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Enhancing Agility in College-Level Women's Hockey Players: The Impact of Tabata Training

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ABSTRACT

Hockey is a sport that captivates with its blend of speed, skill, and sheer excitement. Played on ice, this dynamic game demands agility, endurance, and precision from its players[1]. Whether it's the thunderous slap of the puck against the boards or the graceful glide of skates across the ice, hockey is a spectacle that never fails to enthrall both players and spectators alike. The purpose of this study was to find out the enhancing agility in college-level women's hockey players: the impact of tabata training. To achieve the purpose of the study, thirty (n=30) women hockey players were randomly selected from the Erode District inter – college hockey players, Erode, Tamilnadu, India during the year 2023-2024. The age of subjects ranged between 18-25 years. The subjects were divided in to four groups randomly 15 in each group. experimental group I (tabata training group) and control group II they were not participated in any specific training. One experimental groups underwent training for a period of 9 weeks. The subjects were tested on selected on physical fitness variables namely agility of college level women hockey players. The analysis of covariance was used to find out the significant difference if any, among the experimental group and control group 'F' ratio were computed to the variation on the groups[2]. The 't' ratio was applied to find out the significant improvement in all the variables of 't' groups. In all the cases, 0.05 level of confidence was fixed to test the significant improvement which was considered as appropriate. Statistically significant improvements in baseline scores in fitness variables of agility comparable between the one group of college hockey players. Agility improved by 9.97 and 10.42 in the control group. Additional research on long-duration intervention in elite players may help to establish the role of plyometric training and core training in conventional football skills for core training. Additional research on long-duration intervention in elite players may help to establish the role of plyometric training and core training in conventional football skills for core training.

Key Words: Tabata training, agility and hockey

INTRODUCTION

HOCKEY

At its heart, hockey is a game of speed and agility. Players must navigate the ice with finesse, executing lightning-fast turns, stops, and accelerations while maintaining control of the puck[3]. It's a sport that demands not only physical prowess but also mental acuity, as split-second decisions can determine the outcome of a match.

TABATA TRAINING

Tabata training typically consists of short bursts of intense exercise followed by brief rest periods[4]. The traditional Tabata protocol involves performing an exercise at maximum intensity for 20 seconds, followed by 10 seconds of rest. This cycle is repeated for a total of 8 rounds, resulting in a 4-minute workout.

AGILITY

Incorporating agility training into a well-rounded fitness program can benefit individuals across various sports and activities, improving performance, reducing the risk of injury, and enhancing overall athleticism[5]. Whether you're a competitive athlete or a fitness enthusiast, agility training offers valuable benefits for enhancing mobility, coordination, and speed of movement

METHODOLOGY

To achieve the purpose of the study enhancing agility in college-level women's hockey players: the impact of tabata training. Thirty (n=30) female inter-collegiate hockey women players were selected from the Erode district, Tamil Nadu, India. This study consisted of three equal groups of fifteen subjects each. The age of subjects ranged from 18 to 25 years. The subjects had past experience of at least four years in hockey players and only those who

represented their respective college teams were taken as subjects. The following variables were selected namely agility in Experimental Group-I underwent tabata training. The control group was not exposed to any specific training /conditioning programme. The experimental treatment namely plyometric training and core training was administrated for a duration of 9 weeks and the number of session per week was confined to three alternative days and each session lasted 60 minutes, in addition to the regular schedule of the hockey training both the training packages are presented in appendices I and II respectively.

STATISTICAL TECHNIQUE

The collected data from the three groups before and after the experimental treatments were subjected to statistical analysis using analysis of covariance (ANCOVA). When the 'F' ratio for adjusted post-test means was found to be significant, Scheffe's test was employed as a post hoc test to identify significant differences among paired means. A confidence level of 0.05 was established for hypothesis testing in all cases. The analysis revealed significant findings in several physiological performance variables following the experimental treatments. Specifically, the post hoc Scheffe's test indicated significant differences in paired means within and between the three groups. These differences provide insights into the effects of the experimental treatments on the physiological performance variables under investigation. Further interpretation of the results suggests that the experimental treatments had a discernible impact on the selected physiological performance variables. These findings contribute to our understanding of the efficacy of the treatments in enhancing physiological performance among the study participants. Overall, the statistical analysis conducted using ANCOVA and Scheffe's test underscores the significance of the experimental treatments in influencing the physiological performance variables examined in this study. These results provide valuable insights for future research and the development of targeted interventions aimed at optimizing physiological performance in similar populations.

RESULTS AND ANALYSIS

The impact of independent variables on each criterion variable was assessed within the confines of an eight-week training period. Physiological variable resting heart rate was the primary dependent variable examined in these studies[6]. Prior to and immediately after the experimental period, all subjects underwent testing on the selected dependent variables. Data collected from the experimental groups before and after the intervention were subjected to statistical analysis using dependent 't'-tests and Analysis of Covariance (ANCOVA). Significant 'F' ratios for adjusted post-test means prompted further investigation using Scheffe's Post hoc test to identify paired mean differences. A confidence level of 0.05 was established for all analyses. The results of the analysis provided insights into the influence of the independent variables on resting heart rate and other physiological variables. Significant differences in paired mean differences were observed following the experimental period, indicating the efficacy of the interventions in impacting the selected physiological variables.

The findings underscore the importance of the eight-week training period in eliciting changes in resting heart rate and other physiologial parameters. The application of statistical techniques such as dependent 't'-tests, ANCOVA, and Scheffe's Post hoc test facilitated a comprehensive understanding of the effects of the experimental treatments. In conclusion, the results highlight the significance of the independent variables in influencing physiological variables such as resting heart rate. These findings contribute to our understanding of the efficacy of the interventions in improving physiological outcomes within the study population**.**

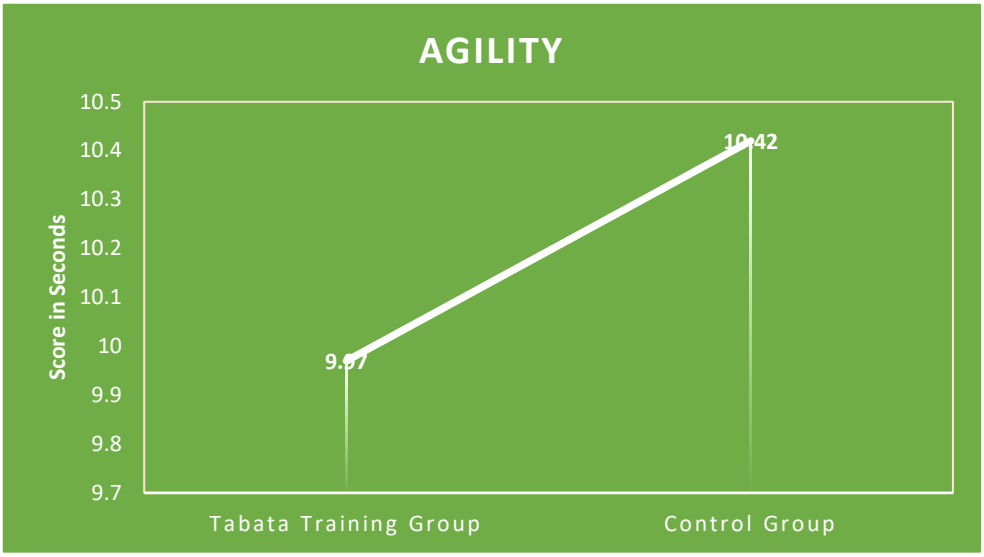
Table – 1

ANALYSIS OF COVARIANCE OF PRE TEST AND POST MEAN AMONG TABATA, TRAINING GROUP AND CONTROL GROUP ON AGILITY

Test	Tabata training group	Control Group	Source of Variance	Sum of Squares	df	Mean Squares	F-ratio
Pre-Test Mean	10.46	10.45	Between groups	0.001	1	0.001	0.14
			Within groups	1.125	28	0.040	
Post-Test Mean	9.99	10.44	Between groups	1.487	1	1.487	28.69*
			Within groups	1.452	28	0.052	
Adjusted Post-Test Mean	9.97	10.42	Between sets	1.532	1	1.532	54.64*
			Within Sets	0.757	27	0.028	

Figure -1

BAR DIA GRAM THE ADJUSTED POST TEST MEAN VALUES OF TABATA TRAINING GROUP AND CONTROL GROUP ON AGILITY



CONCLUSION

In conclusion, the findings of this study indicate a notable enhancement in agility-related fitness variables following Tabata training compared to the control group. The statistically significant improvement observed in agility underscores the effectiveness of the Tabata training program in enhancing this particular aspect of fitness.

Based on these results, it can be concluded that participation in the Tabata training regimen led to a significant increase in selected fitness variables, particularly in agility. This suggests that the high-intensity interval training characteristic of Tabata sessions positively influenced participants' agility, enabling them to move more quickly and efficiently[7].

These findings contribute to the growing body of evidence supporting the efficacy of Tabata training in improving various aspects of physical fitness, including agility. As agility plays a crucial role in many sports and activities, the implications of these results are significant for athletes, fitness enthusiasts, and individuals seeking to enhance their overall physical performance.

Further research may delve deeper into the specific mechanisms through which Tabata training enhances agility and explore its application across different populations and settings. Nonetheless, the present study provides valuable insights into the potential benefits of incorporating Tabata training into fitness programs aimed at improving agility and overall physical performance.

RECOMMENDATIONS

Based on the findings of this study, several recommendations can be made for future research:

Investigate the Effects on Different Demographic Groups

Conduct similar studies focusing on the impact of Tabata training on agility and other fitness variables among women. Considering factors such as age, fitness level, and any specific physiological differences between genders can provide valuable insights into how Tabata training affects various demographic groups.

Explore the Influence of Nutrition

Investigate how different nutritional plans or dietary interventions may interact with Tabata training to influence agility and other fitness outcomes. Understanding the synergistic effects of nutrition and exercise can offer comprehensive strategies for optimizing physical performance.

Longitudinal Studies

Conduct longitudinal studies to assess the long-term effects of Tabata training on agility and overall fitness. Tracking participants over an extended period can reveal any sustained improvements in agility and provide insights into the durability of the training effects.

Comparison with Other Training Modalities

Compare the effectiveness of Tabata training with other forms of high-intensity interval training (HIIT) or traditional endurance training methods in improving agility. This comparative analysis can help identify the most efficient training strategies for enhancing agility in different populations.

Incorporate Multi-dimensional Assessments

Utilize multi-dimensional assessments to comprehensively evaluate agility, including measures of speed, coordination, balance, and reaction time. This holistic approach can provide a more nuanced understanding of how Tabata training impacts different components of agility.

Consider Real-world Application

Explore the applicability of Tabata training in practical settings, such as sports training programs or fitness routines for individuals with specific agility-related goals. Assessing the feasibility and effectiveness of implementing Tabata training in real-world contexts can inform practical recommendations for athletes and fitness enthusiasts.

Account for Individual Variability

Recognize and account for individual variability in response to Tabata training. Factors such as genetic predisposition, training adherence, and motivation levels can influence the outcomes of Tabata training interventions, warranting personalized approaches to optimize results. By addressing these recommendations, future research can further advance our understanding of the effects of Tabata training on agility and contribute to the development of evidence-based strategies for enhancing physical performance across diverse populations[8].

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