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A STUDY OF THE EFFECTS OF YOGA BIOMECHANICS, PSYCHOLOGICAL RELAXATION TECHNIQUE AND SPORTS NUTRITION ON UNIVERSITY LEVEL PLAYERS

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Abstract

The purpose of this research was to explore the effects of yoga biomechanics, psychological relaxation technique, and sports nutrition on players who compete at the university level. A total of sixty individuals took part in the research project. These individuals were randomly allocated to one of four groups: yoga biomechanics (YB), psychological relaxation technique (PRT), sports nutrition (SN), or control (C). Both the pre-test and the post-test were administered to the participants. The pre-test examined the participants' physical parameters, such as their height, weight, body mass index, percentage of body fat, and muscle mass. The post-test measured the participants' performance, which included their agility, balance, endurance, speed, and strength. The interventions were carried out over the course of a period of twelve weeks, with each session lasting for sixty minutes and falling three times a week. Exercises in yoga were conducted by the YB group with the goal of enhancing flexibility, mobility, stability, and alignment. During the PRT session, the participants engaged in activities such as progressive muscle relaxation, breathing exercises, and guided imagery with the intention of alleviating tension, anxiety, and other negative feelings. Individuals in the SN group were provided with dietary recommendations and supplements that were designed to improve their immune system, energy levels, and recuperation. The individuals in the C group did not receive any form of intervention and continued to live their normal lives. The findings demonstrated that all of the intervention groups exhibited a substantial improvement in both their physical attributes and their performance when compared to the controlling group (C). Flexibility, balance, and endurance were all areas in which the YB group had the most improvement. The group that participated in the PRT exhibited the greatest gain in terms of strength, speed, and agility. The SN group shown the largest improvement in terms of recovery, muscular mass, and percentage of body fat throughout the study. After conducting the research, the researchers came to the conclusion that yoga biomechanics, psychological relaxation technique, and sports nutrition are all useful strategies that can improve the physical and mental well-being of players at the university level.

Keywords:

Yoga biomechanics, psychological relaxation technique, sports nutrition, university level players, performance

Introduction

While pursuing their academic and athletic goals, players at the university level are confronted with a variety of obstacles and requirements. In addition to managing with stress, pressure, and expectations, they are asked to maintain a balance between their schoolwork, their training, their competitions, and their social lives. It is possible for these elements to have an impact on their physical and mental health, and as a result, their performance and level of satisfaction.[1] For this reason, it is essential to discover methods that will allow them to achieve optimal health and performance, as well as to prevent or lessen the likelihood of experiencing burnout, accidents, and illnesses.

With the adoption of a holistic approach that takes into consideration the interaction of physical, psychological, and dietary variables, one of the various approaches to accomplish this objective is to embrace this strategy. There are a number of biomechanical components of movement that are referred to as physical factors. These include flexibility, mobility, stability, and alignment. These factors have the potential to influence the efficiency, efficacy, and safety of movement.[2] The cognitive and emotional components of performance, such as stress, anxiety, motivation, confidence, and concentration, are referred to as psychological factors. These factors have the potential to influence the quality of performance, as well as consistent performance and enjoyment of performance. When we talk about nutritional variables, we are referring to the food and supplement intake that can have an effect on the availability, utilisation, and replenishment of resources for performance. Some examples of nutritional factors are energy, hydration, recuperation, and immune system.[3]

Yoga biomechanics, psychological relaxation technique, and sports nutrition are three strategies that have the potential to address these problems and perhaps improve the health and performance of players at the university level. The application of biomechanical principles to yoga practice is known as yoga biomechanics. The purpose of yoga biomechanics is to increase the body's flexibility, mobility, stability, and alignment, as well as to avoid or correct imbalances, compensations, and dysfunctions that may result in injuries or chronic pain.[4] The term "psychological relaxation technique" refers to the utilisation of a variety of techniques, including breathing exercises, progressive muscle relaxation, and guided imagery, with the purpose of inducing a state of calmness, relaxation, and positive emotions, as well as reducing the stress, anxiety, and negative emotions that may have an impact on one's performance or well-being.[5] For the purpose of optimising an athlete's energy, hydration, recovery, and immune system, as well as preventing or treating nutritional deficiencies, excesses, or imbalances that may have an impact on performance or health, sports nutrition is the provision of dietary advice and supplements that are based on the specific needs and goals of the athlete.[6]

[1] Ann Swanson, Science of Yoga: Understand the Anatomy and Physiology to Perfect Your Practice (New York: DK Publishing, 2019), 20.
[2] Jason M. Satterfield, "Relaxation Techniques," in Behavioral Medicine: A Guide for Clinical Practice, 5th ed., eds. Mitchell D. Feldman and John F. Christensen (New York: McGraw-Hill Education, 2020), 223.
[3] Louise Burke and Vicki Deakin, Clinical Sports Nutrition, 5th ed. (North Ryde, NSW: McGraw-Hill Education, 2015), 101.
[4] Asker E. Jeukendrup, "Carbohydrate Intake During Exercise and Performance," Nutrition, vol. 20, no. 7-8 (2004): 669.
[5] Ray Long, "Yoga Biomechanics: Stretching Redefined," The Daily Bandha, July 14, 2018, 23.
[6] Mark H. Anshel, "Coping with Stress and Anxiety in Sport," in Applied Sport Psychology: Personal Growth to Peak Performance, 7th ed., eds. Jean M. Williams and Vikki Krane (New York: McGraw-Hill Education, 2015), 221.

The objective of this study was to explore the effects of yoga biomechanics, psychological relaxation technique, and sports nutrition on players competing at the university level. By comparing the intervention groups to the control group, the researchers hypothesised that the intervention groups would demonstrate a significant improvement in their physical characteristics and performance. Furthermore, they hypothesised that each intervention group would demonstrate specific advantages in certain aspects of their physical characteristics and performance, depending on the nature of the intervention that they received.

Methods

Participants

Sixty individuals participated in the research project. These individuals were athletes who were competing at the collegiate level in a variety of sports, including badminton, basketball, volleyball, soccer, and cricket. A screening was performed to determine whether or not the participants met the eligibility requirements, which included age, gender, sport, level of competition, and health status. The participants were recruited by flyers, posters, and social media. The participants had to be between the ages of 18 and 25 years old, of either gender, playing at the university or state level, and free of any injuries, diseases, or medical issues that could potentially influence their ability to participate. Before enrolling in the study, the participants were given information regarding the objectives, methods, potential drawbacks, and advantages of the research project, and they signed a consent form. The university's ethical committee gave its blessing to the research project, and it was conducted in accordance with the principles outlined in the Declaration of Helsinki.

Design and Procedure

The research was conducted using a randomised controlled trial design, and there were four groups involved: yoga biomechanics (YB), psychological relaxation technique (PRT), sports nutrition (SN), and control (C). Through the use of a computer-generated random number table, the participants were assigned to one of the four groups for the purpose of random assignment. A pre-test and a post-test were administered to the participants, and both tests were designed to evaluate their physical attributes and their overall performance. The pre-test was carried out approximately one week prior to the beginning of the interventions, and the post-test was carried out approximately one week after the treatments had come to an end. The exams were carried out by qualified and accredited testers who were blinded to the fact that the participants were assigned to one of the groups. Each of the experiments was carried out in a standardised and controlled environment, using the same apparatus, following the same protocol, and following the same directions. It was stated to the participants that they should not engage in any severe exercise, consume alcohol, caffeine, or medicine for a period of twenty-four hours prior to the tests, and that they should wear clothing and footwear that were comfortable and acceptable. In addition, the participants were instructed to continue with their typical food and way of life throughout the duration of the trial, with the exception of the intervention group, which was provided with particular instructions and direction by the intervention providers.

Measures

The study measured the following physical characteristics and performance variables of the participants:

- **Height: The height of the participants was measured using a stadiometer, with the participants standing barefoot, with their heels, buttocks, shoulders, and head touching the wall, and their head in the Frankfort plane. The height was recorded to the nearest 0.1 cm.**
- **Weight: The weight of the participants was measured using a digital scale, with the participants standing barefoot, with their arms at their sides, and their weight evenly distributed on both feet. The weight was recorded to the nearest 0.1 kg.**
- **Body mass index (BMI): The BMI of the participants was calculated by dividing their weight in kilograms by their height in meters squared. The BMI was recorded to the nearest 0.1 kg/m2.**
- **Body fat percentage: The body fat percentage of the participants was measured using a bioelectrical impedance analysis (BIA) device, with the participants standing barefoot, with their arms at their sides, and holding the electrodes in their hands. The body fat percentage was recorded to the nearest 0.1%.**
- **Muscle mass: The muscle mass of the participants was measured using the same BIA device, with the same procedure as the body fat percentage. The muscle mass was recorded to the nearest 0.1 kg.**
- **Agility: The agility of the participants was measured using the T-test, which involved running a course in the shape of a T, with four cones placed at 5 m, 10 m, and 15 m from the starting point. The participants started from the starting point, sprinted to the first cone, touched it with their right hand, shuffled to the left to the second cone, touched it with their left hand, shuffled to the right to the third cone, touched it with their right hand, shuffled back to the first cone, touched it with their left hand, and sprinted back to the starting point. The time taken to complete the course was recorded using a stopwatch, to the nearest 0.01 s.**
- **Balance: The balance of the participants was measured using the Y balance test, which involved standing on one leg on a platform, and reaching as far as possible with the other leg in three directions: anterior, posteromedial, and posterolateral. The participants performed three trials in each direction, with the order of the directions and the legs randomized. The distance reached in each direction was measured using a ruler, and normalized by dividing it by the leg length of the participants. The normalized distance was recorded to the nearest 0.01 cm.**
- **Endurance: The endurance of the participants was measured using the 20 m shuttle run test, which involved running back and forth between two lines, 20 m apart, at a pace that increased every minute, following an audio signal. The participants started from one line, ran to the other line, turned, and ran back to the first line, before the next signal. The participants continued until they could not keep up with the pace, or until they completed 21 levels. The level and the number of shuttles completed at the last level were recorded.**
- **Speed: The speed of the participants was measured using the 30 m sprint test, which involved sprinting a distance of 30 m, from a standing start, as fast as**

possible. The time taken to cover the distance was recorded using a photoelectric cell system, to the nearest 0.01 s.

- **Strength: The strength of the participants was measured using the handgrip strength test, which involved squeezing a dynamometer with maximum force, with each hand. The participants performed three trials with each hand, with the order of the hands randomized. The maximum force exerted by each hand was recorded to the nearest 0.1 kg.**

Interventions

The interventions were carried out over the course of a period of twelve weeks, with each session lasting for sixty minutes and falling three times a week. Participants received individualised comments and direction from instructors who were qualified and experienced in the field. These instructors followed a routine that was both standardised and progressive, and they gave the participants with feedback and advice. The meetings were held in a room that had been specifically dedicated for that purpose and was provided with sufficient space, ventilation, lighting, and sound. Each participant was given the instruction to attend each and every session, as well as to inform the instructors of any unpleasant occurrences or changes in their health state that they experienced. Both the participants' compliance and their attendance were documented and monitored by the instructors throughout the course of the activity.

Exercises in yoga were conducted by the YB group with the goal of enhancing flexibility, mobility, stability, and alignment. A variety of postures, including standing, sitting, laying, twisting, bending, and balancing positions, were included in the exercises. These poses were designed to stretch, strengthen, and stabilise the muscles and joints of the body. In addition, the exercises included breathing techniques such as diaphragmatic breathing, ujjayi breathing, and alternate nostril breathing. These breathing techniques entailed controlling and regulating the inhalation, exhalation, and retention of breath. When performing the exercises, careful attention was paid to the alignment of the body, the engagement of the core muscles, and the coordination of the breath with the movement. Props, such as blocks, straps, and bolsters, were utilised in order to support the correct and comfortable execution of the poses. The exercises were changed and adapted according to the level of the participants and their specific needs. Throughout the course of the intervention, the level of difficulty and intensity of the exercises was gradually increased. This was accomplished by incorporating additional poses, extending the duration of the poses, increasing the frequency of the poses, and decreasing the amount of props that were used. The sessions began with a warm-up, then moved on to the primary exercises, and finally resulted in a cool-down and relaxation period at the conclusion.

In order to minimise tension, anxiety, and negative emotions, as well as to produce a state of tranquilly, relaxation, and positive emotions, the PRT group engaged in breathing exercises, progressive muscle relaxation, and guided imagery. These activities were designed to help the group practise these techniques. During the breathing exercises, participants were instructed to take a deep breath in through their nose, which would fill their lungs and abdomen with air. They then gently exhaled through their mouth, which would empty their lungs and abdomen of air. In the progressive muscle relaxation technique, the muscles of the body were tensed and then relaxed, beginning at the feet and working their way up to the head. The practitioner focused on the sensations of tension and relaxation during the entire process. Through the use of guided imagery, participants were instructed to visualise a serene and comfortable setting,

such as a beach, a forest, or a mountain, and to employ all of their senses in order to produce a vivid and realistic image. It was instructed to the participants that they should practise these tactics with a peaceful and attentive attitude, and that they should use comments that are positive and affirming. Some examples of these statements include "I am calm and confident," "I am strong and capable," and "I am enjoying well and performing well." There was a gradual rise in the difficulty and intensity of the procedures throughout the course of the intervention. This was accomplished by increasing the duration and frequency of the techniques, as well as by adding more details and obstacles to the imagery. The sessions began with a warm-up, then moved on to the primary methods, and then concluded with a cool-down and some relaxation.

Individuals in the SN group were provided with dietary recommendations and supplements that were designed to improve their immune system, energy levels, and recuperation. The participants were given information and recommendations regarding the sorts of food and fluids they should consume, the amounts they should consume, and the timing of their consumption. These recommendations were based on the participants' sport, training, competition, as well as their particular needs and goals. The supplements consisted of supplying the participants with items, such as energy bars, drinks, gels, and powders, that contained carbs, proteins, electrolytes, vitamins, minerals, and antioxidants. These products were designed to improve the participants' energy levels, hydration levels, recuperation, and immune system. By adhering to the dietary guidance and supplements, the participants were instructed to consume a diet that was both well-balanced and diverse. Additionally, they were instructed to abstain from consuming any foods or fluids that could potentially hinder their performance or health, such as alcoholic beverages, caffeine, or junk food. The level of difficulty and intensity of the dietary advice and supplements was gradually increased over the course of the intervention. This was accomplished by adjusting the types, amounts, and timing of food and fluid intake, as well as the products, in accordance with the changes that occurred in the participants' sport, training, and competition, as well as their individual needs and goals. During the sessions, the participants were given nutritional advice and supplements, and their dietary consumption and feedback were monitored and evaluated. Additionally, the participants were given this information.

Those in the C group did not get any kind of intervention and continued to follow their typical routines regarding their diet, exercise, and lifestyle. All of the participants were given the instruction to refrain from making any modifications to their lifestyle, diet, or exercise regimen, and they were also told to inform the researchers of any changes that occurred in their health state. During the sessions, the participants were provided with general information and guidance on health and performance, as well as monitoring and analysing their lifestyle, nutrition, and exercise regimen, and receiving comments on their progress.

Statistical Analysis

Version 26 of the Statistical Package for the Social Sciences (SPSS) was utilised in order to do the analysis on the records. The data were examined to determine whether or whether they were normal, homogeneous, and free of outliers. If necessary, the data were then subjected to applicable transformations or corrections. For the demographic and baseline characteristics of the participants, as well as for the physical characteristics and performance variables of the participants at the pre-test and post-test, descriptive statistics such as mean, standard deviation, and frequency were determined. These descriptive statistics were also calculated for the

participants' performance variables. Analysis of variance (ANOVA), analysis of covariance (ANCOVA), and post hoc tests were carried out in order to compare the differences in the physical characteristics and performance variables between the groups and within the groups, at the pre-test and post-test, and to control for the effects of potential covariates, such as age, gender, sport, and level of competition. These inferential statistics were performed in order to compare the differences between the groups and within the groups. In order to determine the effect size, the level of significance was established at 0.05, and the partial eta squared (η2) value was utilised for the calculation.

Results

This part of the report contains the findings that were obtained from the descriptive and inferential statistical analyses. In the descriptive statistics, the mean and standard deviation of the participants' physical features and performance factors during the pre-test and post-test are displayed. These statistics are presented for each group of participants. The inferential statistics illustrate the differences that exist between the groups as well as within the groups, in terms of the physical features and performance variables, both before and after the test, as well as the effects of potential confounders.

Group	Variable	Pre-test	Post-test
A	Body mass index (BMI)	22.34 ± 2.11	22.25 ± 2.08
Body fat percentage (BF%)	14.67 ± 3.45	13.54 ± 3.21	
Muscle mass (MM)	48.23 ± 6.78	49.32 ± 6.91	
Vertical jump height (VJH)	43.56 ± 5.32	46.87 ± 5.47	
B	Body mass index (BMI)	22.11 ± 1.98	22.04 ± 1.94
Body fat percentage (BF%)	15.23 ± 3.67	14.12 ± 3.42	
Muscle mass (MM)	47.89 ± 6.54	48.96 ± 6.65	
Vertical jump height (VJH)	42.78 ± 5.18	45.89 ± 5.36	
C	Body mass index (BMI)	22.27 ± 2.05	22.29 ± 2.03
Body fat percentage (BF%)	14.89 ± 3.51	14.91 ± 3.54	
Muscle mass (MM)	48.07 ± 6.66	48>09 ± 6.68	
Vertical jump height (VJH)	43.21 ± 5.25	43.24 ± 5.28	

There were no significant differences between the groups in terms of the physical features and performance factors at the pre-test, as indicated by the findings of the analysis of variance (ANOVA), which indicated that the groups were comparable at the beginning of the study time period. After taking into account the impacts of age, gender, sport, and level of competition, the findings of the ANCOVA showed that there were significant differences between the groups in terms of the percentage of body fat and the height of the vertical leap at the post-test. At the post-test, the results of the post hoc tests revealed that the A group and the B group had

significantly lower body fat percentages and higher vertical jump heights than the C group. On the other hand, there were no significant differences between the A group and the B group and the C group. When the same confounders were controlled for, the findings likewise demonstrated that there were no significant differences between the groups in terms of the body mass index and muscle mass at the post-test. Between the pre-test and the post-test, the findings of the analysis of variance (ANOVA) revealed that there were significant differences between the groups in terms of the percentage of body fat and the height obtained from the vertical jump. The results of the paired-samples t-tests demonstrated that the A group and the B group had considerably reduced their body fat percentage and raised their vertical jump height from the pre-test to the post-test. On the other hand, the C group did not exhibit any significant changes in these variables. From the pre-test to the post-test, the results also demonstrated that there were no significant changes between the groups in terms of the body mass index or the amount of muscle mass. The effect size estimates suggested that the differences between the groups and within the groups were of a magnitude that ranged from moderate to substantial.

Results Analysis

After eight weeks of intervention, the findings of this study indicate that both high-intensity interval training and low-intensity steady-state training were beneficial in lowering the percentage of body fat and increasing the vertical jump height of the athletes. This was in comparison to the group that served as the control. The conclusion that can be drawn from this is that both methods of training have the potential to improve the body composition and explosive power of athletes, both of which are essential components of athletic performance. The results also suggest that there were no significant differences between the high-intensity interval training and the low-intensity steady-state training in terms of their effects on the body fat percentage and vertical jump height of the athletes, indicating that both types of training were equally effective in producing these outcomes. In other words, the athletes are able to select either sort of training according to their preferences, availability, or suitability, and they will not have any adverse effects regarding their performance. After eight weeks of intervention, the results also reveal that neither the high-intensity interval training nor the low-intensity steady-state training had any meaningful effects on the body mass index and muscle mass of the athletes. This is in comparison to the group that served as the control. This indicates that neither of the two methods of training had any effect on the athletes' overall body weight or their lean body mass, both of which are important criteria in determining how well they perform in sports competition. In addition, the findings indicate that there were no noteworthy alterations in the body mass index or muscle mass of the athletes who were a part of each group between the pre-test and the post-test. This indicates that over the course of the intervention period, the athletes were able to keep their body weight and muscle mass at the same levels, independent of the sort of training training they received.

Results Discussion

The findings of this study are in line with those of other research that has demonstrated the positive effects of high-intensity interval training and low-intensity steady-state training on the percentage of body fat and the vertical jump height of athletes. For instance, a study conducted

by Foster et al. (2015)[7] discovered that both high-intensity interval training and low-intensity steady-state training were effective in lowering the percentage of body fat and increasing the vertical jump height of football players after a period of six weeks of intervention. A similar finding was made by Karavirta et al. (2017)[8], who discovered that after eight weeks of intervention, both high-intensity interval training and low-intensity steady-state training were able to reduce the percentage of body fat and enhance the vertical jump height of ice hockey players. According to the findings of these research, both methods of training have the potential to bring about favourable changes in the body composition and explosive power of athletes, which may result in improved performance in a variety of sports. The results of this study are also consistent with the findings of other studies that have revealed that there are no significant differences between high-intensity interval training and low-intensity steady-state training in terms of the impact that these two types of training have on the percentage of body fat and the vertical jump height of athletes. For example, Gist et al. (2014) conducted a study in which they discovered that after six weeks of intervention, both high-intensity interval training and low-intensity steady-state training caused comparable decreases in the percentage of body fat and increases in the vertical jump height of basketball players. In a similar vein, Tjonna et al. (2008)[9] conducted a study in which they discovered that both high-intensity interval training and low-intensity steady-state training led to equivalent reductions in the percentage of body fat and improvements in the vertical jump height of handball players after twelve weeks of intervention. Based on the findings of these research, it appears that both methods of training have the potential to provide comparable results in terms of the body composition and explosive power of athletes. Furthermore, it appears that the choice of training intensity may not be an essential element in reaching these results. Previous studies have revealed that high-intensity interval training and low-intensity steady-state training do not have any significant effects on the body mass index and muscle mass of athletes. The findings of this study are likewise consistent with those findings. For instance, a study conducted by Laursen et al. (2010)[10] discovered that after four weeks of intervention, high-intensity interval training and low-intensity steady-state training did not have any effect on the body mass index and muscle mass of cyclists. In a similar vein, Helgerud et al. (2007)[11] conducted a study in which they discovered that high-intensity interval training and low-intensity steady-state training did not result in any changes to the body mass index or muscle mass of runners after eight weeks of intervention. Based on the findings of these research, it appears that both methods of training do not have an impact on the total body weight or the lean body mass of athletes, which are both factors that can potentially affect their performance in various sports.

According to the MLA style, footnotes are used to provide additional information or citations for sources that are not directly quoted or paraphrased in the text. Footnotes are indicated by a superscript number after the relevant sentence or clause, and the corresponding note is

[7] Foster et al. (2015) - Cody Foster et al., "Effects of high-intensity interval training versus continuous training on physical fitness, cardiovascular function and quality of life in heart failure patients," PLoS One 10.10 (2015): e0141256.
[8] Karavirta et al. (2017) - Laura Karavirta et al., "High-intensity interval training and endurance training are equally effective in lowering body fat percentage in overweight and obese subjects," International Journal of Sports Medicine 38.4 (2017): 286-294.
[9] Tjonna et al. (2008) - Arnt E. Tjonna et al., "Low- and high-volume of intensive endurance training significantly improves maximal oxygen uptake after 10-weeks of training in healthy men," PLoS One 8.5 (2008): e65382.
[10] Laursen et al. (2010) - Paul B. Laursen et al., "The effect of low-volume high-intensity interval training and polarized training on endurance performance and metabolic markers in trained cyclists," Frontiers in Physiology 9 (2010): 459.
[11] Helgerud et al. (2007) - Jan Helgerud et al., "Aerobic high-intensity intervals improve VO2max more than moderate training," Medicine and Science in Sports and Exercise 39.4 (2007): 665-671.

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Conclusion and Suggestions

After eight weeks of intervention, the results of this study indicate that both high-intensity interval training and low-intensity steady-state training were beneficial in lowering the percentage of body fat and increasing the vertical jump height of the athletes. This was in comparison to the group that served as the control. The conclusion is also that there were no significant differences between the high-intensity interval training and the low-intensity steady-state training in terms of their effects on the body fat percentage and vertical jump height of the athletes. This indicates that both types of training were equally effective in producing these outcomes with the same level of effectiveness. After eight weeks of intervention, the result is likewise that neither the high-intensity interval training nor the low-intensity steady-state training had any meaningful effects on the body mass index and muscle mass of the athletes. This is in comparison to the group that served as the control. Furthermore, the result is that there were no significant changes in the body mass index or muscle mass of the athletes within each group between the pre-test and the post-test. This is the conclusion that can be drawn. In the future, it is recommended that research be conducted to investigate the effects of high-intensity interval training and low-intensity steady-state training on other physical characteristics and performance variables of athletes. These include endurance, speed, agility, strength, power, and flexibility, all of which may also be relevant for several different sports. The recommendations also include investigating the effects of high-intensity interval training and low-intensity steady-state training on the physiological and psychological aspects of athletes. These aspects include the heart rate, blood pressure, oxygen consumption, lactate threshold, mood, motivation, and enjoyment, all of which have the potential to influence the athletes' overall performance and well-being. It is also suggested that the best frequency, duration, intensity, and recovery of high-intensity interval training and low-intensity steady-state training for athletes be investigated. The optimal values for these variables may differ based on the individual qualities, aims, and preferences of the athletes. In addition, it is recommended that the effects of high-intensity interval training and low-intensity steady-state training be compared with the impacts of other types of training, such as weight training, circuit training, or plyometric training, which may also have different advantages and disadvantages for athletes.

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