

Synergy of Jump Rope and Combined Training on Physiological Components and skill Performance Variables among Collegiate Men Hockey Players

¹Mr. A. Azhaguraja, ²Dr. L. Muthukumar, ³Dr. C. Ramesh

¹PhD scholar, Department of Physical Education, Madurai Kamaraj University, Madurai, Tamilnadu, India.

²Director of Physical Education and Sports, Rajapalayam Rajus' College, Rajapalayam

²Assistant Professor & Head, Department of Physical Education, Madurai Kamaraj University, Madurai, Tamilnadu, India.

Abstract: The reason of the study was to discover the Synergy of Jump Rope and Combined Training on Physiological Components and Skill Performance variables among Collegiate Men Hockey Players. Thirty subjects were selected from Rajapalayam Rajus college, Virudhunagar. The subject's aged between 18 to 23 years. The selected subjects were divided into two groups with fifteen subjects in each group selected randomly Synergy of Jump Rope and Plyometric Training group and control group. The six weeks training periods of experimental groups are involved five days per week. Control group did not undertake any training other than their regular work. To attain the significance difference in between the means on the criterion variables of correlated 't' ratio was apply. This study it processes with proper statistical technique. The data result is obtained 't' values are tested at 0.05 levels.

Keywords: Synergy of Jump Rope and Combined Training, Resting Puls Rate, Dribbling.

Introduction

Hockey operates as an athletic discipline executed through the interplay of a ball and stick. Field hockey functions as an open-air sporting contest carried out by two conflicting collectives consisting of 11 participants apiece, who wield implements curved at the striking extremity to propel a compact, rigid sphere toward the adversary objective. The fundamental objective of the competition revolves around racking up as many points as possible within the rival zone, while simultaneously fending off any scoring attempts inside one's own territory. The faction that accumulates the superior tally of goals is designated as the victor of the face-off (Field hockey, n.d.). The contemporary evolution of hockey took shape across England during the middle years of the 18th century. The initial governing body for the sport was established throughout the United Kingdom in 1876, alongside the drafting of initial regulatory frameworks. The inaugural Olympic Hockey Competition intended for men was hosted in London in 1908, featuring a lineup of six competing squads. Subsequently, hockey was dropped from the 1912 Stockholm Games, only to crop up once more in 1920 during the Antwerp games, before dropping out once again from the Paris Olympics in 1924. The International Hockey Federation was set up in 1924, paving the way for hockey to make a triumphant re-entry into the Amsterdam Olympic Games in 1928. At present, the International Hockey Federation branches out into 5 Continental Associations and encompasses 137 National Associations (Hockey Basics, n.d.).

Jump Rope Training

Jump Rope Training (JRT) was probably introduced to America in the 1600s by the Dutch settlers of New Amsterdam. It may surprise that, a longtime rope jumping was strictly a body's activity, at least in Western culture. The 1960s found jump ropes primarily in the hands of school children during the play time. They began to taught rope jumping as an exercise with superior athletic training properties. The late 1960s and the 1970s

heralded a new era for exercise, including jump roping. Although a variety of people had long insisted that exercise was important for physical health and emotional well-being. It wasn't until this time that the scientific evidence was persuasive enough to substantiate their claims. Health experts were then able to convince the public that our sedentary life styles were increasing our risk for the heart disease, obesity, low back pain, certain types of cancer, osteoporosis, and depression, to name a few. Jump rope training showed that regular exercise like rope jumping not only reduced the likelihood of these ailments; it even often reversed them (Solis, 1992).

Combined Training

Combined training is one of the most advanced forms of sports training. In this study combined training integrates the two types of major specific fitness training namely functional stability training and jump rope training for the development of specific fitness components. It is simply used to develop the performance through different activities and sports within an exercise programme in order to provide training 7 variety and improve all round fitness. This combined programme may have the variety of exercise and, which serves to maintain the long term interest and develops the different muscle group in different exercise. In this training the frequency and intensity are the most capable factors to improve the performance of an individual. Combined training is the foremost means to gain all the factors of specific fitness and also the development of technique in a particular game. The foremost important factor in combined training is to plan the schedule and session, likewise, to gain the technical knowledge. Mugadlimath, (2024)

Methodology

Selection of Subject

The primary purpose of the ongoing academic inquiry set out to look into and break down the combined effects, designated as the synergy of jump rope and Combined training, focusing closely on specific physiological components and skill performance variables among collegiate men hockey players. To carry out this research venture successfully, exactly thirty subjects were carefully picked out from Rajapalayam Rajus College, situated within the region of Virudhunagar. The targeted participants fell squarely within an age bracket spanning from 18 to 23 years.

To set up the experimental framework, the chosen subjects were divided up evenly into two distinct cohorts, housing fifteen subjects in each group, which were randomized beforehand. One cohort functioned as the experimental body focusing on the synergy of jump rope and Combined training, while the other acted as a control unit. The structured training regimen assigned to the experimental group was mapped out to span across a duration of six weeks, operating intensively at five days per week. Meanwhile, the control group did not carry out any specialized physical training programs, choosing instead to keep up with standard daily routines and institutional workloads.

In order to point out and measure any significant differences resting between the means concerning the vital criterion variables, a correlated 't' ratio was applied. This scientific investigation went through proper statistical evaluation techniques to ensure accuracy and reliability. Ultimately, the resulting data values derived from the computational calculations were tested rigorously at the standard 0.05 level of significance.

Selection of Variables

1. Resting pulse rate - **Digital Pulse Monitor**
2. Dribbling - **Harbans Singh Hockey Skill Test**

Statistical Techniques

Empirical records gathered on physiological components and skill performance variables were taken up for rigorous quantitative evaluation. The initial measurements were sorted out through structured analytical procedures. Formal investigative assumptions set forth for comparative assessment were closely looked into. A Student's *t*-ratio was brought in to check out these formulated assertions across the targeted groups. This computational metric turned on measuring variance across distinct study samples. In operational terms, the *t*-ratio is drawn up by calculating the net difference between sample mean values. This outcome is subsequently scaled against the standard error derived from the difference between the two sample means. The mathematical routine sets out to balance between-group divergence against underlying sample volatility. Such an approach runs through sample deviations to filter out random measurement noise. Working through this ratio allows underlying systematic divergence to come through with greater clarity. Consequently, the chosen test helps pin down whether observed contrasts crop up purely by chance or stem from genuine, statistically significant distinctions across physiological metrics and physical skill competencies.

Level of Significance

A baseline alpha threshold was set at 0.05 to carry out the necessary inferential evaluations. The study zeroed in on the variance observed between initial baselines and final outcomes across both trial cohorts. Specifically, the analytical framework singled out the pre-test values alongside the post-test metrics to pin down any meaningful shifts. The investigation divided participants into an experimental group and a benchmark control group to run through rigorous paired assessments. Data processing brought out the central tendencies of each division. The empirical protocol laid down an unambiguous cutoff point of 0.05 so that sampling artifacts would be ruled out completely. By checking into the mean differences between the earlier measurements and the concluding scores, the statistical model narrowed down random fluctuations. Every observation was factored in to map out shifts attributable directly to the intervention. The procedure tracked down variances in performance through matched quantitative methods. Significance testing cleared up whether the recorded developmental gains stood up to formal scrutiny. Both the control arm and the treatment branch went through systematic examinations, ensuring that false discoveries were turned away. The design stuck to the predetermined 0.05 threshold to spell out the final empirical validity without distorting initial conditions.

Computation of 't' Ratio between the Pre and Post Test Means of Resting Pulse Rate

Variables	Group	Mean		Mean Difference	Sd Error	't' ratio
		Pre	Post	Pre / Post		
Resting pulse rate	Control	73.60	73.93	0.33	0.30	1.09
	Experimental	72.73	70.13	2.6	0.27	9.53*
Dribbling	Control	9.48	9.31	0.16	0.39	1.93
	Experimental	9.38	8.80	0.58	0.28	9.01*

*Significant at 0.05 level of confidence

The documented evidence brings out the calculated 't' values across the pre-test, post-test, and adjusted post-test phases for both the Synergy of Jump Rope and Combined Training cohort and the control group. Initial baseline measurements lay down the pre-test figures for resting pulse rate and dribbling skill across both branches. The

recorded starting mean values for resting pulse rate run to 73.60 for the experimental assembly and 72.73 for the control assembly. In parallel, the baseline dribbling assessments yield averages of 9.48 and 9.38 respectively. Statistical checks run on these initial numbers turn up calculated 't' values of 1.09 for resting pulse rate and 1.93 for dribbling efficiency. These computational readouts fall short of the required critical threshold of 2.14 at the 0.05 level of confidence. This mathematical gap points to a clear absence of statistical divergence before training gets under way. The analysis bears out that early variances between the Synergy of Jump Rope and Combined Training set and the untreated control participants boil down to mere chance. Both groups start off on virtually identical physical footings prior to the rollout of the dedicated exercise regimen. Following the multi-week conditioning schedule, subsequent evaluations bring forth the post-treatment statistics for both metrics. The final post-test scores clock in at 73.93 for the synergy group alongside 70.13 for the control units in resting pulse rate. Correspondingly, final dribbling examinations turn in numbers of 9.31 and 8.80 across the experimental and reference participants respectively. The comparative computational breakdown yields 't' ratios pegged at 1.09 for pulse rate and 1.93 for dribbling, evaluated against the decisive table cutoff of 2.14 at the 0.05 confidence interval. These derived parameters hold up against scrutiny and back up the presence of meaningful physiological and motor adaptations following the trial. In sum, the resulting data line up to confirm that the combined regimen of jump rope drills alongside plyometric activities sets off measurable adjustments across the targeted parameters. Sakure, (2024)

Discussion on the Findings

Empirical observations brought out a notable divergence between the cohorts under observation. The intervention group went through a structured synergy of jump rope and Combined training. This regimen brought about marked enhancements in both resting pulse rate and dribbling skills. When measured up against the inactive control group, the treated cohort pulled ahead considerably. Baseline assessments and terminal records marked out substantial performance shifts across the evaluated parameters. A statistical split turned up between the experimental group and the control group across every targeted outcome. These recorded gains fully backed up the initial hypothesis set down for the investigation. The targeted conditioning brought down resting pulse rate values toward optimal baseline efficiency. At the same time, stick-handling agility and dribbling execution stepped up to a superior tier. High personal drive on the part of the subjects factored into these positive shifts as well. The participants showed a steady urge to work on their cardiovascular recovery and ball-handling precision throughout the program. Such dedication helped drive down cardiovascular strain and sharpen on-field technical control. Earlier research works on the synergy of jump rope and plyometric training also back up these derived conclusions. Prior trials carried out in related exercise domains turn out matching physiological and motor improvements. The designated six weeks period set down for the experimental group turned out to generate reliable and applicable results. This timeline panned out as a sufficient window to spur functional cardiorespiratory adaptations. It also served to build up neuromuscular coordination without bringing on chronic exhaustion. Mean values were tracked down, paired up, and weighed against one another to pin down final shifts. A distinct gap stood out among the college men hockey players after sorting through the comparative data. The training load broke down into progressive phases that clearly set the participants apart from untrained peers. Neuromuscular adaptations caught on smoothly over the six weeks stretch. Motor coordination leveled up, which cleared the way for crisper hockey stick maneuvers. The combined exercise protocols pulled together aerobic benefits and anaerobic power outputs efficiently. These combined findings hold up under scrutiny and spell out a dependable training approach for sport-specific conditioning.

Conclusions

Careful evaluation of the empirical metrics yields distinct research outcomes. The investigative process first factors in the underlying methodological constraints. These recognized scope limitations hold back unwarranted generalizations. At the same time, analytical procedures break down the primary dataset. Systematic

computations sift through the numerical variables with strict rigor. Mathematical models sort out underlying trends across all observations. Statistical evaluations also iron out potential anomalies within the corpus. Multiple parametric tests zero in on key correlational tendencies. Every computational run bears out the documented patterns. From this systematic processing, final deductions emerge clearly. Defensible claims boil down to direct algorithmic measurements. The empirical findings line up with the proposed theoretical framework. Restricting variables helps narrow down alternative explanations. Rigorous significance tests rule out random chance occurrences across the distribution. The gathered indices back up the primary thesis assertions. Detailed evaluations point toward structural relationships among the recorded metrics. These resulting deductions sum up the core findings. Each deduction directly builds on the calibrated numerical outcomes. Ultimately, the finalized insights stem from both structural boundaries and exhaustive calculations.

1. After six weeks of training it was observed that a significant improvement in hockey players in Resting Puls Rate and Dribbling.
2. The control group shows and insignificant improvement of 0.05 level of confidence.

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