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Effects of TRX Training on Shoulder Strength Among Male Basketball Players

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ABSTRACT

The effects of eight weeks of TRX hanging training on male basketball players' shoulder strength were examined in this study. Fifteen young basketball players, ages 18 to 21, were randomly chosen as study participants from SRM IST, Chennai, in order to fulfill the study's objectives. The subjects underwent TRX training twice a week for 8 weeks. Shoulder strength was the dependent variables of the study. To determine whether there was a significant difference, the gathered data was statistically examined using the Paired T test. After eight weeks of TRX training, there was a substantial difference in the shoulder strength of male basketball players between their pre- and post-test results.

Keywords: *TRX training, Shoulder strength, Wrestlers.*

1. INTRODUCTION

In the majority of sports, resistance training is a key part of training regimens and is useful for both injury prevention and recovery. A variety of resistance training regimens can be used to achieve these objectives [1]. Suspension training comes in several forms, but all of them share an unstable surface and a unique instrument. These workouts have the potential to increase muscle motor unit activation. A common option for exercise aficionados is the usage of suspension equipment. Those who want to get operational strength and health are advised to use this training approach [2]. The practice of suspension training is considered a cutting-edge training technique, the use of these apparatuses dates back to the days of classical gymnastics rings. Total-Body Resistance Exercise, or TRX, is a type of innovative functional training that, like suspension training, enables users to exercise several motor systems along with tissue and joint groups using their own body weight as resistance. According to a study that contrasted traditional and TRX training, TRX training enhances muscle fitness in both adult and youth groups in a manner comparable to that of traditional resistance training. Thus, the purpose of this study was to determine how 8 weeks of TRX suspension exercise affected the shoulder strength of male basketball players [3].

Because monitoring and oversight of appropriate calorie consumption, including choosing of suitable nutrition for players, is still rare and occasionally not done adequately, there are often misconceptions about the proper nutrition to meet the needs of sports [4]. For instance, athletes typically take electrolyte drinks, which aid in rehydrating fluids and electrolytes, as a source of energy when exercising. [5] Examples of supplements available on the market include Enervon C Multivitamins, Vegetable Blend, EsterC Non-Acidic Vitamin C, and many more. Typically, both synthetic and natural substances are used to make these supplements. Despite the fact that supplements containing synthetic substances are sometimes difficult for the body to absorb, their costs vary, with some being rather high [6]. Nevertheless, there are other fruit varieties in nature, such as beets, which can be used as immune-boosting liquids or supplements. Beets are high in iron, which aids in the blood's ability to transfer oxygen to the brain, and easily absorbed carbohydrates for energy. [7]Given the problems found, the authors would want to conduct a study called "the impact that circuit-style training and the distribution of beets for the increasing durability of martial arts athletes in Dojo SMA PAB 4 Sampali."

Literature Review

[8] proposed The Effects of Eight Weeks of TRX Exercises on Range of Motion and uneven shoulder in Beach Volleyball Players. Athletes that undertake overhead movements frequently have shoulder joint injuries, and research has indicated that the soft tissues of the shoulder joint develop long-term unfavorable adaptations as a result of repeated minor impacts during throwing motions. Thirty female beach volleyball players participated in the study. The individuals were split into control and experimental groups once demographic data had been gathered. A goniometer and scoliometer were used to measure the

degree of uneven shoedness and range of motion. Then eight weeks of instruction. The results showed a substantial difference between the study population's prior to and after the test measurements following the 8-week TRX exercise program.

[9] introduced the effect of 8 weeks of TRX, proprioceptive and combined training on strength and range of motion of the shoulder joint in female athletes with a history of shoulder dislocation. Athletic trainers and experts have employed a variety of techniques to treat and rehabilitate shoulder dislocations. Among the most significant and successful interventions are therapeutic exercises. The current study set out to examine the impact of eight weeks of TRX training. All three approaches—TRX exercises, proprioception activities, and combined workouts—improved the dislocated shoulder joint's strength and range of motion overall, according to the study's findings.

[10] designed the Effect of Circuit Training on Mawashi Geri's Kick Speed Results for Kumite Athletes at the KKNSI Dojo Don Bosco Disci College in 2020. The purpose of this study was to determine the effects of circuit training on the Mawashi Geri kick speed results of kumite competitors. Visit KKNSI Don Bosco Diski in 2020. The results of the study demonstrate that Circuit Training exercise considerably increases Mawashi Geri's tendanga rate in Don Bosco Diski Kumite athletes, according to hypothesis analysis of the pre-test and post-test data. With $\alpha = 0.05$ (tcount> ttable) or (11.80> 1.86), the kick speed results obtained tcount = 11.80 and t table of = 1.86, indicating that Ho is rejected and Ha is approved.

[11] proposed Endurance Training for Volleyball Athletes: The Efficacy of Tabata and Circuit Training Models. Physical endurance is necessary to maintain a high level of play during matches that may last up to five sets. Throughout the game, athletes with high endurance levels may move, leap, and execute quick motions without feeling overly fatigued. Thirty athletes from Cianjur Regency's Tectona club made up the research samples. The yo-yo test was the tool used to gauge volleyball players' endurance. For a total of 18 sessions, samples received treatments three times each week. In order to give volleyball players a more beneficial improvement in endurance, the objective is to increase anaerobic endurance and generate an increase in metabolic rate.

[12] introduced the impact of psycho–neuro–motor exercises on enhancing karate technical proficiency. It takes constant practice and a thorough comprehension of procedures to become technically proficient. Our bodies need more focus to process both internal and exterior inputs. This investigation examines how well psycho-neuro-motor exercises can improve a specific martial technique called mawashi-geri. A thorough comprehension of these processes may encourage the creation of increasingly complex and successful training regimens, which could raise athletes' performance levels in major tournaments.

Goal of the study

To determine whether male basketball players' shoulder strength before and after eight weeks of TRX exercise differed significantly.

2. METHODOLOGY

Selection of Subjects

Fifteen male basketball players from SRM IST, Chennai, whose ages ranged from 18 to 21, were chosen at random to serve as study subjects.

Selection of Variables

Dependent variables- Shoulder strength was the dependent variables of the study.

Independent variables- TRX training

Selection of Test

In this study, the researchers employed an experimental methodology. A randomly selected group of 30 basketball players connected to SRM IST was used in the study. Utilizing saturation samples—a sampling strategy in which every member of the population is included as a sample—the researchers used a method of non-probability sampling (Sugiyono, 2016). The sample was split into two groups: Group B received only Circuit Training, whereas Group A received both the Circuit Training approach and beets. The bleep test (multi-stage running test) was used to obtain data for this investigation. This test is administered at the start of the pretest, prior to treatment, and at the conclusion of the posttest, following treatment. Based on the results, it is possible to determine the athletes' level of endurance.

The Yoyo test was used to evaluate basketball players' endurance levels, with the main goal being to measure each player's ability for endurance. The only significant difference between this instrument and the bleep test was the inclusion of a recovery or active rest period. The yo-yo test in this study was carried out outdoors using a rectangular space that was 20 meters long and 2 meters wide. Audio bleeps regulated the speed increase. The total number of levels and successful returns attained by participants were tallied as part of the scoring procedure.

VARIABLES	TEST
Shoulder Strength	Pull Up

The pull-up test evaluates a person's capacity to use upper body strength to raise their body weight. It is a great measure of back and shoulder strength.

In this study, the total population was split into two groups and given either the exercise circuit method or the tabata training method. These groups received treatment for 18 sessions, three days a week. After the research participants' unprocessed information was gathered, the data was analyzed using SPSS version 25. Finding the average and the standard deviation was the first step. The second step was to examine the homogeneity and normality values. Furthermore, the hypothesis testing employed the mathematical methods of t-test paired sample analysis and separate sample t-test analysis.

Proposed design

Only a single group approach was employed for the study, with a pre-test administered before training and a post-test administered following eight weeks of TRX instruction. Subjects received TRX training two days a week for a total of sixty minutes for each workout.

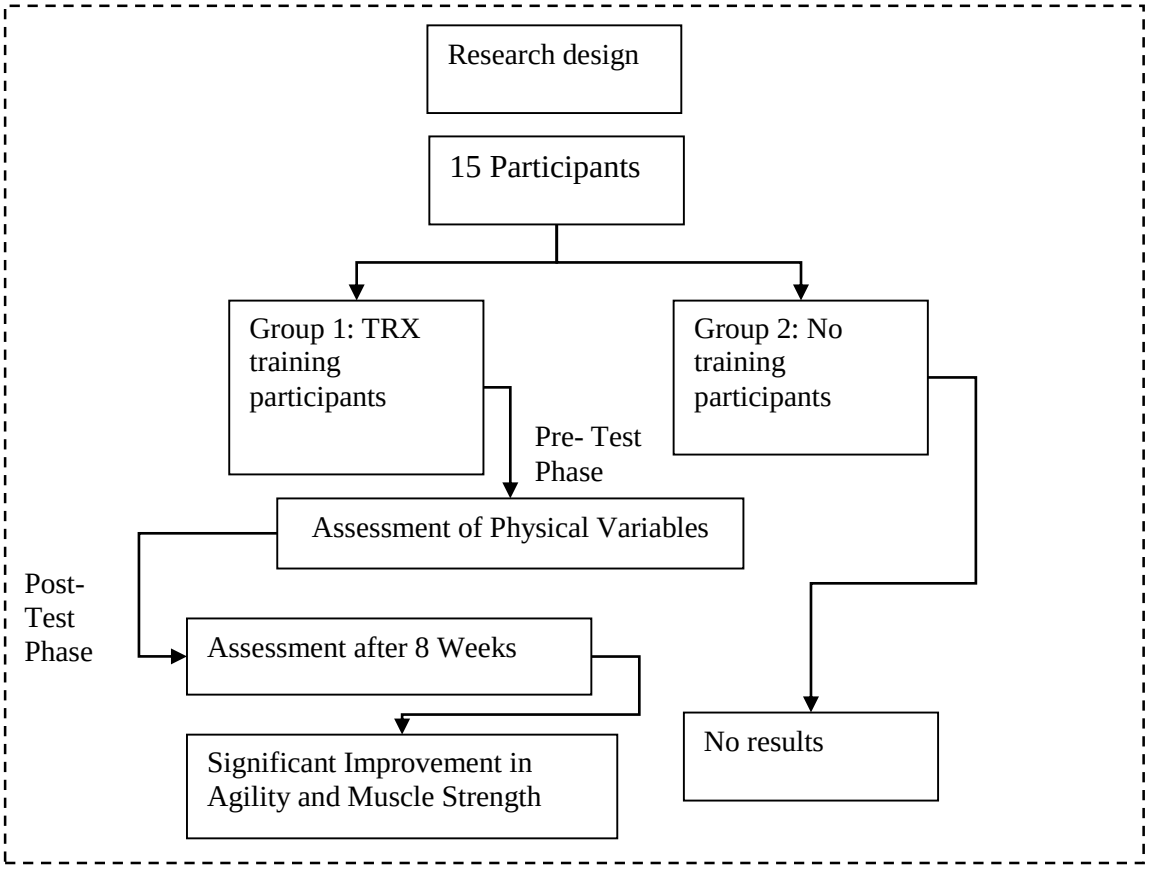

Figure 1. Architectural diagram of proposed system

The architecture diagram shows the study design assessing how TRX exercise affected the upper arm flexibility and power of fifteen college males. The testing group, which trained for eight weeks, and the control company, which did nothing, were randomly assigned to each other. The physical characteristics of both groups were assessed using pre- and post-tests. The experimental group's strength significantly improved, according to the data in figure 1.

3. METHODOLOGY OF STATISTICS

A pair of t-tests and descriptive statistics were used to analyze the data. The significance threshold was set at 0.05.

4. RESULT AND FINDINGS OF THE STUDY

The next stage was to use the versions 25 of the SPSS program to analyze the raw data after it had been collected from the

research participants. The first step was to calculate the standard deviation and mean. The normality and homogeneity values were examined in the second stage. Furthermore, the hypothesis testing employed the statistical techniques of the paired sample t-test analysis and independent sample t-test analysis. The conclusions of study completed during 8 weeks are based on measurements and testing conducted in the field. Tables 1 and 2 reflect the findings of the hypothesis test.

Table 1: T-Test for Paired Samples

Paired Samples Test								
	Paired Differences					**t**	**df**	**Sig. (2-tailed)**
	Mean	**SD**	**Standard Error difference**	**Lower**	**Upper**			
PRETEST PU	1.07	1.100	.131	-1.681	-1.119	10.693	14	.000
POSTTEST PU	2.47	1.356						

t 0.05 *(14) = 2.145*

Table 2: T-Test for Separate Samples

	Paired Differences					**Sig. (2-tailed)**
	Mean	**t**	**Standard Error Mean**	**91% Confidence Interval of the Difference**		
				Lower	**Upper**	
Tabata	1,23	3.55	.823s	-3.342	-2.743	.000
Circuit		1.356				

Male basketball players' Pull Up (SS) test results are displayed in the above table, which compares pre and post test results using a paired t test. The mean scores before and after the test were 1.07 and 2.47, respectively. The standard deviations for both the pre- and post-tests are 1.10 and 1.35, respectively. Statistical significance is present at the level of 0.05 for the obtained t value of 10.693.

According to the test results, both circuit training (p = 0.000) and the tabata training method (p = 0.000) showed significant values below the 0.05 cutoff. It may be concluded that improving athlete endurance was significantly influenced by both circuit training and the tabata training style.

The circuit training model and the tabata training model differed from one another. The circuit training model's average N-Gain value (1.31) was lower than the tabata training model's average N-Gain value (1.34). Consequently, the tabata training method seems to be more successful in boosting basketball players' endurance.

5. DISCUSSION

The study's findings show that male basketball players' shoulder strength testing before and after TRX training showed a substantial improvement. Shoulder strength has significant variations after the 8 weeks of TRX training. The increase in shoulder strength from TRX training programs may be attributed to the strengthening effects of TRX exercises. These

exercises promote muscle hypertrophy and enhance muscle strength, depending on the specific nature of each movement. In this regard, the present study is consistent with the study of Dashtbani (2013), Al-Ebrahimi et al. (2019) and Gabala et al. (2017). A previous study of Rostami, S., Rajaeian, B., Esmaeilian, M., & Rahmani, F. (2023) similar to present study states that TRX exercises can be a helpful way to improve the strength and range of motion of shoulder joint. A study of Ghorbanipour, A., Seyedi, M. R., & Mirnasuri, R. (2023) recommended that TRX exercise protocols, specifically targeting the prevention of muscle injuries and addressing irregularities such as shoulder imbalances. The study's overall conclusions show that TRX training significantly improved male basketball players' shoulder strength scores before and after the test.

6. CONCLUSION

The study's findings demonstrated that, following eight weeks of TRX training, male basketball players' pre- and post-test results for shoulder strength differed significantly. The study's conclusions are consistent with the two training approaches' intended objectives. However, when it came to improving basketball players' endurance, the tabata training model outperformed the circuit training model. Focusing on high-intensity interval training (HIIT) activities like sprinting, rapid jump rope, or high-intensity weight training is made easier by the tabata training concept. In order to give basketball players a more beneficial improvement in endurance, the objective is to increase anaerobic endurance and generate an increase in metabolic rate. Researchers recommend using a more thorough study tool to get information from coaches about the use of tabata and circuit training methods as well as to investigate how the two training methods differ in terms of athlete psychological elements.

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