



# Ascertaining the Effectiveness of Coordination Training Interventions in Enhancing Sports Performance: A Systematic Review and Meta-analysis

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## Abstract

**Objectives.** The study aimed to analyze the effects of training programs that focused on various coordination exercises to improve the sports performance and coordination of athletes.

**Materials and methods.** An electronic review was conducted to compile the literature related to this issue, using Scopus, PubMed, Google Scholar and ProQuest databases. Following a systematic search, eleven studies carried out between 2014 to 2024 were considered appropriate for meta-analysis and were retrieved and analysed. The studies included were confined to different coordination interventions, such as balance, rhythm, agility, neuromuscular training, jump rope ladder exercises, spatial orientation, non-sports specific and proprioceptive training, ranging from 6 weeks to an annual macrocycle with participants (sub-junior and junior levels) from different sports.

**Results.** The meta-analysis revealed a small effect size improvement for balance training ( $E = 0.38$ ; 95 % CI = -0.66-2.54;  $p = 0.25$ ), a large effect size and significant enhancement for coordination and rhythm training ( $E = 2.2$ ; 95 % CI = -0.98-1.45;  $p = 0.70$ ). Additionally, it was noted a moderate effect size and substantial improvement for a specific coordinative ability training ( $E = 1.8$ ; 95 % CI = -0.84-2.99;  $p = 0.00$ ) when compared the experimental group with the control group. The results of 11 studies established a significant effect size of various coordination training interventions in improving motor coordination of athletes. However, the impact of these interventions on sports skills and performance remains limited and inadequate.

**Conclusions.** After a thorough analysis, it was concluded that various training regimens involving different stimuli, means and methods, comprising proprioceptive training, spatial training, motor rhythm training, neuromuscular training, balance training, coordination training drills using ladders, wobble board, bosu balls, trampoline and dynamic games, as well as non-specific sports training with basic exercises, have been found to be effective in enhancing motor coordination and sports skills.

**Keywords:** systematic review, training, sports, coordination.

## Introduction

Sports is a multifaced phenomenon which is governed by several physical, mental and technical components. Sports performance depends on the efficiency and effectiveness of motor Coordination which an athlete performs during a competition. Coordinative abilities and its implication in sports has been an area of concern for research scholars and scientists. Coordinative abilities can be classified into several categories such as orientation ability, rhythm, balance, reaction time, coupling and adaptation. These abilities put

together not only influence the execution of motor movement and sports skills but also provide a stronger base for other abilities like strength and power (Mitrousis et al., 2023). Centre nervous system receives an impetus either from an external or internal stimuli to perform any movement, contracting skeletal muscle. Suitable training can enhance and develop this mechanism. Although several studies indicated the importance of coordinative ability in sports, sports specific coordination varies across sports disciplines. However, the effect of a sports specific coordination training is still uncertain and under investigation (Latino et al., 2021).

While performing technical skill in open – skills – oriented sports such as football, volleyball, tennis and badminton, a state of equilibrium is essential for better performance

and to reduce errors. Moreover, in the close – skills – sports also balance plays a decisive role. Balance abilities have both static and dynamic versions that affect not only stability but also the execution of sports skills. As long as players remain stable and focused, they tend to perform better and demonstrate higher quality of playing ability. Several studies reported that balance training was found to be effective in promoting overall stability and better performance in sports (Cè et al., 2018; Lu et al., 2022; Mitrousis et al., 2023).

Another vital factor that plays a key role in sports context is rhythm which requires an external stimulant to execute controlled and consistent motor movement. Racquets sports and other team sports also emphasized on the development of rhythmic ability in young athletes. Several studies formulated and implemented rhythmic training which was found to be effective in improving the perception, reception and execution ability of young children (Söğüt et al., 2012; Yin et al., 2023).

Agility is another essential prerequisite which has a strong contribution in sports performance. It is the ability to change direction and to utilize the right muscles at a right time during the sports performance. In this context Shi et al. (2023) and several other investigators have studied the effect of agility training and sport performance. These studies reported meaningful impact of ladder training and agility training on sport performance (Bhisaji Pawar & Borkar, 2018; Malwanage et al., 2022a; Yüksel & Aydos, 2019)

Researchers have investigated the effect of various innovative modalities for instance proprioception and neuromuscular training on sports skills and coordinative abilities. These experiments have utilized innovative training protocol and innovative apparatus to inculcate better motor coordination and broader proprioception in the athletes (Blasco et al., 2024; Vasconcelos et al., 2023; Zhao et al., 2021).

Undoubtedly, better coordination led to better sports performance however, there is yet another issue that needs clarification and that is whether the coordination training have a direct impact on the sports skills or not. There are many studies which indicated the influence of coordination training in improving coordinative skills of an athlete, however its direct impact on sports skill is still uncertain. Many studies reported partial or small significance of these training modules on sports skills. In contrast, a few studies revealed that there was no significance of coordination training on sports skills (Formenti et al., 2021; Knobloch et al., 2005; H.-G. Lee, 2021; Peker & Taskin, 2016; Vişan et al., 2023).

To best of the author 's knowledge no systematic review and meta-analysis have been conducted so far regarding the effect of coordination interventions of various types in improving sports skills and enhancing the coordinative abilities of an athletes. Therefore, keeping this context in mind this study was proposed to analyse the effect of different coordination interventions in enhancing sports performance and coordinative abilities of the sports person.

## Materials and Methods

### Database and Search Profile

The literature related to the study was accessed using several electronic data bases primarily Pub med, Scopus, google scholar and ProQuest. Key words included “coordination training” “balance” or “footwork” or “coupling” or

“adaptation” or “hand eye coordination” or “agility”, “orientation” or “rhythmic” or “reaction time” and training or” intervention” and sports person or “athlete” were utilized. Additionally, the search was confined to last 10 years, articles published from Jan, 2014 to Jan, 2024, and it was also limited to human participants and scholarly journals. Once the articles were identified the cited references were also take in consideration for additional search. The search was also restrained to the English language literature only.

### Eligibility criteria

Popular “PICOS” strategy was utilized to retrieve and to access articles, which includes participants, Interventions, comparison, outcome and study designed (Moher et al., 2009). Table 1. disclose the inclusion and exclusion criteria in details. This review was chiefly restricted to the effect of various coordination training on sports performance and improving coordination of athletes. The PRISMA flow chart figure1. underline the flow of the exclusion and inclusion of the studies retrieved and accessed in the present study with specific rationale.

### Methodological Quality Assessment

Methodological quality of the included studies was ensured with the help of PEDro scale, which is a rating scale from ranges from 1 to 10 (de Morton, 2009). Higher rating reflects better methodological quality of training intervention and research paper. Two authors (AS & BD) have independently completed the quality check of methodology for every single study. However, in case of any disagreement, it was resolved with the consensus form third author (RV).

### Data Extraction

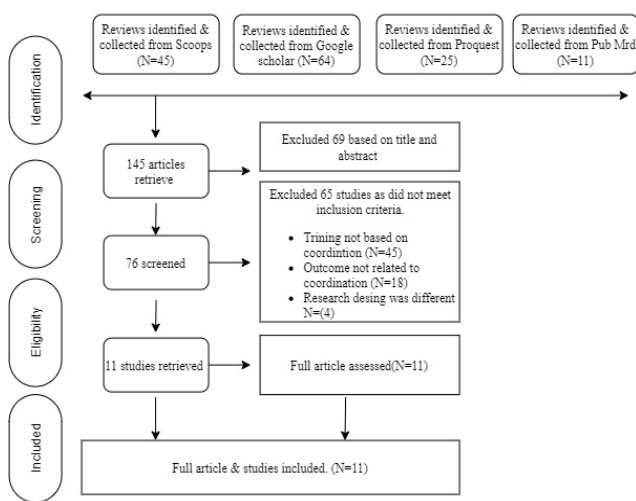
A total of 145 studies were initially extracted from the electronic data based and out of which 69 studies were excluded based on the title. 76 studies were screened for further data extraction and out of which another 65 were excluded because of inclusion criteria and finally only 11 studies meet the inclusion criteria. The data was extracted from these studies and a summary of which is presented in table 2 that includes the objective & design, Sample & analysis method and outcome of the study.

### Statistical Analysis

According to the guidelines of the Meta analysis minimum of three studies were required to compute the effect size and meta-analysis for the literature review. The Der Simonian and Laird (DL) model of effect size and meta-analysis was applied with the help of cumulative difference between the means, standard errors and Hedges's g across the various study and tua-T2 squared was computed to understand the heterogeneity amongst the groups. Effect size was computed while keeping the confidence interval at 95 %. and interpreted as <0.2 trivial, 0.2-0.6 low, 0.6-1.2 moderate, 1.2-2.0 large, 2.0-4.0 very large and 4.0> extremely large. Figure 2 Forest plot was created to showcase the effect size of cumulative difference in means of training groups and control groups Forest plot values are shown as effect size

**Table 1.** Inclusion and exclusion criteria utilized in the systematic review

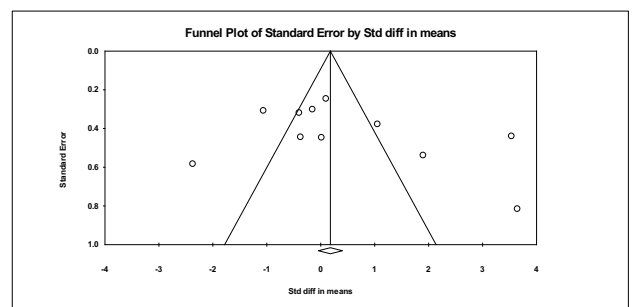
Category	Inclusion criteria	Exclusion criteria
Population	Sports person across all disciplines regardless of training age, gender and playing level.	Non-sports persons
Intervention	Coordination training interventions focusing on, balance, footwork, coupling, adaptation, hand eye coordination, agility, orientation, rhythmic and reaction time workout	Training program that does not employ the coordination training interventions.
Comparison	At least have one training and control group design to determine and to compare the significance of effect.	One group study design or non-existence of control group
Outcome	Impact of training intervention on coordinative abilities such as balance, orientation, agility, rhythm, adaptation, footwork, hand eye coordination	Lack of initial or post data
Study design	Experimental design	Nonexperimental design



**Fig. 1.** PRISMA inclusion/exclusion flow diagram

(std. diff in means) with 95 % confidence interval (CI). Black square indicating the individual studies, and their size depict their relative weight, whereas rhomboid shows the summary value. whereas figure3 funnel plot was prepared to showcase the publication bias in the studies.

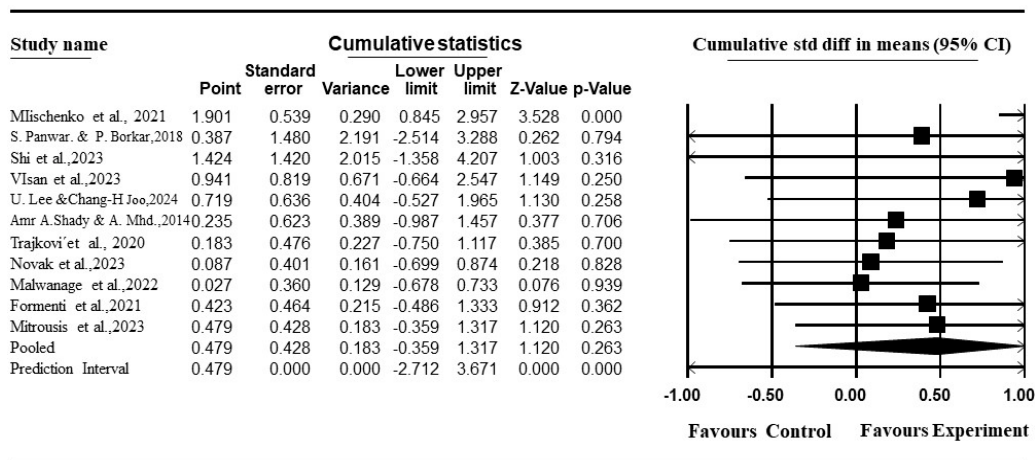
**Results**



**Fig. 3.** Funnel plot indicating the publication bias

**Discussion**

The systematic review and meta-analysis provide valuable insight about different types of coordination training programs and their impact on sports skills as well as coordinative abilities. Although there are limited reviews in this area, the overall results of 11 studies demonstrates a significant effect size (Figure2) of various coordination training interventions in improving coordinative abilities such as static and dynamic balance, motor competency,



**Meta Analysis**

**Fig. 2.** Forest plot showing comparison of cumulative standard difference in mean

**Table 2.** Included Studies on effect of various Coordination interventions on sports performance and coordination of athletes

Authors	Study -Objective & Design	Sample size & analysis method	Outcome and conclusions
Mischenko et al., 2021	Proposed a new methodology for increasing coordination ability in acrobatics sports for females; Two groups, training and control.	N = 20 each in Training and control group; vestibular stability and dynamic coordination were tested.	Result shown significant improvement in coordinative abilities & technical readiness in annual macro-Cyle ; 7 to 10 years is the most suitable age for improving coordinative abilities.
Smurti Pawar & Pradeep Borkar, 2018	Ladder training drills to improve the agility of kabaddi female players; 6 weeks training program with one experimental and one control group.	N = 24 each in Training and control group; agility t test was conducted.	Training group improved significantly in agility; Ladder training for 6 week was effective for enhancing agility.
Shi et al., 2023	Jump rope training for improving dynamic balance and stroke ability of tennis players; 12-weeks training for 3 days a week.	N = 8 in each training and control group; single leg stability test & hitting ability were tested.	Jump rope training and sequencing the rope training with technical training helps to competitive level of tennis players.
Visan et al., 2023	Coordinative ability drills including, ladders, dribbling, running, dynamic games were implemented on young football players; annual macro cycle with one experimental and control group.	N = 21 in both groups; T test (blaze pod technology) and adam test was used for assessment coordinative abilities of the football players.	Intervention program has helped in improvement of agility test on football players.
U-Yeong Lee & Chang-Hwa Joo, 2024	To analyse the effect of proprioceptive training on skill and physical fitness component e.g. balance and agility for young football players ; 8-week training for 2 days a week using balance trainer and bilateral exercises.	N = 10 in training group and N = 9 in control group; Balance measurement system consisting of a board MFT challenge disc 2.0, Austria was used, arrowhead test for agility	Proprioceptive training facilitates balance and agility, however no significance improvement in shooting, dribbling and shot passes; addition in the frequency and time of proprioceptive training was recommended.
Amr Ali Shady & Mohammad Abdel Sattar Mahmoud, 2014	To find out the effect of spatial orientation and motor rhythm training on motor speed and skill of football players; 8-week training for 3 days a week with experimental and control groups.	N = 13 each in both experimental and control group; spatial orientation (turning to touch the colour test), motor rhythm ability (drobe,1999), motor speed and skill ability (shooting, passing and dribbling were assessed.	Spatial orientation and motor rhythm training enhanced the motor speed and skill level of junior football players.
Trajkovic' et al., 2020	Neuromuscular training was implemented to ascertain its effect on motor competence and skill performance of volleyball players ;10-week training with training and control group.	N = 32 in training and 34 in the control group; The Körperkoordinationstest für Kinder (KTk ) Test to know the motor competency and modified t Test, 10m sprint, plank, vertical jump and medicine ball throw was tested.	Neuromuscular training not only helped in the improvement of motor competency but also the physical skill of volleyball players. No improvement in plank performance.
Novak et al., 2023	To assess the effect of balance training program on the player's balance and technical skill of the adolescent soccer players;8-week training program with training and control group.	N = 17 in training group and 15 in the control group; Static and dynamic balance and technical skills (passing, shotting with dominant and nondominant leg) and juggling were assessed.	Balance training has helped in improvement of static and dynamic balance and shooting with dominate leg. However no significant improvement in other variables.
Malwanage et al., 2022	To find out the effect of balance training on static and dynamic balance and sports specific foot work performance ; 8-week training with frequency of 2 days a week with training and control group.	N = 12 in intervention group and 8 in control group; Static balance and dynamic balance was tested with unipedal stance and stat excursion test respectively while the sports specific footwork was assessed with shuttle run and push off time during stroke play.	Balance training has enhanced the dynamic balance and shuttle run time while no improvement in the other variables; It was recommended to have balance training more challenging by increasing the base of support and higher centre of gravity, removing the visual feedback and changing the training surface.
Mitrousis et al., 2023	To analyse the effect of balance training on the balance and sports skills of young football players by using Bosu balls, wobbles boards, agility ladders, mini trampoline balance beam and obstacle;8-week training with the training and control group; control group was given a placebo training.	N = 17 in experimental group while only 15 participants in the control group; Jhonson and nelson test for static balance and Lafayette balance device with wooden board for dynamic balance and sports skills such as passing, shooting, juggling and dribbling were assessed.	Balance training has helped in the improvement of dynamic balance and shooting skills; No improvement in other tested variables but it was recommended to consider the gender, playing position and different competition level for better results.
Formenti et al., 2021	To investigate the influence of non-sports specific and sports specific training on the skills and perceptual response and general motor coordination of football players;10-week training with three groups, non-sports specific, sports specific and control group were utilized.	N = 26 in non-sports specific group and 27 participants in sports specific group and 26 in control group; Harre circuit test for motor coordination, Y-balance test and linear dribbling test was used for the skill assessment.	Non-sports specific training was significantly better than sports specific training in Haree test and Y-balance test, however no difference in dribbling; integration of non-sports specific training was recommended.

agility, motor coordination, rhythm, single leg and vestibular stability (Bhisaji Pawar & Borkar, 2018; Johann et al., 2016; U.-Y. Lee & Joo, 2024; Lu et al., 2022; Shi et al., 2023; Söğüt et al., 2012; Yin et al., 2023). However, the impact of these training methods on sports skills and performance is still confined and inadequate. Among these studies that provide data for coordinative abilities, the notable large benefit effect was reported for various playing level (from sub junior to junior), primarily adolescent (i.e. 9 to 16 years) and different genders. Majority of studies were confined to 8 to 12 weeks of training with 2 to 3 days of training days incorporating both the coordinative abilities and skill training of the sports person of multiple sports (i.e. Badminton, football, volleyball, kabaddi and tennis). Additionally, literature review reported a few longitudinal studies for an annual macro cycle with several phases of training (Mischenko et al., 2021).

### *Balance and coordinative abilities*

Balance is one of the crucial coordinative abilities that play a key role in sports performance and efficient motor movement. The literature review provides evidence that balance training provides a small to large effect size improvement in both static and dynamic balance and facilitates skill development. Novak et al. reported a small effect size (0.38) (Novak et al., 2023) noting improvement in both static and dynamic balance and dominant leg shooting of football players yet not much substantial improvement in other skills components such as passing and dribbling of football players. Another study by Malwanage et al. (2022) highlighted a similar trend with a small effect size of 0.33. Even though the dynamic balance and shuttle run performance improved significantly, no improvement in static balance of the football players was reported. These studies suggested that the balance training should be more complex in nature with integrating lower base of support and higher centre of gravity. Additionally, training can be made more challenging and yield better results by incorporating varied visual feedback and more specific training modules keeping in view the gender, training level and position of the players. On the other hand, Mitrousis et al. reported a large effect size (Figure 2) and improvement in coordinative abilities (Mitrousis et al., 2023a). Optimum utilization of appropriate equipment such as Bosu balls, wobbles boards, agility ladders, mini trampoline balance beam and obstacle may further enhance the coordinative abilities of players. Though a traditional training method, jump rope training can facilitate static and dynamic balance and support the technical skills of the player. Shi et al. (2023) reported large effect size with significant results of jump rope skipping on the single leg stability and skill level (Yin et al., 2023). Sequencing of jump rope and integrated it with technical training could yield better results

### *Rhythm and motor competency*

Motor competency and rhythm plays a pivotal role in sports and achieving desired performance during the competition. The central nervous system regulates rhythm which relies on an external stimulant while motor competency utilized the optimum activation neuromuscular junction. Among all studies, few studies reported a significant influence of neuromuscular, rhythm

and coordinative ability training on motor competency and rhythm of sports person. Trajkovic' et al. (2020) reported a large effect size and significant result of neuromuscular training on the motor competency of the volleyball players (Trajković & Bogataj, 2020). The Körperkoordinationstest für Kinder (KTK) test was used to assess motor competency and 10 weeks of neuromuscular training may enhance the motor competency and physical skills of the players. This training included fundamental exercises like deep squats, four-way jumps, medicine ball throw, wall sits, box jump, hurdle jumps, and agility ladders which led to significant improvement in the motor competency of the players.

Another study by Amr Ali Shady and Mohammad Abdel Sattar Mahmoud (2014), also highlighted some benefits of spatial orientation and motor rhythm for sports persons (Shady & Mahmoud, 2014). An 8 week-long training that uses spatial orientation and motor rhythm training reported a large effect size and significant improvement in the spatial orientation and motor speed of a sports person. These findings are of great importance as if a player improves these fundamental abilities they can participate in strength and more complex conditioning programs.

### *Agility and coordinative abilities*

Agility has been a vital component of sports training and performance enhancement programs. Change of direction with precision and efficient utilization of desired muscle group is essential in achieving success and consistency in sports performance. Smurti Pawar and Pradeep Borkar (2018) demonstrated that 6 week of ladder training significantly improved agility and performance in the volleyball players. Therefore, Ladder training should be an integral part of the training regime for sports persons. To contrast another study by Visan et al. (2023) reported small size effects of coordinative training that utilized ladder, dynamic games and dribbling for football players (Vişan et al., 2023). However, it was suggested that 8 to 10 year is the most suitable training age to train these abilities. Furthermore, U-Yeong Lee and Chang-Hwa Joo (2024) emphasised the effectiveness of proprioceptive training. This study used a MFT challenge disc 2.0, Austria for balance and arrowhead test for agility (U.-Y. Lee & Joo, 2024). The training regime incorporated exercises with ball and without ball for instance standing with one leg and single leg heading, squat, lunge, jumping and swing forward and back without ball. Increase in time of training and frequency of the training was suggested to foster better results.

### *Sports skills and coordination training*

Indeed, coordination influence the sports skills and technical efficiency of the players. Mastery of sports skills largely depends on the level and proficiency in coordinative abilities. Surprisingly, all these studies reported varying effect sizes for coordination training in sports skills.

Mischenko et al. (2021) proposed a new methodology for improving coordinative ability in acrobatic sports finding a large effect size of coordination training on vestibular stability, dynamic coordination and technical readiness. This study was completed in an annual macro-cycle that included the skateboard, agility ladder, trampoline and Bosu

hemisphere in active game. Another study by Formenti et al. (2021) which examined the effect of sports specific and non-sports specific training on the coordination and skill of football players. Interestingly, non-sports specific training helped in improvement of perceptual response, motor coordination and balance of football players (Formenti et al., 2021). This non-sports specific training regime include balance drills, SAQ drills and jump rope drills. This means that balance work on unstable surface, trampoline, basic skill exercise (split steps, line drills, lateral drills, hopscotch, in and out drills) and jumps rope exercise (basic bounce steps, alternate bounce and doubles basic bounce) were found suitable for improving the sports skills and coordinative abilities. This may be due to non-sports specific stimuli for the athlete and enjoyment of the innovative exercise routine. Still there is a scope to understand the implication of non-sports specific training on the enjoyment and development of sports skills and enhancement of coordinative abilities.

### Limitation

A key limitation of this literature review was inclusion of a lower number of participants in the study which is why it produced a lower level of effect size and lower power in the cumulative statistics and resulted in standard error and false negative. Majority of the study were conducted over 8 weeks and lower frequency either twice or thrice day a week which is a shorter duration to produce significant effects on motor abilities This is an essential factor in all sports-oriented training. Future research should focus on longitudinal studies to achieve more robust results. Not initiating the coordinative abilities training at an early age as old as 8 to 10 years is another limitation of this meta-analysis, which was revealed in many studies. Formulation of training programs according to the age, gender and training level of the athletes may warrant encouraging results.

### Conclusion

The meta-analysis suggested that coordination training which utilized diverse modalities including neuromuscular training, rhythm training and proprioceptive training were significant in improving sports skills and coordinative abilities in sports persons. Further the current literature review advocates the use of traditional methodologies for instance ladder training, jump rope and non-sports specific basic exercise along with innovative modern technological bases apparatus to produce effective results. This diverse approach helps in improving the sports skills as well as the coordinative abilities of athletes. Additionally, this meta-analysis recommended that basic sports training and agility training also enhanced the coordinative abilities and sports skills of a sports person. Strength and conditioning coaches should integrate innovative and basic coordination training mean and method at an early age on or before 8 to 10 years to induce better sports performance. However, formulation and implementation of the longitudinal studies and orientation of sports specific and non-sports specific coordination training may warrant improved perceptual skill, motor competency and motor coordination of athletes. Further, future research should use different training terrain and latest technologies to boost coordinative abilities and to produce significant results.

### Conflict of Interest

Authors declare no conflict of interest regarding this paper.

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# З'ясування ефективності інтервенцій з координаційного тренування щодо покращення спортивної результативності: Систематичний огляд та метааналіз

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Авторський вклад: А – дизайн дослідження; В – збір даних; С – статаналіз; D – підготовка рукопису; E – збір коштів

Реферат. Стаття: 8 с., 2 табл., 3 рис., 33 джерела.

**Мета дослідження.** Метою дослідження було проаналізувати вплив тренувальних програм, сфокусованих на виконанні різноманітних координаційних вправ, щодо покращення спортивної результативності та координації спортсменів.

**Матеріали та методи.** З метою збору літературних джерел, пов'язаних з вивченням зазначеної тематики, проведено огляд електронних публікацій із використанням наукометричних баз даних Scopus, PubMed, Google Scholar та ProQuest. Після систематичного пошуку було отримано та проаналізовано одинадцять досліджень, проведених у період з 2014 по 2024 рік, які вважалися доцільними для здійснення метааналізу. У включених дослідженнях розглядалося проведення різних тренувальних інтервенцій, спрямованих на розвиток координації, як-от тренування для розвитку рівноваги, ритму, спритності, нервово-м'язової системи, виконання комплексу вправ зі стрибків на скакалці та із використанням координаційної драбини (швидкісної доріжки), вправи для розвитку просторового орієнтування, неспортивне специфічне та пропріоцептивне тренування, тривалістю від 6 тижнів до річного макроциклу із залученням учасників (субюніорського та юніорського рівнів) з різних видів спорту.

**Результати.** За результатами метааналізу виявлено незначне покращення розміру ефекту щодо тренувань з розвитку рівноваги ( $E = 0,38$ ; 95 % ДІ =  $-0,66-2,54$ ;  $p = 0,25$ ), великий розмір ефекту та суттєве підвищення показників щодо тренувань з розвитку координації та ритму ( $E = 2,2$ ; 95 % ДІ =  $-0,98-1,45$ ;  $p = 0,70$ ). Крім того, відзначено помірний розмір ефекту та істотне поліпшення показників щодо тренування специфічних координаційних здібностей ( $E = 1,8$ ; 95 % ДІ =  $-0,84-2,99$ ;  $p = 0,00$ ) у порівнянні експериментальної групи з контрольною групою. Згідно з результатами 11 досліджень встановлено значний розмір ефекту при застосуванні різних інтервенцій з координаційного тренування щодо покращення рухової координації спортсменів. Однак вивчення впливу вищевказаних інтервенцій на спортивні навички та результативність залишається обмеженим і недостатнім.

**Висновки.** Після проведення ґрунтовного аналізу встановлено, що застосування різних тренувальних режимів, що передбачає залучення різноманітних стимулюючих чинників, засобів і методів, а саме: пропріоцептивні тренування, вправи для розвитку просторового орієнтування, тренування рухового ритму, вправи для розвитку нервово-м'язової системи, тренування на рівновагу, комплекс вправ на координацію із використанням драбини, вобл-борду (балансувальної дошки), балансувальних півсфер, батуту, динамічні ігри, а також неспецифічні спортивні тренування з базовими вправами, довело свою ефективність з точки зору покращення рухової координації та розвитку спортивних навичок.

**Ключові слова:** систематичний огляд, тренування, види спорту, координація.

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