as well as in the case of the previous researched indices at the beginning of the experiment had almost the same values, where the experimental group registered 1, 64 attempts, but the bystander group 1,40, as at the end of the experiment in both groups to register statistically significant increases ($P<0,05$), where the experimental group registered 2,5, but bystander group 1,6 tries. There is not much difference also at the results related to "conversions in the form of kicks at the gate ", which in both groups at the beginning of the pedagogical experiment were on the average of 1,8 - 2,0 conversions, this result being fairly modest for this age of sports rugby players. At the end of the pedagogical experiment the results have increased relatively evenly in both groups, with an insignificant growth ($P>0,05$) in experimental group, which reached the averages of 2,9 conversions in the experimental group and 2,6 in the bystander group. Actually this indicator represents the success or failure of one or the other rugby team and not only.

The next stage of the researches was the video analysis of collective technical-tactical actions, which are presented in the touches and scrums (fixed moments of the game) and rucks and mauls (fixed points of the game). At the game fixed moments (Fig.2) after the video analysis of official matches before and after the implementation of the

experimental program of coordinative capacities development, we can notice that was increased the number of “touches” as well as “scrums” at the experimental group, which at the beginning of the experiment demonstrated an equivalent result with -11,38 touches, but at the end of this one -13,7. At the indicator of “scrums”, at the beginning of the experiment demonstrated a result of 10,38 scrums, as at the end of this one to reach -12,1 scrums.

Also, at the bystander group it were registered some processes in this regard where the touches number increased from 9,28 at the beginning of the experiment, till 11,2 at the end of this one, but the number of scrums decreased from 10,38 till 10,4 average per game.

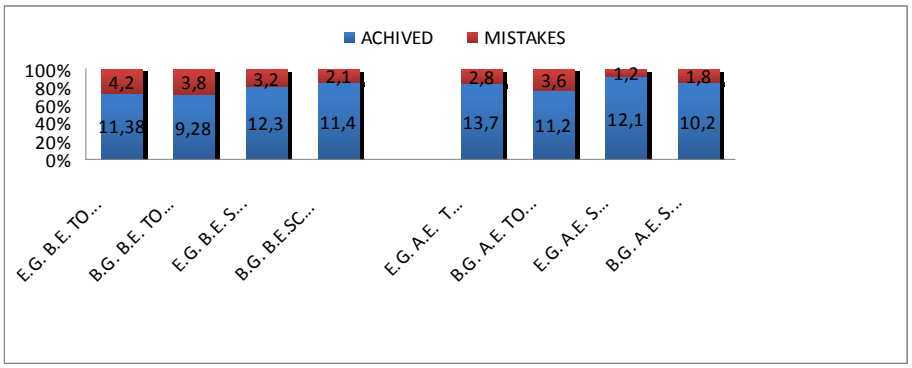


***Fig.2. The dynamics of qualitative indices at the game fixed moments of the junior rugby players involved in the pedagogical experiment.***

After analyzing the statistical figures, we notice that at the game fixed moments before the pedagogical experiment, the differences of achieved technical elements number between researched groups are statistically insignificant ( P>0,05), but at the end of the experiment are highlighted significant differences ( P>0,05), as at the touches ( difference of 2,5), as also at the scrums ( difference of 1,9).

One of the auxiliary tasks of our researches was to outline the achievement mistakes of collective actions at the fixed moments. At the “touches” and “scrums” elements, as well as the experimental group as the bystander group have about the same number of the performance mistakes after the first video analysis of the games. After the implementation of the experimental program the number of the implementing mistakes decreased at the both researched groups, but at “the touches” element the difference between mistakes at the experimental and bystander group is significantly P<0,05, but at “the scrums”- insignificantly P > 0,05.

As well as at the fix moments, as at the fixing points of the rugby game (Fig.3) is accentuated the increase of repetitions number of collective actions at the beginning of the experiment , for the experimental group which is 28,63 " rucks" and 4,38 " mauls", at the end of the experiment its number had increased to 35,7 of "rucks" and 7,8 of "mauls". At bystander group we have increases from 27,63 rucks and 5,4 mauls at the beginning of the experiment, 28,2 rucks and 6,2 mauls at the end of the experiment. Statistically analyzing the achieved results, we can mention that at the beginning of the experiment, the number difference of rucks and achieved mauls on average per game between the groups included in the experiment are insignificant ( P>0,05), but at the end of the experiment, even if the results have increased at both teams, it was registered statistically a significant difference at the "rucks" with 7,5 and at the " mauls", with 1,6 more at the experimental group than the bystander one ( P<0,05).

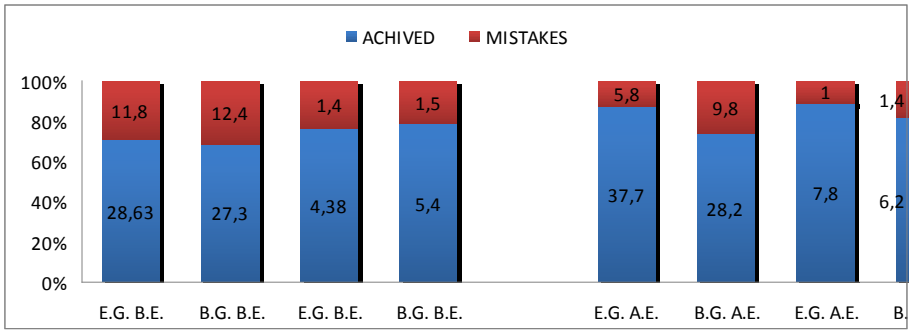


***Fig.3. The dynamics of qualitative indices at the game fixing points of the junior rugby players involved in the pedagogical experiment***

At the same time, substantially the number of performance mistakes of the fixing points decrease in the game for both teams, but the experimental group registers significant values towards the bystander group between the analyzed indices at the end of the experiment. Thus, at "rucks" at the beginning of the experiment, the experimental group reaches values about 11,8 mistakes, but bystander group -12,4 mistakes ( P >0,05), at the end of the experience these values reached the quote about 5,8 mistakes at the experimental group ( P<0,01) and 9,8 at the bystander group ( P<0,05). Approximately the same tendency is kept also in the case of "mauls", where at the beginning of the experiment the experimental and bystander group registered about the same result related to the percentage of committed mistakes- 1,4 - 1,5 ( P>0,05), at the end of the experiment the number of mistakes decreased significantly at both

groups, reaching the average of 1.0 mistakes in the experimental group and 1,4 mistakes in the bystander group (P<0,05).

A great interest has also presented and the total number of attack and defense technical elements done within rugby game. For the prominence of the attack individual techniques within video analysis, it were analyzed the number of performed passes and kicks, but for defense techniques – tackles and opponent's blocking, but also the quality of their accomplishment.

According to char 1 and Fig. 4 related to offensive techniques, we can notice that is a relative similarity in both groups ( experimental and bystander) at the beginning analysis, the number of passes being 50,38 passes in the experimental group and 46,5 passes in the bystander group, that represent closer results. Consequently the difference between them is statistically insignificant (P>0,05). At the end of the test, both groups increased their number of passes, but here experimental group prevails, and registered 67,7 passes in a game against 52,4 passes registered by the bystander group, thus the difference between these results is significant (P<0,05).

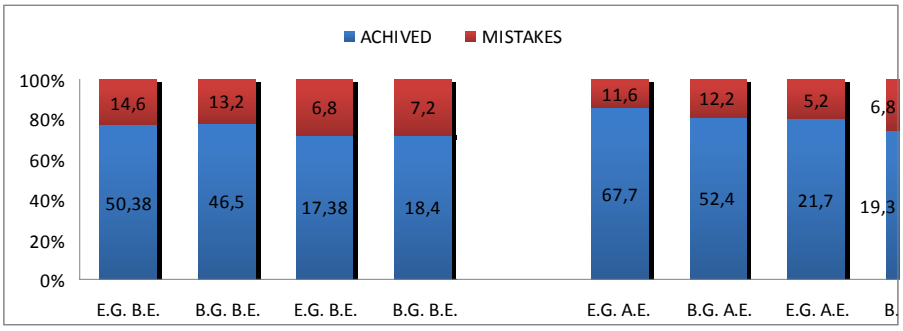


***Fig.4. The dynamics of performing indices of the attack individual techniques of junior rugby players involved in pedagogical experiment***

Analyzing the kicks it was noticed that in the experimental group at the beginning of the experiment were registered 17,38 kicks but in the bystander group -18,4 kicks, the results are very close ( P>0,05).At the end of the test, this hint increased in both groups, but the experimental group had a more pronounced development reaching values about 21,7 kicks, while the bystander group demonstrating an average of 19,3 kicks, thus statistically demonstrating a significant growth. ( P<0,05).The same obvious difference, is noticed also in number of the mistakes from both attack individual technical elements committed by the groups involved in experiment, where the experimental group has a smaller rate of mistakes

towards the bystander group at the end of the pedagogical experiment (P<0,05).

Quite relevant were demonstrated the results related to the number of tackles effectuated within an official game ( chart 1 and fig.5) where we notice an increase of this indicator at the end of the experiment with 9,18 tackles towards the initial result in the experimental group and an increase with 2,8 tackles per game for the bystander group. The statistical calculations indicate us a significant increase in favor of the experimental group (P<0,05). Also we notice here a considerable decrease of the committed mistakes number in both groups at the execution of this technical element, that at the end of the experiment decrease with 2,6 tackles in the experimental group and with 2 tackles in the bystander group.

The superiority of the experimental group was confirmed also by the mathematical calculations, the difference is statistically significant for both defense technical methods (P <0,05). The same tendency is noticed also at the opponent's tackle and blocking performing mistakes at the end of the experiment, where its numbers decreased significantly in the case of the experimental group (P<0,05).

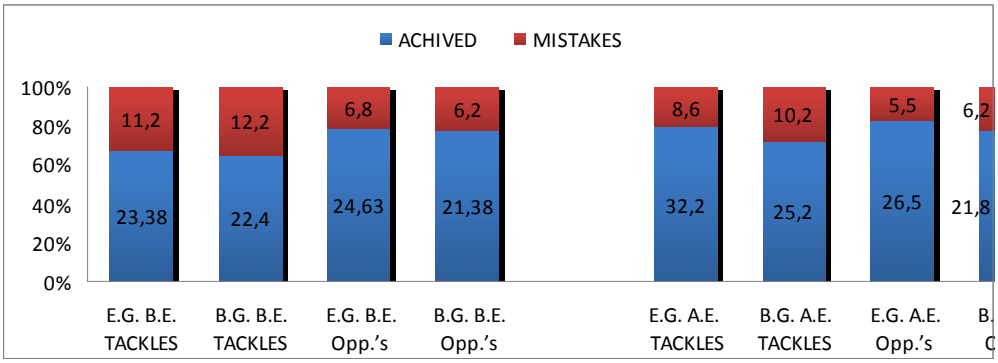


***Fig.5. The dynamics of performing indices of defense individual techniques of the rugby players involved in the pedagogical experiment***

The increase of performing number of the attack technical elements as well as defense and number reduction of performing mistakes at the experimental group towards the bystander one, allow us to say that the player's technical –tactical potential has increased also their performing quality during the matches.

Another element related to the defense individual techniques is the opponent's blocking, where as in the case of tackles at the beginning of pedagogical experiment, both teams involved in the experiment have demonstrated approximately the same number of executions, being in

medium 24,6 blockings in the experimental group and 21,3 blockings in the bystander group. At the end of performed experiment, the experimental group has improved this hint till 26,8 blockings, towards the bystander group which registered a number of 21,8 blockings per a game. According to statistical calculations this difference is statistically significant (P<0,05).

Regarding the number of mistakes at the beginning and end of the pedagogical experiment its number was quite small in both groups, simply because this technical element is not too sophisticated in terms of biomechanical construction , that is relatively simply in terms of technical execution.

Following the team competitive activity and performing efficiency of technical-tactical actions during the game, it were examined also the entrance moments of ball's possession and its loss (Fig. 6).

In the analyzed matches before the implementation of the coordinative capacities development ways, at the experimental group we notice that the difference between the enterig number in ball's possession and possession's loss is about 3, but at the bystander group about 2. At the end of the experiment, after the experiment's organization, the difference between the entering in ball's possession has considerably increased towards the possession's loss ( 14,2 on average per game) towards the bystender group ( 3,5 on average per game), that has a more modest increase on this line.

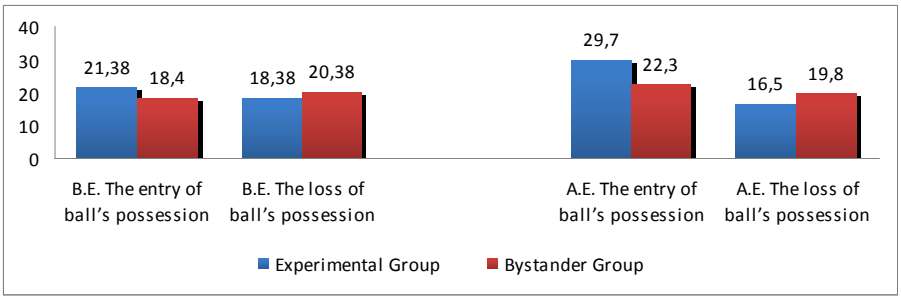


***Fig.6. The dynamics of entering indices in the ball's possession and the loss of ball's possession of junior rugby players involved in the experiment.***

The effectuated statistical callculations at the end of the experiment revealed a significant increase of analyzed results only in the case of experimental group (P<0,05). Here we are not referring to the number of committed mistakes, according to the simple fact that both technical-tactical actions are spontaneously and can be treated as

mistakes, because the ball's loss is already treated as a committed mistake by the player.

**Conclusions:**

Consequently, after the video analysis of competitive activity executed with the players involved in pedagogical experiment we can mention, that in the internal championship of the Republic of Moldova, before the implementation of coordinative capacities development program as well as in the experimental group as in the bystander group it is noticed that at all tested indices, the junior rugby players reflect a weak specific training and a big rate of mistakes in the game actions execution and an imperfect, individual technique.

In the same championship, after the implementation of experimental program, it is observed that at the experimental group has increased the technical-tactical potential; this is confirmed trough the raising of accumulated points number, group and individual technique actions executed towards the bystander group.

At the same time, with the raising of actions number, it is observed that at the experimental group has considerably decreased the number of individual technical executed mistakes as well as the collective technical-tactical actions in comparison with bystander group.

According to registered results, we can assert that the proposed experimental program for the development of coordinative capacities through specific ways of rugby game, has considerably influenced the quality of competitive activities of 16-17 years rugby players, as illustrated by extended statistical calculations.

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## INFLUENŢA DEZVOLTĂRII CAPACITĂŢILOR COORDINATIVE ASUPRA INDICILOR CALITATIVI DE JOC AL RUGBIŞTILOR DE 16 - 17 ANI

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**Cuvinte-cheie:** capacităţi coordinative, analiza video, indici calitativi de joc, rugbi.

**Adnotare:**Acest articol reflectă argumentarea experimentală a influenţei dezvoltării capacităţilor coordinative asupra nivelului măiestriei sportive și activității competiționale a rugbiştilor juniori în procesul de antrenament. Pornind de la ipoteza că utilizarea mijloacelor dezvoltare direcționate a capacităţilor coordinative la rugbiştii juniori în cadrul antrenamentului sportiv va influenţa nemijlocit asupra indicilor calitativi de joc s-a elaborat programa experimentală care a fost propusă grupei experimentale, care include metode şi mijloace specifice dezvoltării direcționate a capacităţilor coordinative., în timp ce grupa martor a urmat antrenamentul tradiţional. La ambele grupe au fost analizate prin metoda video meciurile oficiale din campionatul intern la începutul şi sfârşitul experimentului pedagogic, datele fiind prelucrate matematico – statistic şi prezentate în forma tabelară şi grafică. Analizând rezultatele finale, putem constata că ipoteza înaintată la începutul cercetărilor a fost confirmată, fapt ce a permis ridicarea maestrei sportive şi îmbunătăţirea indicilor calitativi de joc în activitatea competițională prin implementarea mijloacelor de dezvoltare direcționată a capacităţilor coordinative în procesul de pregătire a rugbiştilor juniori de 16 - 17 ani.