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Dr. Shamsher Kasnia
Assistant Professor, Department of Physical Education, C.D.L.U, Sirsa, Haryana, India

Corresponding Author:
Dr. Shamsher Kasnia
Assistant Professor, Department of Physical Education, C.D.L.U, Sirsa, Haryana, India

Effect of isometric and isotonic training on explosive strength

Dr. Shamsher Kasnia

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Abstract
The current study's goal was to look into how isotonic and isometric training affected explosive strength. 60 male students from the Department of Physical Education at C.D.L.U. Sirsa (Haryana) were chosen for the study in order to accomplish this goal. The chosen subjects, such as physical exertion and isometric coaching, and management cluster, were separated into three equal teams of twenty subjects each. First Group undertook an isotonic training programme, Group II underwent isometric coaching for twelve weeks on three days per week, and Group III served as the management cluster, participating in only their usual educational activities in accordance with their curriculum. Leg strength was chosen as the next criterion variable, and it was assessed using the leg raise technique with dynamometer. The study's aim was to investigate the effects of isometric and isotonic training on leg strength. On a specific criterion variable, all the topics for the three teams were examined during, before, and right after the coaching programme. The analysis of variance was used to determine whether there were any significant differences between the teams. At a confidence level of 0.05, the degree of significance was examined in regard to the 'F' magnitude connection discovered by the analysis of variance. According to the study's findings, there was a substantial difference in leg strength between the coaching cluster and management cluster in isotonic and isometric exercises. Additionally, it was discovered that isometric and isotonic exercises significantly improved leg strength.

Keywords: Isometric training, isotonic training and leg strength

Introduction
Activities can be set up taking into account the length and pressure of the muscles involved. Isotonic exercises comprise a concentric or raising stage as well as a whimsical or bringing down stage. Isometric exercises are those in which pressure is generated inside the muscle to support a load but there is no joint development around the joint. While isotonic exercises are typically preferable to improve practical quality, isotonic exercises can also be used to build quality, muscular measure, and strong continuation.

Development around a single joint is a component of a disengagement isotonic technique. Jockeys use segregation exercises to concentrate on specific body regions. Leg extensions, leg twists, seated and standing calf raises, sidelong shoulder raises, front shoulder raises, pec deck flies, and evangelist twists are examples of segregation isotonic exercises. The objective muscle in this type of exercise is the agonist, which is a crucial muscle needed to initiate the development.

Growth at several joints is a component of compound isotonic actions. Compound actions, which also need an agonist, engage synergist muscles to aid in the growth. Muscles that work synergistically tend to be smaller than agonists. The triceps is the agonist and the deltoid is the synergist during overhead squeezing exercises. Compound isotonic exercises include squats, hops, dead lifts, barbell squeezes, push-ups, and pull-ups. Compound workouts are more beneficial because they mirror current trends and continue to be true exercises.

Your overall mass is primarily located in your lower body. A strong, well-built lower body can make everyday tasks like walking, climbing stairs, and standing easier. By engaging in isometric exercises, you can increase the shape of your lower body. Isometric exercises don't need any special equipment, making them ideal for performing at home. Charles Atlas, a physical therapist, advocated this method of training by designing a workout regimen he named "Dynamic Tension" with a focus on static activities. Detachment lower body exercises include knee presses against a pad or small medicine ball, the divider squat hold, laying hip scaffolds, static thrust holds, and static knee augmentation.

Although your abdominal region and centre speak to a smaller muscle zone than your lower body, these muscles are just as important. Strong abdominal and centre muscles support your spine, balance your shoulders, and give you an empowered good stance as you lift heavy objects. Isometric push-ups, isometric pull-ups, and self-opposed biceps twists will help you improve your stomach exercises. isometric crunches, stomach vacuums, wrestler's scaffolds, and corporate boards are all centre exercises. Additionally, there are isometric exercise tools like the Bull worker designed specifically for this form of workout.

The list of activities available is endless, and every movement your body performs involves muscular compression. Understanding the many types of powerful compressions and which practises employ such constrictions will improve your execution if you want to increase your solid quality.

Isotonic Exercise

When a muscle contracts, it exerts a constant force even though the muscle lengthens and shortens during the process of growing. This is known as isotonic compression. In this approach, getting a glass to drink from would need your muscles to exert the same force throughout the growth, which is practically impossible. As a result of frequent muscular withdrawal, the urge evolves with time. Alterable withdrawal, which means the muscle strain varies as it moves the glass, is a more accurate phrase. Exercises like dumbbell twists, squats, lurches, and walking frequently display this type of withdrawal. These exercises isolate specific muscle groups, such with dumbbell twists when the bicep is the primary muscle exercised.

Isometric Exercise

When you push against something that is obstinate, you experience isometric withdrawals. Another name for this is static strain. Muscle contraction without movement of the muscle or joints is known as isometric exercise. Examples of isometric exercises include pushing up against a wall or stopping in the "up" position during a push-up. For this reason, isometric exercises are occasionally used in a rehabilitation environment even though they don't really create quality in the first place. However, they can maintain quality. If a person has joint pain and finds it difficult to engage in activities requiring a range of motion, isometric exercises may help maintain joint muscle strength without adding to the pain.

Methodology

The study's goal was to examine the effects of isotonic and isometric training on leg strength. The Department of Physical Education at the C.D.L.U. in Sirsa (Haryana) selected 60 boy students as the study's subjects in order to accomplish this goal. The chosen topics, which included physical activity, isometric training, and management cluster, were divided into three equal teams of twenty each. Cluster I underwent an isotonic training programme, Group II underwent isometric coaching for twelve weeks on three days per week, and Group III, which served as the management cluster, did not take part in any specialised coaching programmes in addition to their regular educational activities in accordance with their syllabus. The next variable, Explosive Leg Strength, was chosen as the criteria variable and was assessed by using a leg raise with a dynamometer. Prior to and right after the coaching programmes, all of the topics for the three teams were put to the test using the elect criterion variable. The analysis of variance was used to examine any appreciable differences between the teams. At 0.05 level of confidence, the degree of significance to examine the size relation of the "F" found through analysis of variance was examined.

Table 1: Analysis of covariance of the data on leg strength of pre and post tests scores of isotonic and isometric training and control groups

Test	Isotonic training group	Isometric training group	Control Group	Source of Variance	Sum of Squares	Df	Mean Squares	Obtained 'F' Ratio
Pre Test								
Mean	89.75	89.78	89.80	Between	0.02	2	0.004	0.10
S.D	0.267	0.276	0.253	With in	2.36	58	0.04	
Post Test								
Mean	94.37	92.54	89.51	Between	189.38	2	94.83	185.82
S.D	0.274	0.216	0.252	With in	19.13	58	0.48	
Adjust Post Test								
Mean	94.28	91.73	88.36	Between	165.94	2	83.52	54.82
				With in	57.14	58	1.25	

The respective balanced post-test methods for the isotonic preparation bunch, the isometric preparing group, and the control group are 94.28, 91.73, and 88.36. The acquired "f" fraction for balanced post-test means is 54.82, which is higher than the table estimation of 3.226 for df 2 and 58 needed for significance at the 0.05 level of certainty for leg strength.

The study's findings showed that there was a significant difference in leg strength between the isotonic preparation group, isometric preparation group, and control amass for the balanced post-test procedures.

Table 2: The mean contrast values among the isotonic preparation group, isometric training group, control group, mean differences and confidence interval value

Isotonic Training group	Isometric Training group	Control Group	Mean Differences	Confidence Interval Value
94.28	91.73	-	2.55	1.04
94.28	-	88.36	5.92	1.04
-	91.73	88.36	3.37	1.04

The table 2 shows that the mean contrast values between the isotonic preparation group and the isometric preparation group, the isotonic preparation group and the control group, and the isometric preparation group and the control group, respectively, on leg strength, were greater than the necessary assurance interim esteem of 1.04 for significance. The findings of this study showed that there was a significant difference in leg strength between isotonic preparation group and isometric preparation group, isotonic preparation group and control group, and isometric preparation group and control assembly.

Conclusion

When compared to the other independent group, there was a significant difference between isotonic preparing, isometric preparing, and control aggregates in terms of leg strength.
Due to isotonic and isometric preparation, the close paradigm variable underwent a significant change. The modifications to the fundamental variables favoured isotonic preparation.

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