



EFFECTIVENESS OF SELECTED NUTRACEUTICALS FOR REHABILITATION OF ACL KNEE INJURED INDIAN FOOTBALL PLAYERS

Dr. Mohd Salim Javed, Associate Professor,
Faculty of Physical Education and Sports GNA University,
Phgwara, Punjab



Abstract

Aim of this study was to find out the effectiveness of Nutraceuticals for rehabilitate ACL knee injured Indian Footballers. An injuries are the part and parcel of sports participation and injuries are those much more serious to the Indian footballers that due to injuries they were forced to stop playing and it leads to finish their careers before achieving the best result in their discipline. The knee joints and muscle groups are important, contributing to execute successive skills or movements as per the demand of the situation in sport arena. ACL sprain is the most common injury in athletes because of the insufficient flexibility, strength and nutrition. This study also explores the benefits of nutrition to rehabilitate an athlete himself definitely. A total 30 ACL injured subjects were selected on the basis of inclusive and exclusive criteria and divided into two groups A (N=15) and B (N=15). Group A treated as experimental with execute knee movements protocol with used which taken selected nutrition's for rehabilitation and. Group B as control were executed knee movements protocol, without the uses of nutrition's for rehabilitation of ACL knee injury. 8 weeks nutritional program applied on experimental group only and check list and nutrition schedule prepared by experts of both core disciplines. The paired sample 't' test between both groups showed significant difference at the level of 0.01 and also t.ratio had shown the significant effectiveness of selected nutraceutical for rehabilitation of ACL knee injury i.e flexion [Ex.Group 20.75*-Co.Group 19.40*] extension [Ex.Group 18.59*-Co.Group 8.09*] muscle circumference [Ex.Group 5.88*-Co.Group 3.60*] and movement steps [Ex.Group 14.59*-Co.Group 10.11*]. There is a significant effect of nutrition on ACL knee injury. Experimental group was found better rehabilitation as compression to control group.

Keywords: ACL Knee injury, nutrition, Rehabilitation, Knee extension, flexion, Muscle circumference, movement steps, check list and nutritional program.

Introduction

Today, is the competitive time of world sports. Through every athlete want to win over opposite competitor along with their successive skills, which required overall fitness to execute as per the demand of the situation in the ground. if an athlete does not have sufficient fitness level, resulting injuries. ACL Knee injury is the most common among the knee injuries because all most sudden and unpredictable movements are executed by knee joints. The ACL can be injured by having the tibia moved forcefully in an anterior direction. This occurs when an athlete is making a very quick cutting motion on a hard surface when the athlete gets hit in the behind in the lower leg or when the farmer gets pushed backward while the tibia is held in place as happens in contact sports. The main function of these two ligaments is to stabilize the knee in anterior or posterior directions. To increase the rate of recovery we can apply different way to overcome of an athlete like scientific rehabilitation process and adequate nutrition. During ACL injury nutrition plays and uses full role. When the ACL is tearing the protein is much required. 5% protein intake increase as a comparison of the normal person. Indian science proves that when we used the 5% kcal increase during ACL injury the time of rehabilitation is short as a comparison of the other person. In the ACL tear injuries our major muscles are weak. For the demonstration of the muscle protein or different type of nutritions are essential to recovery fast.

However one of the literature view "Importance of the nutrition and diet supplementation after ACL reconstruction" studied by Mercer .A (2013). The purpose the article to know about the ACL injury and use of nutrition in the period of rehabilitation. ACL injury is a ligament injury during the ACL injury ligament was tear. Doctor treat through the surgery



during surgery several cell and tissue are lose and result that our knee attaching muscle size are reduce. For rehabilitatio of ACL injury the amount of the injury is increase up to the 5 % of every nutrition. Protein plays a important role to reconstruction of the ligament injury. So as a compare to the other the level of the protein increase up to the 55%-60% .the uses of the protein is much required as a compare to the other. The total recovery period of the ACL reconstruction is 7-8 week during these week nutrition work for an injury life a surgery of the injury. The article also described that during the other type of the injury nutrition is harmful of all person. Thus the present study was done to find out "Effectiveness of selected nutraceuticals for rehabilitation of ACL knee injury". Moreover, a review by Eshmerk .B.et.al(2005) conduct a study the effect carbohydrate and protein supplement on the strengthening outcome and recovery of ACL patient. The purpose of the study to know about ACL patient, frame strengthening program, use of carbohydrate and protein. 25 male and female selected as a purposive technique. 36 different type of strengthening exercises used to prepare a muscle fitness. 12 week strengthening training and nutrition object used on the ACL patients. Muscle biopsy used as a pre test or post test. The level of the research 0.005. The result of the study was that the flexion , extension and resistance training are significant. The nutrition supplement is an important for a muscle strength and muscle body mass.

Methodology

In this study experimental method and Quasi experimental design used to investigate the effects with 30 male subjects having a ACL knee injury. Characteristics of the sample described as 30 subjects were selected from the department of physiotherapy, Baba Hundal Charitable Hospital Jandiala Guru Amritsar, Mata Kaulan Hospital, Amritsar and Doabha Hospital, Jalandhar-Punjab-India. Further, all subjects with ACL Knee injury divided into two groups A (N=15) & B (N=15). Purposive sampling technique was used to collect data. 8 weeks nutritional program applied on experimental group and after that post test was conducted. Total four variables Knee Extension, Knee Flexion, Muscle Circumference and Knee Steps were selected for this study. Carbohydrate, Protein, Fats, Minerals, Vitamins and Water intake in diet was prescribed by Ritu Sudhakar M.Sc(Chief Dietician) (Dayanand Medical College & Hospital, Ludhiana (DMC). Punjab. The 30 subjects divided in two groups (Group A & Group B) followed by lottery method. All the subjects had ACL knee injury were lying in supine position on the examination table just prior to or after the pain sensitivity examination. To measure knee extension the subject's ankle placed on a rigid bolster (if excessive adipose tissue is present and the knee was resting on the table, add extra height under the ankle). Subject asked to actively straighten the leg three times. The investigator checks to see that the subject was having pain sensitivity in injured knee during contracting their quadriceps muscles to extend their knee down towards the table (not just co-contracting both hamstrings and quadriceps). Investigator measures the angle in degrees using the goniometer. Use reference of 180° as full extension (e.g. angles greater than 180° indicates hyper-extension. To measure flexion of knee, subject asked to bring the foot as close as possible to the buttocks without using their hands to pull, simultaneously foot was stay in flat position on the table and after that investigator checks to see that the subject was having pain sensitivity during flexion of injured knee and measures the angle in degrees using the goniometer, being careful to use angles that referenced as follows: 180° equals full extension and normal flexion will likely not exceed 40°. With the help of measurement tape tester measure the muscle circumference of thigh. Tester mark the point on the thigh muscle same difference of all subject. Tester keeps in mind that same measurement tape used in pre and post test. To measure the movement step of the knee injury patient. Parallel bar use as a tool to measure the movement and stepping of the subject. Investigator was to keep in mind when he was take the stepping he was stand sideward of the subject to make the subject comfortable. These measurements taken in pre and post test of both Groups A and B. The selected nutrition diet chart followed by the experimental group A and without nutrition diet control group B underwent the same up to 8 weeks than post test protocol by both groups. Data was analyzed using SPSS (16.0) version. Paired "t-test" was done between the groups having ACL knee injury, to determine the significance level of pre and post-test for both the groups.



Results

Mean values and Standard Deviations of the outcome variables during both the tests are displayed in Table 1 to 4

TABLE 1
 COMPARISON OF KNEE EXTENSION AMONG EXPERIMENTAL AND CONTROL GROUP

Knee Extension	Test	Mean \pm SD	t. value
Experimental Group A(N=15)	Pre	3.20 \pm 3.58	18.59*
	Post	122.6 \pm 24.63	
Control Group B(N=15)	Pre	4.80 \pm 5.89	18.09*
	Post	109.7 \pm 23.8	

Paired sample “t-test” was used to comparison between the two groups of Knee Extension and result showed insignificant difference in Group A and B [Table-1].

TABLE 2
 COMPARISON OF KNEE FLEXION AMONG EXPERIMENTAL AND CONTROL GROUP

Knee Flexion	Test	Mean \pm SD	t. value
Experimental Group A (N=15)	Pre	3.20 \pm 3.58	20.75*
	Post	126.6 \pm 23.19	
Control Group B (N=15)	Pre	4.80 \pm 5.89	19.40*
	Post	114.6 \pm 22.7	

Paired sample “t-test” was used to comparison between the two groups of Knee Flexion and result showed insignificant difference in Group A and B [Table-2].

TABLE 3
 COMPARISON OF MUSCLE CIRCUMFERENCE AMONG EXPERIMENTAL AND CONTROL GROUP

Variable: Circumference	Muscle	Test	Mean \pm SD	t. value
Experimental Group A(N=15)		Pre	19.66 \pm 2.74	5.88*
		Post	23.20 \pm 3.62	
Control Group B(N=15)		Pre	19.60 \pm 2.82	3.60*
		Post	21.80 \pm 3.64	

Paired sample “t-test” was used to comparison between the two groups of muscle circumference and result showed insignificant difference in Group A and B [Table-3].



TABLE 4
 COMPARISON OF MUSCLE CIRCUMFERENCE AMONG EXPERIMENTAL AND CONTROL GROUP

Variable: Movement step of the knee	Test	Mean \pm SD	t. valve
Experimental Group A(N=15)	Pre	1.06 \pm 1.03	14.59*
	Post	19.86 \pm 5.30	
Control Group B (N=15)	Pre	0.93 \pm 1.03	10.11*
	Post	16.93 \pm 6.35	

Paired sample “t-test” was used to comparison between the two groups of movement step of the knee and result showed insignificant difference in Group A and B [Table-4].

Discussion of Findings

When the Footballers suffering from ACL Knee injury they followed various types of knee related rehabilitative exercises beside this intake of selected nutritions is the best way to increased the rate of recovery of ACL knee injured patients. ACL injuries is a ligament injuries when ACL is tear the protein is much required. 5% protein intake increase as a compare of the normal person. Indian science prove that when we used the 5% kcal increase during ACL injury the time of rehabilitation is short as a compare of the other person. In the ACL tear injuries our major muscles are weak .for the remonstration of the muscle protein or different type of nutritions required for fast recovery. The purpose of this study was to find out the significance differences between the subjects which where belonging to Experimental Group as well as Control Group. Hence the directional hypotheses there will be significant effect of nutrition on ACL (flexion, extension, muscle circumference, movement step) in this study-test was done to compare each pre and post-test and measurement to determine the significant difference between two groups. The result showed significant difference between groups. One of the study was done by Steven Bubel MS, CSCS on ACL Rehabilitation and nutrition this study researchers sought to find out if post-workout nutrient supplementation would, indeed, have the same muscle-building effects of rehabilitative patient as it does in the healthy population. Twenty-six ACL-injured men and women were divided into three supplementation groups and performed resistance training 3 times a week. Immediately after each training session subjects consumed either a protein and carbohydrate drink, carbohydrate only(think Gatorade), or a placebo. They discovered that, after 12 weeks, the protein and carbohydrate grouped exhibited significantly greater muscle size and strength in the quadriceps of the injured leg relative to the other groups.

Another study done by Willian.J(2003) on the effect of creatine and tratede supplement on the recovery process of hormones. The purpose of the study to show the effect of selected nutrition on the recovery process of the hormones. 20 male person was used as a sample. 9 week nutrition program apply on the total population. Growth hormones test used as a pre test or post test. The value of the nutritions are increasing to 20% on the depended of the nature of the person. The result of the study after 5 week muscle sizes of the patient are double as a privies measurement. The result was total significant on the recovery process of the hormones as a compared to other.

Relevance to clinical practice

This study exposed major effectiveness of selected nutrition on the strenthing out come and recovery of ACL knee injured Football players, framing strengthening programs,uses of selected nutrition(carbohydrate,fat,proteins,vitamins minerals and water).These findings may have clinical implication in terms of how these type of nutrition help to managing the cell, tissue, muscle, different type of system. In the sports nutrition is playing an important role as nutrition sports person like that they have missing some important things. Sports person use the supplement to growth and maientance of the muscle. Proteins play an important role to build up and tone up the muscle size.



Conclusion

It was concluded that selected nutraceuticals having more effectiveness which increased the rate of recovery or rehabilitation of ACL knee injured protocol in footballers.

References

- Bass.B, The effect of exercise and nutrition on the mechanostat. *Malnutrition and sport injury and rehabilitation*. 2011; 2(2):23-30.
- Brieger WR, Onyido AE, Sexton JD, Ezike VI, Berman JG, Ekanem OJ, Monitoring community response to malaria control using insecticide-impregnated bed nets, curtains and residual spray. *Health Education Nsukka: Nigeria*;1996.
- Brooks & Mercies, Protein is a such kind of nature product to injury. *Sports nutrition and implication*. 1994; 2(3):11-17.
- Dennim.H. Nutritional support on outcome from severe head injury. *Nutriton journal on during injury*. 2013;9(1):21-26.
- Esmarck,B, Mizuno. H, Hansen. C, Suetta. P, Krogsgaard. M & Kjær.H, The effect of Protein and Carbohydrate Supplementation on Strength Training Outcome of Rehabilitation in ACL Patients. *Wiley interscience*. 2005;23(1):2114-2122.
- Fairweather.T & Hurrell, Minerals and its uses during rehabilitation. *Dietary nutrition and minerals component*. 1996;2 (12): 45-54.
- Harvard .J, Over view of the sports injury. *Sports injury*. 2013; 5(12):23-28.
- Jenkins, Penik.L, & Syion.K, Sports nutrition and it application in sports. West Bengal: Around to all publisher; 1981.
- Mercer. A, The importance of diet and nutrition after ACL reconstruction. *Journal on nutrition and injury rehabilitation*. 2013;7(7):1772-1790.
- Miettinen, Mercies.K & Sharma.P, Amount of fat in body required. *Dietary nutrition and fat component*. 2004;3(11):33-44.
- Nash.S, Onino.V & Parshin.B, An examination of the dietary intakes and nutritional status of chronic healthy spinal and injury individuals. *International journal of nutrition and injuries process*. 2014;6(7):66-78.
- Payranak.K, Role of nutrition during the rehabilitation of the injuries. *Journal of nutrition and rehabilitation*. 2004;3(3):1334-1346.
- Pharam.D, Rauino.L, Restint. V & Saklob.J, Effect of selected parentral feeding on survival in head. *International journal of nutrition and injuries process*. 2014;6(7):45-50.
- Sharma.N.P, Common sports injury and their recommended. *Handbook of sports medicine*. Friends publication. New delhi; 2006:14-3.
- Sharma.N.P, Diet nutrition and sports performance. *Handbook of sports medicine*. Friends publication. New delhi; 2006:14-31.
- Willian.J, the effect of Creatine and tratade on the recovery process of the hormones . *Journal of orthopaedic research*. 2003;22(3):209-218.