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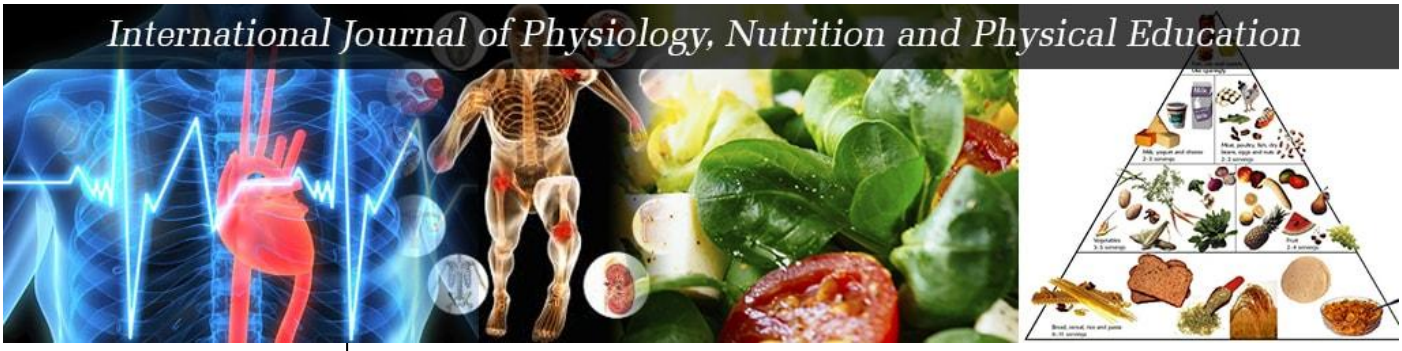

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Effect of specific training programme on abdominal thickness among university hockey players

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Abstract
The purpose of the study was to find out the effect of specific training on abdominal thickness among university hockey players. To achieve this purpose of the study, thirty men hockey players were selected as subjects who were from the various faculties, Nagaland University, Lumami. The selected subjects were aged between 19 to 24 years. They were divided into two equal groups of fifteen each, Group I underwent specific training and Group II acted as control that did not participate in any special training apart from their regular sports and games practices. The subjects were tested on selected criterion variables such as abdominal thickness prior to any immediately after the training period. The selected criterion variable such as abdominal thickness was measuring by Harpenden Skinfold Caliper. The analysis of covariance (ANCOVA) was used to find out the significant differences if any, between the experimental group and control group on selected criterion variable. The 0.05 level of confidence was fixed to test the significance, which was considered as an appropriate. The result of the present study has revealed that there was a significant difference among the experimental and control group on abdominal thickness.

Keywords: specific training, abdominal thickness, hockey

Introduction
The primary objective of sports training is to stress various bodily systems to bring about positive adaptation in order to enhance sporting performance. To achieve this objective, coaches and athletes systematically apply a number of training principles including overload, specificity and progression, organized through what is commonly termed periodization. The application of these principles involves the manipulation of various programme design variables including choice of exercise, order of training activities/exercises, training intensity (load and repetition), rest periods between sets and activities/exercises and training frequency and volume in order to provide periods of stimulus and recovery, with the successful balance of these factors resulting in positive adaptation [1]. Sport specific training is simply fitness and performance training designed specifically for athletic performance enhancement. Training programs for athletic performance enhancement could include such areas as strength, speed, power, endurance, flexibility, mobility, agility, mental preparedness (including goal setting), sleep, recovery/regeneration techniques and strategies, nutrition, rehabilitation, pre-habilitation, and injury risk reduction. A general program should include all of these components and a more specific program may only include a few, depending upon the athlete's specific needs (based on strengths, weaknesses and/or imbalances) and the demands of the sport they participate in [2]. Hockey players are known for their physical toughness, willingness to battle through injuries, dribbling ability and talent with the puck. Players who can take the hits and keep on going forward need strong and resilient bodies. Players must have the size to block shots and the quickness to take the attack up when they gain possession of the puck. Hockey players need to be in top-level cardiovascular condition to play the game effectively. Players who carry a high percentage of body fat are at a disadvantage and will slow down during a shift and in the late stages of the game. Players need to keep their body fat level between 6 percent and 12 percent. A "model" look is not necessary, but abdominal muscles should be visible [3]. Millions of athletes across the country are trying to improve their physiques by altering their body composition. Specifically, they want to reduce their

Body fat. The cardiovascular endurance exercise session is the traditional favorite exercise of choice to achieve this goal. Many athletes hop on the treadmill or step machine for 45 minutes to expend calories and decrease fat stores. Although research has proven that this approach might be a sure solution to short-term weight loss (for about the first three months), it may not be the best strategy for long-term weight loss and maintenance. Body composition training and strength training are not enemies, especially not in the long term. But even in the short term, strength training makes sense; otherwise, the body reaches a plateau all too soon. Why wait until the muscles have decreased in size because of the cardiovascular endurance training and until the metabolic cost of living has gone down because of the weight loss? If you pair strength training with the traditional cardiovascular endurance exercise in a planned program, you can create an effective symbiotic relationship [4]. Body composition is a physical measurement that provides more specific information about body make-up than body weight alone. Body composition can be defined as the proportion of fat and fat free mass (FFM) in the body. Fat free mass includes primarily muscle, bone, and water along with some other elements. Fat mass includes fat that is stored as an energy source and fat in the central nervous system, organs, bone marrow and sex tissues, known as essential fat. can easily fit into recommended ranges for their sport, but lifestyle habits are not optimized. Others may fall into the extremes, either over or under the typical ranges for their sport. Regardless, developing optimal fueling, training, rest and recovery habits should be priorities for all students can easily fit into recommended ranges for their sport, but lifestyle habits are not optimized. Others may fall into the extremes, either over or under the typical ranges for their sport. Regardless, developing optimal fueling, training, rest and recovery habits should be priorities for all student-athletes, in order to optimize performance and long-term health. Many student-athletes have goals of gaining or losing weight. Some perceive direct performance benefits, some have aesthetic reasons while others are meeting the necessary weight requirements of their sport (e.g. wrestling and rowing.) Student-athletes benefit from focusing on altering body composition more than just weight alone. Losing body fat while maintaining or increasing FFM is typically favorable in sports. When the focus is limited to scale weight, improper fueling becomes more likely as does the risk of losing lean tissue, bone mass or energy stores and gaining undesirable fat stores. Improper fueling can relate to increased illness and injury risk, poor recovery, decreased performance and more [5].

2. Materials and methods

In the present study all the students studying in various faculties, Nagaland University, Lumami were considered as population for the study. A representative sample of 30 hockey players in the age of 19-24 years was chosen as sample for the study. The selected participants were divided into two groups. Group I underwent specific training and group II act as control group. The experimental groups underwent eight weeks of training in their particular workout. For this study dependent variable is abdominal thickness.

2.1 Skinfold Measurement

Purpose to assess the Body Fat of the athletes.
Equipment Used Harpenden Skinfold Caliper.

Description

All the skinfold measurements were taken on right side of the body with the subject standing [6] Abdominal.

The vertical pinch is made at the marked site, and the calipers placed just below the pinch. Be careful not to place the caliper or fingers inside the navel.

2.2 Analysis of Data

The data obtained were analyzed by analysis of covariance (ANCOVA). Analysis of covariance was computed for any number of experimental groups, the obtained 'F' ratio compared with critical F value for significance [7].

3. Results & Discussion

The statistical analyses of shooting performance due to specific training have been presented in Table I.

Table I: Analysis of Covariance on Abdominal of Specific Training Group and Control Group

	Experimental Group	Control Group	Source of Variance	Sum of Squares	Df	Mean Squared	'F' ratio
Pre-test Mean S.D.	23.74 2.64	23.54 2.58	Between Within	4.41 40.09	1 28	4.41 1.43	3.08
Post-test Mean S.D.	20.54 2.54	23.28 2.62	Between Within	65.64 146.10	1 28	65.64 5.22	12.58*
Adjusted Post-test Mean	20.62	23.32	Between Within	82.54 55.20	1 27	82.54 2.05	40.26*

* Significant at.05 level of confidence. Table value required for significance at.05 level with df 1 and 28 and 1 and 27 are 4.20 and 4.21.

The data collected prior and after the experimental period on abdominal of specific exercise training group and control group were analysed and presented in Table - I.

Table – I showed that the pre-test values of abdominal for specific exercise training group and control group were 23.74 ± 2.64 and 23.54 ± 2.58 respectively. The obtained 'F' ratio value of 3.08 for pre-test score of specific exercise training group and control group on biceps was less than the required table value of 4.20 for significance with df 1 and 28 at.05 level of confidence.

The post-test mean values of abdominal for specific exercise training group and control group were 20.54 ± 2.54 and 23.28 ± 2.62 respectively. The obtained 'F' ratio value of 12.58 for post-test scores of specific training exercise group and control group was more than the required table value of 4.20 for significance with df 1 and 28 at.05 level of confidence.

The adjusted post-test mean values of abdominal for specific exercise training group and control group were 20.62 and 23.32 respectively. The obtained 'F' ratio value of 40.26 for adjusted post-test scores of specific exercise training and control group was more than the required table value of 4.21 for significance with df 1 and 27 at.05 level of confidence.

The results of this study showed that there was a significant difference among specific exercise training group and control group on abdominal.

4. Conclusions

The result of this study showed that there was a significant improvement after the specific exercise training on abdominal when compared with control group. The eight weeks of experimental treatment significantly influence on abdominal thickness in university hockey players. The above results are supported by Dupler [8], Fry Andrew [9] and Legaz and Eston [10].

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