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THE EFFECTS OF LTAD-BASED PROGRAMMING ON FUNDAMENTAL SKILLS AND PHYSICAL ABILITIES OF BASKETBALL PLAYERS AGED 11-12 YEARS

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Abstract

Study purpose. The purpose of this research is to determine the effect of LTAD-based programming on the physical abilities and fundamental skills of basketball players aged 11-12 years.

Materials and methods. The research method used was an experimental one-group pretest-posttest design. The study participants included 50 basketball players, 25 males and 25 females, weighing ±50–70 kg and standing 159-172 cm tall. The instruments used consisted of a multistage fitness test, 30-meter sprint, Illinois run, layup, shooting under the ring, and free throw. Data was gathered by observation and testing. The data was analyzed descriptively using Wilcoxon and Mann-Whitney tests, which were aided by SPSS version 23.

Results. The results of the male and female groups' pretest-posttest showed that the Asymp.sig (2-tailed) values for the aspects of endurance, speed, agility, layup, shooting under the ring, and free throw were 0.000<0.05. The results of the posttest comparison between males and females revealed that the Asymp.sig (2-tailed) value for the aspects of endurance, agility, speed, layup, and free throw was 0.264-0.938>0.05, only for shooting under the ring the Asymp.sig (2-tailed) value was 0.008 <0.05.

Conclusions. The male and female groups' posttest results were better than the pretest results before LTAD-based programming. The majority of the posttest comparisons between males and females revealed no significant differences. This suggests that both the male and female groups improved after receiving LTAD-based programming.

Keywords: long-term athlete development, LTAD-based programming, learn to train, basketball players aged 11-12 years.

Introduction

Basketball sport development is inextricably linked to internal as well as external factors (Fox et al., 2017). Internal factors include motivation, self-confidence, and adequate human resources, while external factors such as good training programs, and the availability of complete infrastructure (Bompa O. Tudor, 2019). This is one of the most important aspects of basketball coaching development. One of the goals of basketball coaching is to assist athletes in reaching their peak performance at the specified age (Johnson et al., 2011). As a result, the concept of long-term athlete development is critical when managing training based on the athlete's chronological age.

The concept of long-term athlete development (LTAD) provides a method and philosophy for developing athletes as well as cultural changes in sports to produce game assessments and organized training program design (Siwik et al., 2015). Balyi coined the term "long-term athlete development", which consists of several stages that must be completed in a systematic order, including the active star, fundamental, learning to train, training to train, learning to complete, training to complete, learning to win, training to win, and active for life (Abdelrasoul, 2015; Balyi et al., 2013). The learning-to-train stage, which occurs between the ages of 8 and 12 years for both boys and females, is a critical mass for determining the best training arrangements (Abdelrasoul, 2015).

As a result, as a coach, he must learn how to develop abilities that are directed by long-term athlete development principles (Yudhistira, 2023). Athletes can actively participate in fun physical exercises such as developing

flexibility, coordination, speed, endurance, and strength using their body weight or infrastructure such as medicine balls and so on during the learn-to-train stage (Abdelrasoul, 2015). Therefore, the primary focus at this stage is on developing fundamental techniques and physical abilities by chronological age (van Kooten, 2016). However, various issues arise while attempting to execute this concept.

A classic problem, for example, is that athletes are focused on achieving victory at a young age where the most important factor is success at a young age and placing specialization-oriented training programs to reach peak performance before a specified age (Yildirim et al., 2019). This contradicts the premise of long-term athlete development. Aside from that, the needs analysis in the form of observations and interviews with trainers revealed that they were already aware of the importance of teaching essential skills effectively and correctly. However, the use of the training model still does not reflect the LTAD idea, such as the application of the fundamental skills in the training model, which lacks variation and does not recognize the necessity of intervals and recuperation in a single training session. Intervals and recovery are part of the training in this case (Hausswirth & Mujika, 2013)

Besides, stretching is not particularly programmed and does not follow the rules for raising, activation, mobility, and potentiation (Jeffreys, 2018). According to research, flexibility is an essential component of excellent physical growth (Jeffreys, 2018). Training in the learning-to-train stage is conceptually engaging games-based training (Harrison et al., 2015). Aside from that, methods of training must be capable of including the development of cooperation, discipline, and process focus (Sulistiyono et al., 2022).

The authors examined numerous long-term athlete development concepts. Long-term athlete development conceptual model (Granacher et al., 2016), implementation of long-term athlete development from a trainer's perspective (Beaudoin et al., 2015), problems with adapting the long-term athlete development model from a social control perspective (Dowling et al., 2020), and youth athlete development model (Varghese et al., 2022). Sulistiyono et al. recently evaluated a training model focused on long-term athlete development, with the findings indicating an improvement in the physical ability aspect of soccer (Sulistiyono, Sugiyanto, et al., 2021).

The preceding research focuses solely on training conceptual models, narrative studies, exploration, adoption, and implementation from the trainer's and societal perspectives. The referenced study did not include basketball players aged 11 to 12. Empirical evidence on the use of the training model using the LTAD method for 11-12-year-olds in basketball has gotten less attention. According to past studies, there is still a scarcity of evidence-based research on the effectiveness of LTAD (Beaudoin et al., 2015; Ropret & Jevtić, 2019). In this regard, the author's purpose is to fill a vacuum in prior research by developing essential skills and physical capacities in basketball players aged 11-12 years using an LTAD-based training model.

The purpose of this study is to determine the effect that LTAD-based training programming has on physical abilities and fundamental skills in basketball players aged 11-12 years. The authors hypothesize that there is a considerable difference between the male pretest and posttest, and the female pretest and posttest. Furthermore, the authors hypothesize that there is no significant difference in posttest findings between the male and female groups in terms of growth in physical abilities and fundamental skills in basketball players aged 11-12 years.

Materials and methods

Study participants

This is field-testing experimental research with a one-group pretest-posttest-posttest design (Yulianto & Yudhistira, 2021). This study compared the male group's pretest and posttest, as well as the female group's pretest and posttest. Following that, this study compares the male group's posttest to the female group's posttest. Participants included 50 basketball players, 25 males and 25 females, weighing 50-70 kilograms and standing 159-172 centimeters tall. All participants were given a pretest to observe initial results utilizing physical ability instruments such as aerobic endurance, speed, and agility tests, while fundamental skills were assessed using the dribble layup, under-the-ring, and free throw instruments. After determining the pertest findings for the male and female groups, they received treatment with LTAD-based programming developed by the authors. Four trainers assisted with the research to ensure its smooth operation.

Study organization

Participants were given treatment in the form of LTAD-based programming prepared by the authors by adapting guidelines from relevant books, ebooks, and journal articles. Before any programming is given to athletes, it is validated by 5 experts, three of whom are nationally licensed basketball coaches and two of whom are lecturers who are knowledgeable about training programming. Based on this assessment, the program received a consensus with an average content validity result of 8.00-1.00, indicating that the program has good content validity (Pradipta et al., 2023; Yudhistira & Tomoliyus, 2020). As a result, the program can be utilized to treat basketball players aged 11 to 12. The minimum attendance of participants to take part in treatment is 80%. The multistage fitness test, 30-meter run, and Illinois agility run are among the test instruments used to assess physical ability (Wiriawan, 2017). The core skills were next tested, which include the dribble layup, under-the-ring, and free throw tests (Akinci & Kirazci, 2020; Marta, 2022; Mascret et al., 2016).

The training program is delivered three to four times per week for a total of 24 meetings. With programmed training dose settings, one training session lasts roughly 120 minutes. The procedure for carrying out training for basketball players is guided by stretching using the raise, activation, mobility, and potential (RAMP) guidelines. After that, the core training one is started, which includes physical ability training such as agility and coordination, as well as speed, and then goes on to core training two, which includes instruction in fundamental skills such as passing, dribbling, and shooting. After that, proprioceptive neuromuscular facilitation (PNF) is used to provide cooling stretching. The preceding explanation is an example of this programming, which is, of course, tailored to specific training adaptations.

Two essential exercises, such as fundamental skills training and physical strength training, can be performed in a single training session. Aside from that, you can exercise physical talents such as agility and coordination training, speed and strength, or fundamental skills training such as shooting, dribbling passes, and offensive and defensive drill games in a single training session. To clarify, the LTAD-based training program is shown in Table 1 as follows:

Statistical analysis

For this research, descriptive analysis was utilized to give maximum, minimum, mean, and standard deviation values (Dameria et al., 2023). In the second stage, the authors used the nonparametric Wilcoxon test to process the pretest and post-test data (Akhiruyanto et al., 2022), while the nonparametric Mann-Whitney test to compare post-test results for males and females (Pramono et al., 2023).

Table 1. LTAD-based training program for basketball players aged 11-12 years

No	Practice Material	Dose
	Warm-up program (RAMP)	
1	Raise: Leg high knee, Leg high knee right & left, Leg high knee 2x2	Intensity: moderate Volume (rep): 2-3-4x etc Recovery: 2-3’
	Activation & mobility: Shoulder rotation, sway squat, lunges, single leg knee flexion with internal rotation, single leg knee, plank with arm and leg raise.	Intensity: low-moderate Volume (reps): 8-10x
	Potentiation: wall ball drill, circle basketball around the waist, circle basketball around legs	Intensity: low-moderate Volume (sets x rep): 2-3-4 etc x 20-30”
	Fundamental Skills Training Program	
2a	Passing: chest pass, bounce pass, overhead pass, baseball pass, one-handed chest pass, one-handed bounce pass	Intensity: moderate Volume (sets x rep): 2-3-4 etc x 10-15-20 etc Recovery: 60”
2b	Dribble: forward, backward, lateral, crossover	Intensity: moderate Volume (set x rep) 2-3-4 etc x 5-6-7 etc Recovery: 60”
2c	Shooting: under basket, set shoot, lay up, free throw	Intensity: moderate Volume (sets x rep): 2-3-4 etc x 10-12-15 etc Recovery: 60”
	Game Practice Program	
3a	Defense drill: Defense shuffle, mirror drill	Intensity: maximum Duration: 10-15-20’
3b	Offensive drill: box out drill, one on one drill	Intensity: maximum Duration: 10-15-20’
3a	Another drill: pick a setting, inbounding the ball	Intensity: maximum Duration: 10-15-20’
	Physical Ability Training Program	
4a	Agility balance, coordination: ladder rabbit hops, straddle hops squat, hopscotch, ladder taps right and left, ladder single leg hops right and left	Intensity: low-moderate Volume (sets x rep): 6-8 x 3-4-5 etc Intervals: 10-15” Recovery: 60”
4b	Speed: Forward sprint, backpedal sprint, lateral sprint	Intensity: maximum Distance: 30-40 meters Rep: 2-3-4 etc Recovery: 40-60-90
4c	Strength: goblet squat, split squat, box jump, scapula push-up, band overhead press, standing band row, overhead squat, renegade row, situp	Intensity: low-moderate Volume (sets x rep): 2-3-4 etc x 6-8-9-10 Recovery: 2-3’ Media: 1kg barbell, light-medium size resistance band
	Cooling down exercise program with PNF	
5	Hamstring and glute stretch, chest stretch, shoulder stretch, tricep stretch, quadriceps stretch	Rep: 2-3-4 etc Count: 1-6” per move Count: 7-10” counter per move

Table 2. Results of descriptive analysis of physical abilities and fundamental skills of basketball players aged 11-12 years

Group	Variable	Pretest				Postest			
		Min	Max	Mean	SD	Min	Mac	Mean	SD
Male	Durability	27.02	43.06	33.94	4.94431	32.09	45.08	36.97	3.45426
	Speed	4.98	6.50	5.64	0.32225	4.10	5.90	4.945	0.33786
	Agility	18.24	22.45	19.87	0.93851	17.00	21.01	18.96	1.03899
	Right dribble layup	1	6	3	1.519	4	7	5	0.963
	Dribble lay up left	0	5	2	1.700	4	7	5	0.831
	Under ring	6	26	17	5.100	11	28	20	4.698
	Freethrow	1	10	6	2.548	6	16	10	2.712
Female	Durability	27.02	43.06	33.94	4.94431	32.09	45.08	36.97	3.45426
	Speed	4.98	6.50	5.6472	0.32225	41.10	5.90	4.945	0.33786
	Agility	18.24	22.45	19.87	0.93851	17.00	21.01	18.96	1.03899
	Right dribble layup	1	7	2	1.498	4	8	5	0.843
	Dribble lay up left	1	5	2	1.150	4	7	4	0.862
	Under ring	7	24	12	5.297	9	26	16	4.830
	Freethrow	1	11	5	2.609	6	15	9	2.147

This data processing was assisted by the SPSS version 23 application. To make it clearer, we have presented the results of the descriptive analysis in Table 2 as follows.

Results

Wilcoxon analysis of the Asymp.sig (2-tailed) value of the male group regarding physical abilities which include endurance, speed, and overall agility produces a value of 0.000<0.05, while the fundamental aspects of skill which include right and left dribble layup, under ring, and free throw, overall produces a value of 0.000 < 0.05. This shows that there is a significant difference between the male group's pretest and posttest. According to the findings above, there was a significant improvement in physical abilities and fundamental skills when compared to the male group's pretest and posttest scores. The Wilcoxon analysis of the Asymp.sig (2-tailed) value of the female group's physical abilities such as endurance, speed, and overall agility produced a value of 0.000-0.001 < 0.05, whereas fundamental skills such as right and left dribble layup, under the ring, and free throw yielded a value of 0.000 < 0.05. These findings reveal that there is a substantial difference between the male group's pretest and posttest. According to the findings above, there was substantial improvement in physical abilities and fundamental skills when compared to the female group's pretest and posttest scores.

The Mann-Whitney analysis with Asymp.sig (2-tailed) values for the physical ability variable yielded the following results: endurance 0.662>0.05, speed 0.938>0.05, and agility 0.727>0.05. This suggests that there is no substantial difference in physical abilities between the male and female groups, although the average scores for the male and female groups tend to be the same. There is only one significant difference in the overall fundamental skill results, and that is shooting under the ring 0.008 0.05. As a result, the male and female groups differ significantly. Aside from the under-ring variable, no significant differences were found between male

Table 3. Comparison results of pretest and posttest for male and female groups based on Wilcoxon analysis

Group	Variable	Asymp. sig (2-tailed)
Male	Pretest – endurance	0.000
	Posttest – endurance	
	Pretest – speed	0.000
	Posttest – speed	
	Pretest – agility	0.000
	Posttest – agility	
	Pretest – right dribble layup	0.000
	Posttest – right dribble layup	
	Pretest – left dribble layup	0.000
	Posttest – left dribble layup	
	Pretest – under the ring	0.000
	Postest – under ring	
	Pretest – free throw	0.000
	Postest – free throw	
Female	Pretest – endurance	0.001
	Posttest – endurance	
	Pretest – speed	0.000
	Posttest – speed	
	Pretest – agility	0.000
	Posttest – agility	
	Pretest – right dribble layup	0.000
	Posttest – right dribble layup	
	Pretest – left dribble layup	0.000
	Posttest – left dribble layup	
	Pretest – under the ring	0.000
	Postest – under ring	
	Pretest – free throw	0.000
	Postest – free throw	

Table 4. Posttest comparison results for male and female groups based on Mann-Whitney analysis

Group	Variable	Mean value	Asymp. sig (2-tailed)
Male	Endurance	36.97	0.662
Female		36.97	
Male	Speed	4.945	0.938
Female		4.945	
Male	Agility	18.96	0.727
Female		18.96	
Male	Right dribble layup	5	0.264
Female		5	
Male	Left dribble layup	5	0.163
Female		4	
Male	Under ring	20	0.008
Female		16	
Male	Freethrow	10	0.198
Female		9	

and female groups. According to the mean value, the male group outperforms the female group. To make it clearer, the mean value is presented using the diagram in Figure 1 as follows:

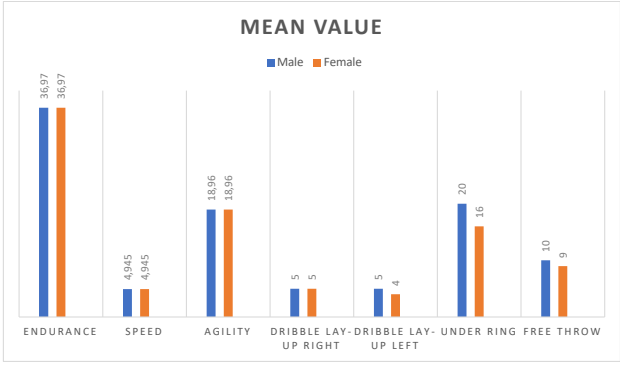

Fig. 1. Diagram of the average posttest score for the male and female groups

Discussion

The purpose of this study is to determine how long-term athlete development (LTAD)-based programming affects physical abilities such as aerobic endurance, speed, and agility, as well as fundamental skills, including dribble layups, shooting under the ring, and shooting free throws in basketball players aged 11-12 years. The authors observed a difference between pretest and posttest in the male group and between pretest and posttest in the female group. The posttest findings from the male and female groups were then compared.

The results of the Wilcoxon analysis, Asymp.sig (2-tailed) values in the pretest and posttest of the male group for the physical ability variable produced the following results: endurance 0.000<0.05, speed 0.000<0.05, agility 0.000<0.05, while the fundamental skill variable includes right dribble lay up 0.000<0.05, left dribble lay up 0.000<0.05, shooting under the ring 0.000<0.05, and shooting free throw 0.000<0.05. This indicates that there is a significant difference between the pretest and posttest in the male group. These findings reveal that long-term athlete development (LTAD)-based programming resulted in a considerable increase in pretest and posttest physical ability.

Wilcoxon analysis of Asymp.sig (2-tailed) values for the pretest and posttest of the female group for the physical ability variable gave the following results: endurance 0.001<0.05, speed 0.000<0.05, agility 0.000<0.05, while fundamental skill variables include right dribble lay up 0.000<0.05, left dribble lay up 0.000<0.05, shooting under the ring 0.000<0.05, and shooting free throw 0.000<0.05. This indicates that there is a significant difference between the pretest and posttest in the female group. These findings reveal that long-term athlete development (LTAD)-based programming resulted in a considerable increase in pretest and posttest physical ability.

The Mann-Whitney analysis of Asymp.sig (2-tailed) values for the physical ability variable yielded the following results: endurance 0.662>0.05, speed 0.938>0.05, and agility 0.727>0.05. As a result, there is no significant difference in physical abilities between male and female groups. They tend to be the same based on the mean values of the male and female groups. Right dribble layup 0.264>0.05, left dribble layup 0.163>0.05, shooting beneath the ring 0.008>0.05, and free throw shooting 0.198>0.5 are fundamental skill variables. There is only one significant difference between the male and female groups in the fundamental skill findings, which is shooting under the ring of 0.008 < 0.05. Aside from the shooting under ring variable, there were no significant changes between male and female groups following treatment.

The authors' findings are consistent with Granacher et al.'s study, which states that physical ability training related to muscle endurance is important during the long-term athlete development stage to stimulate athlete development, tolerate the demands of long-term training and competition, and minimize the effects of injury in the future (Granacher et al., 2016). Coaches must specifically facilitate exercises related to body balance, and weight training with a focus on movement technique, complex exercises, and plyometric exercises that are appropriate to the training dose during the long-term development stage of athletes to provide benefits in athletic performance and muscle fitness (Granacher et al., 2016).

Recently, ladder-based plyometrics training programming for 11-12-year-olds was created using proper training guidelines to produce increased physical abilities such as agility, leg muscle power, and aerobic endurance (Pramono et al., 2023). Recent data on the impact of long-term athlete development-based training on physical abilities and academic accomplishment was also discovered; the results significantly improved physical abilities such as leg muscle power, aerobic endurance, and 30-meter sprint in soccer players aged 11-12 years (Sulistiyono, Sugiyanto, et al., 2021). Physical abilities must be specifically developed to support motor skills, improve health, and reduce injuries (Faigenbaum et al., 2016; Loyd et al., 2015). Furthermore, improving physical ability can promote athletes' long-term career development (Loyd et al., 2015).

The findings of the authors suggest that LTAD-based programming improves fundamental skills in basketball

players aged 11 to 12. This is consistent with previous research in the sport of soccer for players aged 10 to 12 years old using a games experience learning training model based on the LTAD programming concept (Sulistiyono, Akhiruyanto, et al., 2021). Treatment carried out for 10 weeks with a training frequency of 3 times a week was able to provide improvements in basic soccer playing techniques compared to conventional methods that had been applied (Sulistiyono, Akhiruyanto, et al., 2021). Likewise, Yudanto et al's research applied the games experience learning model with LTAD principles compared to the technical approach method with the results of the experience of the game learning training model being better than the technical approach in improving football playing skills (Yudanto, Suherman, et al., 2022; Yudanto, Yudhistira, et al., 2022). Wicaksono et al's research also applies the part and whole method, this method has the principle of LTAD programming at the learning-to-train stage (Wicaksono & Hidayatullah, 2022). As a result, this method can improve basic skills in the sport of volleyball (Wicaksono & Hidayatullah, 2022).

Furthermore, the authors compared the male and female groups' post-test outcomes in terms of physical ability and essential competencies. The results for the male and female groups did not differ significantly, and the results for numerous components could even be considered identical. At the learn-to-train stage, LTAD-based programming delivers equivalent progress for males and females, with programming properly monitored from the treatment process, rest patterns, and adequate nutrition. According to developmental psychology, when children between the ages of 6 and 12 attend elementary school, their growth will accelerate, as will their development of movement and nerves (Firdaus, 2012). Aside from that, male athletes' growth tends to slow down at the age of 8, whilst female athletes' growth accelerates (Jahja, 2011). As a result, as a coach, you must understand the athlete's growth and development to properly alter the programming (Hadi et al., 2022).

Gender sexual maturity undoubtedly differs (Jahja, 2011). Children are eager to study, understand knowledge, and have a high level of curiosity throughout this period (Jahja, 2011). As a result, the trainer takes on crucial roles such as administrator, facilitator, motivator, and well-managed training program (Saifu et al., 2021; Wicaksono & Hidayatullah, 2022). Equally crucial factors are parental support and the surrounding environment because even if the athlete is brilliant if parental and environmental support is lacking, the desired results will be thwarted (Harris et al., 2014; Martens, 2012; Rodis, 2013). Experts agree that at this age, assistance from family, peers, and school influences social development to attain success in sporting achievements (Dorsch et al., 2021).

In the sport of basketball, the learn-to-train stage is a perfect moment for optimizing physical skills and abilities (O'Sullivan, 2014). According to studies, this stage is a semi-specific development that must be directed (Styasih et al., 2016). Furthermore, this stage is critical for improving movement speed and coordination (Ivashchenko et al., 2018). Coordination is defined as the coordination of body and brain motions to carry out certain movements (Hadi & Yudhistira, 2023). This stage is an accelerated period for improving fundamental basketball skills and physical abilities (Guimarães et al., 2019). This can be regarded as an athlete's thirst for knowledge, hence the involvement of parents and coaches is critical in guiding athletes (Haddad et al., 2021). As a result, it becomes a severe issue when the trainer is unfamiliar with the details of this level.

Long-term athlete development provides a solution to these challenges (Ford et al., 2011). This concept is relevant from both internal and external perspectives (Ford et al., 2011). Similarly, several studies support the authors' findings that the LTAD concept provides a structured and systematic pathway to optimize development from gifted children to elite athletes by taking individual maturity into account based on chronological age (Balyi et al., 2013; Dowling et al., 2020; Ford et al., 2011)

This concept will run smoothly when there is synergy between coaches, organizational management, and supportive parents (Dowling et al., 2020). This concept is quite complex since it discusses not only how athletes might excel now, but also philosophical development in terms of cognitive, affective, and psychomotor development (Styasih et al., 2016). The concept outlines stages that must be completed based on the athlete's chronological age (Balyi, 2004).

The concept of LTAD is inextricably linked to the science of sports pedagogy. Sports pedagogy is related to how someone helps children and young people explore their potential through sport (Armour, 2013). The point is about how children learn in every aspect of education both at school and outside of school (Armour, 2013). According to another study, sports pedagogy is a guide and procedure for learning sports-specific abilities (Lee et al., 2014). Aside from that, the most significant aspect is how this learning may be implemented effectively so that athletes can get individual, social, and health benefits (Armour, 2013).

Conclusion

According to the findings and discussion, providing treatment with LTAD-based programming at the learning-to-train stage can improve physical abilities such as endurance, speed, and agility, as well as fundamental skills, including shooting, shooting under the ring, and free throw shooting in both male and female groups. The comparison of the male and female posttests did not appear to cause significant differences, implying that the male and female groups given LTAD-based programming achieved the same good results. As a result, LTAD programming is a concept that is required in the field of performance sports, particularly basketball, to enhance long-term performance based on an athlete's physiological and chronological age. However, future studies will necessitate a more in-depth discussion, such as implementing longitudinal-based interventions to acquire more comprehensive findings.

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Conflict of interest

All authors declare no conflict of interest.

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ВПЛИВ ПРОГРАМУВАННЯ НА БАЗІ МОДЕЛІ LTAD НА ФУНДАМЕНТАЛЬНІ НАВИЧКИ ТА ФІЗИЧНІ ЗДІБНОСТІ БАСКЕТБОЛІСТІВ ВІКОМ 11-12 РОКІВ

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Авторський вклад: A – дизайн дослідження; B – збір даних; C – статаналіз; D – підготовка рукопису; E – збір коштів

Реферат. Стаття: 9 с., 4 табл., 1 рис., 54 джерел.

Мета дослідження. Метою цього дослідження є визначення впливу програмування на базі моделі Довгострокового розвитку спортсменів (LTAD) на фізичні здібності та фундаментальні навички баскетболістів віком 11-12 років.

Матеріали та методи. Як метод дослідження використовували експериментальний план із попереднім і підсумковим тестуванням на одній групі. Учасниками дослідження були 50 баскетболістів, 25 чоловічої статі та 25 жіночої статі, вагою ±50-70 кг і зростом 159-172 см. Інструменти, які використовували, включали багатоетапний тест на функціональний стан, біг на 30 метрів, Іллінойський тест на біг, кидок однією рукою з-під кільця з відскоком м'яча від щита, кидок однією рукою з-під кільця без відскоку м'яча від щита і штрафний кидок. Дані збирали шляхом спостереження та тестування. Дані аналізували описово з використанням критеріїв Вілкоксона та Манна-Уітні за допомогою програмного забезпечення SPSS версії 23.

Результати. Результати попереднього та підсумкового тестування чоловічої та жіночої груп показали, що значення асимптотичної значущості (2-сторонньої) для аспектів витривалості, швидкості, спритності, кидка однією рукою з-під кільця з відскоком м'яча від щита, кидка однією рукою з-під кільця без відскоку м'яча від щита та штрафного кидка становили 0,000<0,05. Результати порівняння показників підсумкового тестування між чоловічою та жіночою групами показали, що значення асимптотичної значущості (2-сторонньої) для аспектів витривалості, спритності, швидкості, кидка однією рукою з-під кільця з відскоком м'яча від щита та штрафного кидка становило 0,264–0,938>0,05, і лише для кидка однією рукою з-під кільця без відскоку м'яча від щита значення асимптотичної значущості (2-сторонньої) становило 0,008 <0,05.

Висновки. Результати підсумкового тестування чоловічої та жіночої груп були кращими за результати попереднього тестування до програмування на базі моделі Довгострокового розвитку спортсменів (LTAD). У більшості порівнянь результатів підсумкового тестування між чоловічою та жіночою групами не було виявлено статистично значущих відмінностей. Це дає підстави вважати, що і чоловіча, і жіноча групи покращили свої результати після застосування до них програмування на базі моделі Довгострокового розвитку спортсменів (LTAD).

Ключові слова: довгостроковий розвиток спортсменів, програмування на базі моделі Довгострокового розвитку спортсменів (LTAD), вчитися тренувати, бакетболісти віком 11-12 років.

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