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Original Research Article

A Mini Review: How Does the Bosu Ball Training Method Affect an Athlete's Balance?

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Abstract

The aim of this research is to analyze and evaluate various research findings regarding the effect of the Bosu Ball training method on improving athletes' balance. This type of research is a literature review. Search for this article through the database on Google Scholar with the keywords 'bosu ball' and 'balance'. Based on this search, 5 articles were found (2022 – 2023) that matched the keywords and were worthy of analysis and evaluation. The results of the literature review analysis show that the Bosu Ball training method has consistently proven effective in improving athletes' balance. Then form flexible exercises using a bosu ball, such as using a circuit or combining it with other types of exercise. However, based on the evaluation of the discussion of each research result, it seems that training using the bosu ball is only an additional exercise or not as the main exercise. So the recommendation from the results of this research is to apply bosu ball training by combining other types of training that have characteristics such as strength training, speed training or endurance training, and you can also modify the number of sets or repetitions. The hope is that the physical abilities of other athletes will increase. Further research is also needed to strengthen these findings and further explore the potential benefits of Bosu Ball in improving athletes' physical abilities other than balance as well as the positive impact on athlete performance in various types of sports.

Keywords: Bosu Ball, Balance, Athlete Performance.

INTRODUCTION

Balance is an important component in athlete performance in various sports. Optimal balance allows athletes to maintain control of their body in complex movements, reducing the risk of injury, and improving overall performance (Gebel *et al*., 2020). Good balance in athletes affects their performance significantly, especially in terms of technical performance, injury prevention, reaction ability, endurance and overall performance improvement (Granacher & Behm, 2023). With optimal balance, athletes are able to maintain proper body position when moving, respond quickly to changing game situations, reduce the risk of injury, and increase their strength and endurance on the field or competition arena (Shetty *et al*., 2023).

The development of balance is a natural result of increasing strength in the muscles, developing muscle regions to increase the athlete's endurance, supporting the implementation of controlled movements during the execution of sportsmanship movements, and ensuring the protection of movement techniques (Yan & Hong, 2023). By providing increased strength and proportional force transfer, it reduces the risk of injury and increases efficiency in movements or transitions between movements due to improved balance (Akinoğlu *et al*., 2023). Developing and improving balance and muscle strength is a huge advantage for athletes in their chosen sport. Some muscles must adapt to the type and load of training performed according to the athlete's needs to improve sports performance (Nurhadi *et al*., 2023). One

type of exercise that can be used to improve balance is Bosu Ball training. However, the development of bosu ball training is still very minimal to analyze.

The Bosu Ball is a training device consisting of half a ball mounted on a flat platform, which challenges athletes to maintain balance while performing various movements (Salot *et al*., 2020), (Nugraha *et al*., 2022). The Bosu Ball has several advantages, including improving body balance and stability, activating stabilizer muscles that are often overlooked, offering a wide variety of exercises, allowing adjustment of exercise intensity, being versatile for various types of exercise, and easy to carry to various locations (Prasetyo *et al.*, 2023), (Kanwar & Thomas, 2023). However, the fact in the field is that there are still many trainers who have not implemented a variety of appropriate training methods to improve balance. So training sessions for balance are rarely given or not at all.

The aim of this research is to analyze and evaluate various existing research findings regarding the effect of the Bosu Ball training method on improving athletes' balance. Thus, this study aims to provide a deeper understanding of the effectiveness of the Bosu Ball as a training tool in improving athletes' balance, as well as its potential advantages and disadvantages compared to other training methods. It is hoped that the results of this research will provide valuable insight for coaches, researchers and sports practitioners in developing more effective training programs to improve athletes' balance.

METHOD

This type of research is a literature review, this type of research focuses on analyzing and evaluating previously published research results. So the results of the literature review research aim to understand and explain the state of the research in accordance with the objectives of this research. However, this research method uses a mini review, meaning there are certain limitations such as the number of articles, article searches, and indexes of journals that publish articles.

Search for this article through the database on Google Scholar with the keywords 'bosu ball' and 'balance'. Based on this search, 5 articles were found that matched the keywords and were worthy of review. Even though this research uses a mini review, the analysis and evaluation methods remain the same as the literature review method.

RESULT

The following are the results of the analysis based on searches for previous articles relevant to this research topic. So there were 5 studies found from 2022 – 2023.

Table 1: Research Analysis Results

No	Author (Year)	Title	Sample	Type of Exercise	Training Load	Result
1	OKLUDİL, K., & SERİN, E. (2022)	Bosu Denge Ve Kuvvet Egzersiz Programinin Adölesan Kadin Voleybolcularin Vücut Kompozisyonu, Anaerobik Güç Ve Denge Yeteneğine Etkisi	30 female volleyball players aged 14 – 16 years. 15 experimental group players (14.87 ± 0.92) and 15 control group players (14.93 ± 0.70)	Hopscotch (Bounce one leg and pull the other foot to the hip). T- Jumps (Double leg t jumps to the right, left and back). Lateral Jumps (Double leg jumps to the sides). Side Taps / Tick Tock (One leg reaching back / alternating one leg jumping while opening the other leg to the side). Alternating Single Leg Jump Stick (Alternating cross elbow-knee contact at the level of the abdomen). Jump Hop (Double, right and left jumps)	Training is carried out 3 times a week for 8 weeks	Training with a bosu ball can improve the balance of female volleyball athletes using the Flaminggo Balance Test
2	ERİŞ, F. (2023)	Investigation of the Effect of Push-Up Exercises with and without Suspension on Some Motor	20 male volleyball athletes aged 15 – 18 years	Push-Up Exercises with and without Suspension	The 1st group, without suspension with repetitions and sets of 8x2, 10x2, 8x3 and 10x3, respectively. From the 3rd week until the end of the 8th week, both groups performed PU exercise with	Both training methods effectively increase the stability and dynamic balance of the upper extremities. However, the bosu ball push up (PU) training method with suspension is more

					3 sets and 12 repetitions. In the 2nd group, with suspension (bosu ball) was performed for 8 weeks with 3 sessions per week and at least 1 day intervals in order to eliminate the fatigue effect. In the first two weeks, the number of repetitions and sets were 8x2, 10x2, 8x3 and 10x3 for the adaptation of the suspended PU bosu ball exercise. From the 3rd week to the end of the 8th week, both groups performed PU exercise with 3 sets and 12 repetitions.	effective in increasing muscle strength than PU training without suspension
3	Nugraha, P. D., Soegiyanto, S., Kristiyanto, A., & Azam, M. (2022)	The effect of ankle strengthening exercise on balance in youth basketball players	64 male basketball players (32 athletes aged 16 years and 32 athletes aged 18 years)	bosu ball exercise and theraband exercise	The training treatment was for 16 meetings, with a training pattern of one day of training and one day of rest. Theraband exercise consists of four movements, namely: 1) plantarflexion (extension), 2) dorsiflexion (flexion), 3) inversion, 4) eversion. The Bosu ball exercise consists of four movements: 1) single-leg stance, 2) runner touch, 3) chest-passing in singleleg stance, 4) forward-behind in single-leg stance.	Training with a bosu ball and training with a theraband can significantly improve balance in male basketball athletes aged 16 and 18 years. However, Bosu ball exercises give a better effect than band exercises. Although statistically not too significant, there is a difference in the average. The motor system works more, starting from the legs, back, and abdominal muscles. The motor system that works when doing theraband exercise tends to be on the muscles in the legs.
4	Prasetyo, H., Siswantoyo, Prasetyo, Y., & Hartanto, A. (2023)	Circuit training bosu ball: effect on balance and accuracy of archery athletes	12 athletes aged 14 – 17 years	Bosu ball	18 pertemuan. Post 1: Bosu balance on upper bosu ball. Post 2: Bosu single leg balance on upper bosu ball (right leg). Post 3: Bosu single leg balance on upper bosu ball (left leg). Post 4: Bosu balance on lowel bosu ball. Post 5: Bosu single leg balance on lower bosu ball (right leg). Post 6: Bosu single leg balance on lower bosu ball (left leg)	Circuit training with a Bosu ball effectively improves archery athletes' balance and archery accuracy. Specifically, the participants demonstrated an average increase in their balance scores improvement in their archery accuracy following the training.

5	Romanova, E., Vorozheikin, A., Bayankin, O., Limarenko, O., Bolotin, A., Tyupa, P., ... Anisimov, M. (2023).	Enhancing physical and functional fitness through the integration of health fitness elements in young gymnasts	20 female athletes aged 10 – 11 years. 10 athletes in the control group and 10 athletes in the experimental group	In the conditioning training section, EG athletes use innovative physical training with sports equipment designed for health fitness. The duration is 25-30 minutes. To improve cardiorespiratory fitness, endurance, movement coordination and muscle strength of the lower extremities and trunk of EG athletes, a StarFit model step platform with a step height of 15 cm was used, active training time. Equipment 10-12 minutes. The «Bosu» BRADEX hemisphere is used to develop the static balance of the body and the coordination abilities of gymnasts. Practice time is 8-10 minutes. Sliders (a set of 6D™ SLIDING) are used to improve coordination, balance, increase strength abilities, endurance and flexibility. Training time on the slider is 8-10 minutes	The gymnasts attended training sessions 4 times a week, each lasting 3 hours. The annual training load was 624 hours. The training program included theoretical training, practical exercises, rehabilitation activities and testing	After the annual pedagogical experiment, it was evident that gymnasts in the EG group significantly outperformed the CG group, which adhered to a traditional training program. The superiority of the EG group extended to basic motor qualities, cardio-respiratory functional indicators, static and dynamic balance, as well as control exercises in specialized physical training.

Research results from Okludil & Serin (2022) report that training carried out 3 times a week for 8 weeks can improve the balance of female volleyball athletes aged 14 – 16 years. These types of exercises consist of Hopscotch, T- Jumps, Lateral Jumps, Side Taps / Tick Tock, Alternating Single Leg Jump Stick, Jump Hop. The results of training using a bosu ball can also improve other physical abilities such as body composition and anaerobic power.

Research results from ERİŞ (2023) explained that push-ups with a bosu ball and push-ups without a bosu ball were effective in improving the balance of 20 male volleyball athletes aged 15 – 18 years. However, the push up (PU) training method with a bosu ball is more effective in increasing muscle strength than push up training without a bosu ball.

Research results from Nugraha *et al*., (2022) reported that bosu ball and theraband training had an influence on the balance of 64 male basketball athletes aged 16 – 18 years. However, Bosu ball exercises give a better effect than band exercises. Although statistically not too significant, there is a difference in the average. The motor system works more, starting from the legs, back, and abdominal muscles. The motor system that works when doing theraband exercise tends to be on the muscles in the legs.

The results of research from Prasetyo *et al*., (2023) explain that the bosu ball circuit training method was effective in improving 12 archery athletes aged 14 - 17 years. The training program was carried out over 18 meetings. Additionally, the program is effective on archery accuracy. Other results show an average pretest balance score of 44.12 seconds, and a pretest archery accuracy score of 216.50. After 18 sessions of circuit training with a bosu ball, posttest balance scores increased to an average of 51.44 seconds, and posttest archery accuracy scores increased to an average of 282.83.

Research results from Romanova *et al*., (2023) reported, including bosu ball training into the annual training macro cycle in rhythmic gymnastics. After annual pedagogical experiments, it was proven that the gymnasts in the bosu ball group significantly outperformed the control group, which adhered to the traditional training program. The advantages of the bosu ball group extend to basic motor qualities, cardio-respiratory functional indicators, static and dynamic balance, as well as control exercises in special physical training. As a result, the bosu ball group showed a high level of physical fitness compared to the control group.

DISCUSSION

The results of the literature review analysis show that the Bosu Ball training method has consistently proven effective in improving athletes' balance. Various previous studies have revealed that the use of the Bosu Ball in training can result in significant improvements in athletes' balance abilities, both in specific sport contexts and in general (Nugraha *et al*., 2022). First of all, the Bosu Ball challenges athletes to maintain their balance on an unstable surface, which triggers the activation of

stabilizer and core muscles (Badau *et al*., 2019), (Prathibha D *et al*., 2024). This provides an additional stimulus for the body to develop strength, stability, and coordination between muscles, which in turn improves the athlete's balance ability.

In Addition, the use of the Bosu Ball allows for a wide variety of exercises, from basic balance exercises to more complex strength training (Sawant *et al*., 2020). With a wide variety of exercises, athletes can continually challenge themselves and prevent plateaus in balance improvement. Some studies have also shown that training with the Bosu Ball can have a sustained positive effect on an athlete's balance even after a relatively short training period (Prasetyo *et al*., 2023). This suggests that the use of the Bosu Ball could be a valuable component in a long-term training program to sustainably improve an athlete's balance (Romanova *et al*., 2023).

However, it is important to remember that the effectiveness of using the Bosu Ball in improving an athlete's balance can be influenced by various factors, including the duration and intensity of exercise, the type of sport performed, and the athlete's individual characteristics (Roshni *et al*., 2021), (Kanwar & Thomas, 2023), (Dong *et al*., 2023). Therefore, it is important to consider these factors in designing a training program that suits the athlete's specific needs and goals (Permatasari *et al*., 2024), (Fadhila *et al*., 2024). Overall, the results of the literature review analysis support the conclusion that the Bosu Ball training method is effective in improving athletes' balance.

The Bosu Ball training method is recommended as an effective insert exercise to improve athletes' balance and physical abilities because Bosu Ball challenges athletes to develop body stability and activation of stabilizer muscles, which in turn improves overall balance. With a wide variety of exercises and the ability to be tailored to individual fitness levels, the use of the Bosu Ball can be a valuable addition to an athlete's training program to improve their performance on the field or competition arena. The limitation of this research is that we only managed to review a small amount of literature. This is due to the need to reveal appropriate training methods for balance training when the main training program is implemented. It is hoped that in the future, the research results will spur research that analyzes the effect of bosu ball on athletes' physical abilities other than balance.

CONCLUSION

Based on research results that have been analyzed and evaluated, the training method with the bosu ball has an effect on athletes' balance. Another analysis result is, one research result applies bosu ball with circuit training. Then another training program explained by comparing bosu ball training with other variables such as theraband exercise and the control group. Next, modify the push up exercise with and without a bosu ball. Until the results of the analysis in the latest research, namely including bosu ball training into the annual training cycle. However, based on the evaluation of the discussion of each research result, it seems that training using the bosu ball is only an additional exercise or not as the main exercise. So the recommendation from the results of this research is to apply bosu ball training by combining other types of training that have characteristics such as strength training, speed training or endurance training, and you can also modify the number of sets or repetitions. Further research may be needed to strengthen these findings and further explore the potential benefits of Bosu Ball in improving athlete performance in various sports.

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