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Original Article

The use of «COMBI» training method for developing technical competence in 7-8-year-old football players

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Abstract:
There is not enough information in the scientific literature, where the issue of combined use of the conjugate method to conduct training sessions for football players', aged 7-8 and training devices for the simultaneous coordination and technical skills development is considered. *Research aim* is to test the author's methodology for improving young football players', aged 7-8, sports technical skills and coordination at the stage of initial training. ***Materials and methods***. 2 groups of young football players from the Chelyabinsk Sports School (Russia) participated in our research work. Both groups of athletes were engaged 3 times a week according to the standard training program methodology for football players. In the experimental group, the program of all training sessions was supplemented with the author's «COMBI» method with the simultaneous use of the conjugate method and a complex of balancing training devices for coordination, balance and sports technical skills («coordination + technique») development. The training program for the experimental group was supplemented with a homework assignment «playing footbag with a soft ball (sox)». Monitoring and high-stakes testing of the athletes' technical competence, static and dynamic coordination was carried out. ***Results.*** At the end of the annual training macrocycle, the athletes of the experimental group had a significant increase in their static coordination indicators values (Romberg and Yarotsky samples) by 2.3 times and 2 times, respectively. Dynamic coordination increased 2.4 and 4.4 times in two tests. The technique of ball control increased by 1.7 times, the headed shot technique - by 3 times, kicking technique – by 2 times, compared with the indicators values of children in the control group**.** ***Conclusions***. The proposed author's method of conducting classes to improve young football players' of the first year of training, aged 7-8, sports technique and coordination turned out to be more effective than the method recommended in the standard curriculum
Key Words: **football, sports technique, coordination, conjugate method, training devices**

Introduction

In different countries of the world, children start playing football from an early age. There are many sports schools where children can develop and improve their physical fitness and acquire special football skills. This game requires athletes having good physical, technical and tactical competencies and a high level of health. The athlete has to perform motor actions of a cyclic orientation (Fernando Barba, 2020) in conditions of intense physical activity and active opposition to rivals (Rovnyi, & Pasko, 2017). It is known that a high sport result achievement largely depends on the technique of motor actions mastery (Hakman et al., 2018; Montesano Pietro, Mazzeo Filomena, 2019). Football technique should be performed simultaneously with the greatest accuracy and speed. Therefore, the athletes' technical and coordination abilities development is important at the initial stage of sports training (Hakman et al., 2018), especially in the early sensitive period. At this age, the gradual complication of the training task will be very effective (Vorobyov et al., 2019)

The basis for improving technical competence is the athlete's high physical fitness (Iedynak et al., 2017; Sermaxhaj et al., 2017; Yarmak et al., 2017). Equally important is coordination development, which determines the technical prospects of a football player (Bykova et al., 2017). In sports, coordination abilities are a means of harmonious performance of individual motor elements and the entire exercise as a whole, which requires accuracy and speed of the motor task realization (Sogut, 2017). One of the regularities of mastering technical football skills is good intramuscular and intermuscular coordination, which develops and improves with frequent repetition of the same motor action technique. Coordination training is a mandatory component of the training

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process for athletes in many sports (Chagas et al., 2018). Well-developed vestibular stability, sense of spatial balance and coordination serve as a significant factor in sports injuries prevention, which are often recorded in football (Anthonius et al., 2018).

In our research work, training devices based on the principle of an unstable surface were used to develop the young athletes' coordination abilities and vestibular stability. Such types of simulators create destabilizing conditions for performing physical exercises during training, promote coordination qualities development and improve the proprioceptive system (Zagorodny et al., 2015). Training programs with this type of training allow including a large number of muscles in the work (Degtyareva, & Turchina, 2015) and reduce muscle passivity. To solve the educational tasks of training young football players, a conjugate training method using balancing sports equipment is well suited. With this method, not only general and special physical qualities are developed, but at the same time football players' technical skills are improved.

The scientific literature analysis shows that there is a sufficient number of training programs for young football players' technical training. There are results of studying the relationship between static and dynamic balance and basic football skills of children, aged from 10 to 16 (Anthonius et al., 2018). According to Sermaxhaj et al. (2017), there are few scientific papers on the effective use of the gaming (sport) equipment potential in training sessions. The issues of using training equipment for the formation of static, dynamic coordination and vestibular stability and their impact over basic technical football skills in children aged 7-8 have not been sufficiently studied. There are no scientific studies on the combined use of training devices and a conjugate method of conducting training sessions for young football players, aged 7-8, where the annual macrocycle program provides for the task of coordination and technique («coordination + technique») simultaneous development.

Football experts' forecasts indicate that in the coming years, the trend of current scientific research in football will be the topics of increasing the speed of movement, explosive speed, strength, and coordination abilities of athletes. Therefore, we consider the topic of our research relevant and timely.

Research aim is to test the author's methodology for improving sports technical skills and coordination at the stage of initial training in 7-8-year-old football players.

Material & methods

The research work was carried out in September 2020 - May 2021 at a sports school in Chelyabinsk (Russia). 56 boys, aged 7-8, who were engaged in football in the group of initial sports training took part in our research. For our research control (CG, n=28) and experimental (EG, n=28) groups were formed. Both groups used «A typical program of sports training for groups of the sports and recreation stage and the stage of initial training (boys and girls, aged 5-6 and 7-9) in the sport Football» (2020), where a week-long training microcycle consisted of 3 sessions lasting 60 minutes. In both groups, two training sessions were conducted by the method of circular training, where exercises were performed by the «segmented» method. At the third training session, the situational-game method was used throughout the main part of the lesson (outdoor games, relay race, and football game).

Young athletes of the control group at all three classes a week mastered the technique of football in accordance with the standard program of sports training. In the experimental group, simultaneously with the techniques and skills training, the development of coordination and vestibular stability was additionally carried out using the conjugate method «coordination + technique». To do this, we have adjusted the methodological focus of the annual training macrocycle typical program. We have prepared a safe set of sports equipment and simulators for performing general development and special exercises for the development of coordination and balance: Universal dockaball (size No. 4), SKYFIT SF-BPI balance platform, ORIGINAL rockboard, Bradex SF 0020 pilates disc, Sprinter balancing pad, Airex Balance-Beam balancing bar. The duration of the exercises on the simulators was 15 minutes. At each lesson, a module of 1-2 simulators and exercises, corresponding to the children's musculoskeletal system motor capabilities were used. The modules were changed monthly.

The structure of the first and second lessons in the weekly microcycle of athletes of the experimental group is shown in Figure 1, the structure of the third lesson is shown in Figure 2.

Fig. 1. The structure of the first and second lessons in a weekly training microcycle in EG

The simulators were used in the first and second training sessions in the experimental group at the end of the warm-up (7 minutes) and at the beginning of the main part of the lesson (8 minutes).

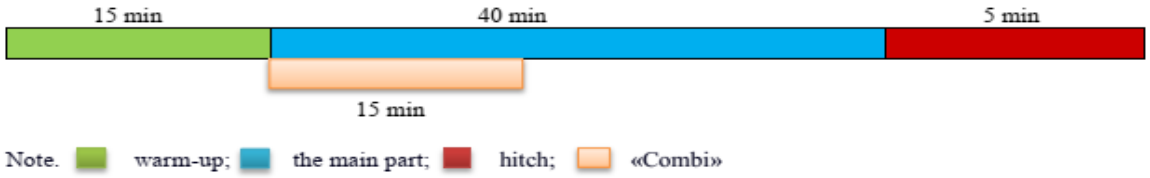

Fig. 2. The structure of the third lesson in a weekly training microcycle in EG

At the third training session, simulators were used at the beginning of the main part.

The exercises had a different orientation and feature: by muscle tension localization, by the number of support points, by additional support presence, for dynamic and static balance development. Monthly complication of the exercise conditions was carried out.

The section «Independent work» of the training program for the experimental group was supplemented with a homework assignment «playing footbag with a soft ball (sox) «JUMBO», d = 6 cm», which the children performed until the end of the annual macrocycle. The technique of the footbag game contains elements of movements that are in football.

High-stakes testing of the children's static equilibrium state was carried out using a simple Romberg test, sec (Khasnis, & Gokula, 2003). Vestibular stability of children was assessed using Yarotsky test (Egorova, 2013). Dynamic balance control was carried out using Bondarevsky test (1966) with open and closed eyes and the test «turns on a gymnastic bench in 20 seconds», the number of times (Starosta, & Hirtz, 1989).

Before and after the research project, the football players' technical competence was tested using the English tests of the Uefa Soccerstar Challenge (Guba, & Leksakov, 2018): ball control during running at a distance of 30 yards, s; turns with the ball 9 times at a distance of 0.5 yards, s; running without the ball 30 yards, s; hitting the ball with the head (headed shots) 3 times, number of goals; hitting the ball with the foot 3 times from the right and left sides of the goal; number of points; dribbling, s.

Using licensed versions of statistical programs, the arithmetic mean of the indicator, its error and sigma deviations were calculated. The reliability of the difference in indicators was assessed according to the Student's criterion. Parents did not object to their children's participation in the experiment, which was conducted according to international ethical norms and rules.

Results

The results of testing the young football players' static and dynamic coordination at the beginning and at the end of the research work are presented in Table 1.

Table 1. High-stakes testing indicators values of the football players' static and dynamic coordination (M±m)

Test №	Test	CG (n=28)		EG (n=28)	
		At the project beginning	At the project end	At the project beginning	At the project end
Static coordination					
1.	Romberg test, s	18.5±2.24	27.7±3.23*	17.8±2.22	38.5±4.17*
2.	Yarotsky test, s	15.6±2.14	24.3±2.56*	16.3±2.17	32.8±3.58*
Dynamic coordination					
3.	Bondarevsky test with open eyes, s	13.4±2.12	17.8±2.87	12.8±2.11	27.6±3.12*
4.	Bondarevsky test with closed eyes, s	8.2±1.81	10.3±2.15	8.4±1.78	17.9±2.36*
5.	Turns on a gymnastic bench in 20 seconds, the number of times	4.2±0.34	5.6±2.12	4.4±0.36	7.7±2.24*

Note.* sifnificance of various differencies (p< 0,05)

At the beginning of the research, there were no significant differences between the athletes' static and dynamic coordination values indicators in CG and EG, p>0.05. At the end of our research, the coordination indicators values in children of CG and EG differed from each other. At the end of the annual training macrocycle, there was an increase in these indicators values in both groups. The athletes of the control group significantly increased the indicators values in two tests of static coordination (№1 and №2). In the experimental group, a significant increase in the indicators values was found in all tests for static and dynamic coordination, p<0.05. The increase in the coordination indicators values turned out to be more in the athletes of the experimental group in test № 1 by 2.1 times, №2 by 2.0, №3 by 2.1, №4 by 2.1, in test №5 by 1.7 times, compared with the initial results. This increase was greater than in the athletes of the control group (Figure 3).

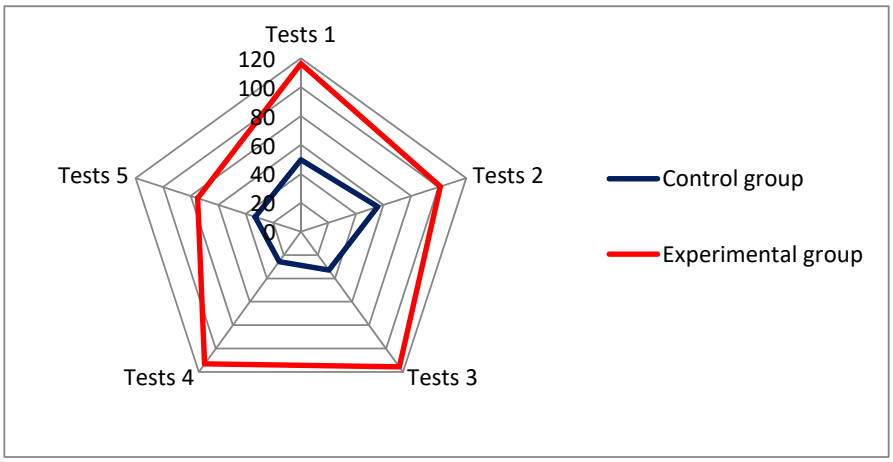

Fig. 3. The increase in the static and dynamic coordination values of athletes of the CG and EG at the end of the experiment (%)

In the experimental group, in contrast to the control one, the increase in the indicators values of the athletes' static and dynamic coordination exceeds 100% (with the exception of test №5). At the beginning of the research project, there were no statistically significant differences between the values of children's technical skills testing indicators in both groups (Table 2).

Table 2. High-stakes testing of the CG and EG football players' technical competence (M±m)

Test №	Test	CG (n=28)		EG (n=28)	
		At the project beginning	At the project end	At the project beginning	At the project end
1.	Ball control during running at a distance of 30 yards, s	8.8±1.31	6.2±1.22	8.9±1.29	5.1±1.05*
2.	Turns with the ball 9 times at a distance of 0.5 yards, s	40.4±4.67	35.7±4.50	41.2±4.82	27.8±4.16*
3.	Running without the ball 30 yards, s	18.8±3.44	13.6±3.12	18.2±3.22	12.2±2.14*
4.	Hitting the ball with the head (headed shots) 3 times, number of goals	1.0±0.01	2.0±0.26*	1.0±0.001	3.0±0.32*
5.	Hitting the ball with the foot 3 times from the right and left sides of the goal; number of points	7.2±1.45	10.4±2.57	7.0±1.56	14.4±2.73*
6.	Dribbling, s	25.7±4.59	20.9±3.28	24.8±4.06	17.2±3.14*

After the research project completion, the values of technical readiness indicators improved in both groups. A significant increase in the values of the technical competence indicators occurred in CG only in test №4, and in EG - in all tests (Table 2). At the end of the experiment, the increase of the values of technical competence was greater in athletes of the experimental group in the test №1 by 1.7 times, №2 by 1.4 times, №3 by 1.5 times, №4 by 3.0 times, №5 by 2.0 times, in the test №6 by 1.4 times compared to the baseline results. This increase was greater than in CG. (Figure 4).

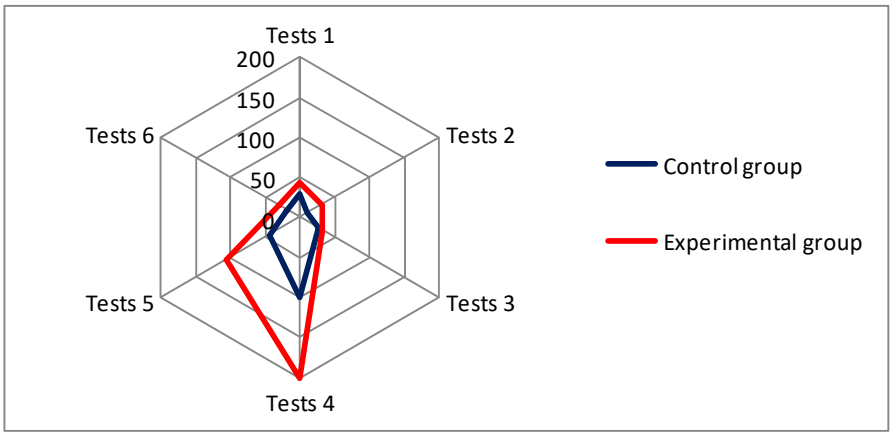

Fig. 4. The increase in the CG and EG athletes' technical competence indicators values at the end of the experiment (%)

Our research results showed that the training sessions, conducted by the conjugate method according to the «Combi» («coordination + technique») method using a set of simulators, proved to be more effective for improving the technical competence of the boys than the method of conducting classes according to a standard program for children's sport school.

Discussion

An athlete's technical competence in team sports is considered as one of the significant qualities that affect the performance of athletes (Montesano Pietro, & Mazzeo Filomena, 2019). It is important to study the issues of improving athletes' technical competence using various means and methods. One of the methods of improving sports technique is based on coordination training, which contributes to more effective improvement of motor skills (Bykova et al., 2017; Ştefan Alecu, & Dragoş Ionescu - Bondoc, 2018; Hakman et al., 2018; Montesano Pietro, & Mazzeo Filomena, 2019)

Experts in the field of sports recommend coaches to use an innovative arsenal of tools and methods to develop the technique of motor actions in football in an earlier sensitive period (Rosario Ceruso et al., 2019), which excludes «re-training» to achieve good sports results in the future. A high degree of mastering coordination actions in this childhood is associated with significant plasticity of the cerebral cortex and proprioceptive sensitivity development (Giovanni Esposito et al., 2019). Therefore, the topic of our research project seems relevant and timely and is consistent with the opinion of other authors working in this direction (Hakman et al., 2018; Montesano Pietro, & Mazzeo Filomena, 2019).

In other sports, there is experience of using training devices with unstable surfaces in the training process (Zagorodny et al., 2015; Anthonius et al., 2018). We have proposed an innovative training program for the development of sports equipment for young football players, aged 7-8, in which classes are based on a combination of the conjugate method and balancing simulators «coordination + technique».

Such a methodical approach to conducting a training session allowed, at the end of our pedagogical experiment, to obtain higher indicators of static, dynamic coordination and technical competence of young football players, aged 7-8, at the stage of initial sports training, compared with athletes who were engaged in the traditional program of the annual training macrocycle.

Our statement that coordination qualities and vestibular stability development increase the level of football players' technical competence is consistent with the data of similar research works obtained in other sports (Bykova, et al., 2017; Ştefan Alecu, & Dragoş Ionescu-Bondoc, 2018; Montesano Pietro, & Mazzeo Filomena, 2019). The development of the coordination component of physical fitness makes it possible to increase the technical competence effectiveness up to 40% (Baginska, 2017; Boichuk et al., 2017). Balancing on an unstable support during training increases the development of speed and strength qualities and improves an athlete's proprioceptive system (Degtyareva, & Turchina, 2015). Some authors report that after 8 weeks of proprioceptive training, they received positive results in not only vestibular stability t, but also motor reaction speed development (Taskin Cengiz & Bicer Yonca Sureya, 2015). We believe that the use of new pedagogical and methodological techniques by the coach increases the effectiveness of the training session and athletes' performance.

Conclusions

In the pedagogical experiment conducted by us, the author's innovative «Combi» method was tested for the development of sports technique and coordination among young football players, aged 7-8 at the initial stage of sports training. This method provides for the use of a combination of the conjugate method and a complex of training devices, having unstable surfaces at the training session of the standard program of the annual macrocycle. The training program for the experimental group is supplemented with the homework «playing footbag with a soft ball (sox)».

At the end of the annual training macrocycle, the results of monitoring and testing of the children showed that a significant increase in the static coordination indicators values was found in the experimental group of football players. The samples of Romberg and Yarotsky increased by 2.3 times and by 2 times, respectively. Dynamic coordination (Starosta and Bondarevsky test) increased by 2.4 and by 4.4 times, respectively. The technique of control a soccer ball increased by 1.7 times, the technique of headed shot by 3 times, kicking towards the goal by 2 times, compared with the values of the children's in the control group indicators.

The results of using our author's methodology at the initial stage of sports training for children aged 7-8 confirm the conclusions of other authors that coordination abilities development leads to an increase in sports technique skills in football. In modern football, the requirements for the athletes' physical and technical training are increasing. Sports teachers and coaches have to take a creative approach to improving the training session. We believe that «Combi» method created and tested by us proved to be successful and effective. Therefore, we suggest using it in educational institutions of different sports orientation for training novice athletes.

Conflicts of interest. The authors declare no conflict of interest.

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