To Check The Pinch Grip Strength Smokers And Non Smokers In Male Individual"-Comparative Study

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Abstract-

Purpose: *To check the pinch grip strength in smoker and non smokers in male people.*

Subjects and method: *60 subjects were included in this study. They were assigned into two groups by inclusion and exclusion criteria(n=30 per group) group A (experimental group) in this group included smokers male individual and group B (experimental group) in this group included non smokers male individual. Grip strength were tested first followed up by tip(2 point) pinch, key (lateral)pinch, and palmer (3 point pad) pinch.*

Result: *The study demonstrated score among two groups. One way ANOVA (analysis of variance) shows that at pre 0 day=61.8.1,P=0.00Whereas the student t= test (paired) shows that there is significant difference groups (p<0.0001).*

Conclusion: *The smokers were less pinch grip strength than non smokers. In addition, the grip strength in young smokers were decreased. Therefore , smoking will cause a gradual loss of pinch grip strength.*

Keywords- BMI:-body mass density

I. INTRODUCTION

According to the world health organization, Men of reproductive age (20~40 year of age) make up approximately 46% of smoker..(1)

Although the prevalence of male smoker , based on nationally representative sources from 187 countries, decrease from 41.2% in 1980 to 31.1% in 2012, actual number of everyday smoker increased from 721 million in 1980-967 million in 2012.(2)

According to Iran ministry of health, there are over one million smoker in the country. They consumed 50 billion cigarettes every year.(3)

Increasing cigarettes consumption, particularly among young people , has become a major problem in our society .It is generally typified by the holding of an cigarettes. Most of the smokers from the cigarettes burnings end , while about 10% originate from exhale main stream smoke. The dexterity of the hand is generally define under 2 category– power grip and precision grip. Precision grip unlike power grip are used with the intension and increased control as oppose to increased strength. The pinch grip is a form of precision grip where by an objects is pinch between the palmer surface of the finger and opposite thumb.(4) Pinch Grip is when the hand grasps an object with the thumb on one side of the object and rest of the finger is other side of the object.(4)

For the pinch grip to be successful, the individual must be able pick up the object without any portion of the object resting in the palm of the hand.(5)

Some researcher consider a pinch grip is the ability to grasp an object with just the thumb on one finger. Lateral prehension is included here as a form of power grip because lateral grip involves the static holding of an object that is then moved by the more proximal joints of the upper extremity Consequently grip strength has been used as an indicator of overall muscles strength in many population study.(6)

Lateral prehension is included here as a form of power grip because lateral grip involves the static comprehension of an object that is then moved by the more proximal joints of the upper extremity.(7)

Although not a (powerful) grip, neither is lateral prehension is used to manipulate objects in the hand. precision handling is the position and muscular requirements of precision handling are some what more variables then those of power grip, require much find motor control, and are more dependent on intact sensation.(8)The 3 variety of precision handling that exemplifying this mode of precision are –
1). Pad to pad prehension
2). Tip to tip prehension
3). Lateral side prehension

The muscles of the body are also threatened by smoking due to the mechanism of muscle activity.(9)Level of education and occupation have also been significantly effect associated with decreased physical function. (10) Our study is based on whether smoking has its effect on pinch grip strength.

II. REVIEW OF LITRATURE

Shan Ai Quan et al (2007):- concluded that these result showed that current smoking, low education and low income were independent risk factor decreased grip strength among elderly men in Korea .

Virgil Mathiowetz et al (1986):- concluded that the result of study that the increases ingrip and pinch strength coincide with increases in chronological age , that males are stronger than females in all age group , and that hand dominance does not significantly affect hand strength scores.

Vincent Wai-Shing Lau et al (2006):- concluded of this study are in agreement with a previous overseas study in terms of the percentage differences of grip strength between the dominant hand and the non-dominant hand.

ActaOrtop Bras et al (2011):- concluded of this study presents suggested references values for the functional evaluations of isometric muscles strength of the hands in children and youths.

Takeshi Saito et al (2012):- concluded that cigarette smoking might be negatively associated with muscle strength , especially grip strength in Japanese men .

Farzaneh Moslemi-Haghighi et al (2011):- according to these result, the smokers were less powerful than non smokers. In addition, physical activity skills in young smokers were decreased. Therefore, smoking will cause a gradual loss of physical strength and active personal and social power.

AviHarlev et al (2015):- its concluded that smoking has a stronger measurable effect on semen quality and function in fertile men than in sub fertile men .

III. PURPOSE OF STUDY

To check the pinch grip strength in smoker and non smoker male people

HYPOTHESIS:

NULL HYPOTHESIS

It state that there will be no significant difference in pinch grip strength in smoker and non smoker male individuals.

ALTERNATE HYPOTHESIS

It state that there will be a significant difference in pinch grip strength in smoker and non smoker male individuals

IV. MATERIAL AND METHOD

STUDY DESIGN:-

Randomised control trail.

SPACE AND LOCATION:-

All subject will be taken from Saaii College Of Medical Science And Technology and some chaubepur village area.

STUDY POPULATION:-

Study was conducted in subject smoker and non smoker.

SAMPLE SIZE:-

60 subject- Group A- 30 experimental group
Group B- 30 experimental group

SAMPLING METHOD:-

Total number of 60 participants was taken according to the inclusion and exclusion criteria. Participant who satisfy the criteria were allowed to participate in the study after explaining and filling the consent form.

STUDY DURATION:-

4 week.

SELECTION CRITERIA

INCLUSION CRITERIA-

• Those who were willing to participate in the study and for 4 weeks.
• Gender-male

EXCLUSION CRITERIA-

• History of any pathology or any disease.
• No history of any fracture.

VARIABLES:-

DEPENDENT-

• Pinch strength measured by pieston pinch gauge
• WEING MACHEINE.
• Pinch grip

INDEPENDENT-

• BMI
• Lateral pinch strength.
• Tip to tip pinch strength.
• Pad to pad pinch strength.
• Pinch guage

MATERIALS;-

Pencil and erasure, scale

PROCEDURE:-

Subjects who fulfill the inclusion and exclusion criteria were included in the study and an informed consent was taken from each of the subjects prior to participation. After this participants were randomly allocated to three Groups, Group A, Group B . For this purpose randomization is done by allocating subjects with number of experimental group.

- GROUP A- EXPERIMENTAL GROUP
- GROUP B- EXPERIMENTAL GROUP

A brief interview proceeded all testing to determine whether or not subjects met the criteria. Grip strength was tested first followed up by tip(2 point) pinch, key (lateral) pinch, and palmer (3 point pad) pinch. The each test of hand strength , the subject were seated with their shoulder adducted and neutrally rotated , elbow flexed 90 degree , forearm in neutral position and wrist between o and 15 degree of ulnar deviation .For each strength test , standard instruction were followed , and the scores of 3 successive trials were recorded of each hand .

DATA ANALYSIS:-

Analysis of raw data was done using SPSS window version 13.0 version. Descriptive statistics were used to define the demographic characteristics of the sample. Various statistical measures such as mean, standard deviation and test of significance such as Chi-Square test, student paired 't' test, one way analysis of variance (ANOVA) and multiple comparision scheffe test were utilized for this purpose. Nominal data using 'F' test, ANOVA and Chi- Squre test was done. Intra group comparison of the pre interventional and post interventional outcome measures was done by using student paired 't' test whereas one way ANOVA and multiple comparison Scheffe test was used to measure the inter group difference.

V. RESULT

Table 1.1: BMI of study subjects

	GROUP A	GROUP B	SIGNIFICANT
BMI	22.5	21.6	F=2.02,P=0.00 B/W GP=±13.1 With in GP=±6.5

Table 1: Represents the BMI of study subjects. The mean BMI of study subjects is 22.57, 21.639667 in group A, group B respectively. The mean BMI among two groups were almost same I.e. mean BMI difference among groups is statistically insignificant (F=2.026,p=<0.5).

1.2:- T-T Pinch 1 among two group

T-T PINCH-1	GROUP A	GROUP B	SIGNIFICANT
	9.4	12.3	F=24.4,P=0.00 B/W GP=±120.4 With in GP=±4.9

Table:-2 Shows tip to tip pinch grip 1 score among two groups. One way ANOVA (analysis of variance) shows that is almost same (F=24.4) .Whereas the student t – test (paired) shows that there is significant (p>0.0001).

1.3 P-P Pinch -1 among two group

P-P PINCH-1	GROUP A	GROUP B	SIGNIFICANT
	15.9	18.3	F=18.9,P=0.00 B/W GP=±86.4 With in GP=±4.5

Table-3 shows P-P Pinch-1 score among two groups. One way ANOVA (analysis of variance) shows that at pre 0 day , F=18.9,P=0.00 Whereas the student t – test (paired) shows that there is significant difference groups i (p<0.0001).

1.4 LAT Pinch-1 among two group

LAT PINCH-1	GROUP A	GROUP B	SIGNIFICANT
	20.8	25.1	F=42.5,P=0.00 B/W GP=±281.6 With in GP=±6.6

Table-4:- shows LAT Pinch-1 score among two groups. One way ANOVA (analysis of variance) shows that at pre 0 day , F=42.5,P=0.00Whereas the student t – test (paired) shows that there is significant difference groups (p<0.0001).

1.5 T-T Pinch-2 among two group

T-T PINCH-2	GROUP A	GROUP B	SIGNIFICANT
	10.0	12.2	F=17.1,P=0.00 B/W GP=±74.8 With in GP=±4.3

Table-5:- shows LAT Pinch-1 score among two groups. One way ANOVA (analysis of variance) shows that at pre 0 day , F=17.1,P=0.00Whereas the student t – test (paired) shows that there is significant difference groups (p<0.0001).

1.6 P-P Pinch-2 among two group

P-P PINCH-2	GROUP A	GROUP B	SIGNIFICANT
	15.2	18.1	F=21.0,P=0.00 B/W GP=±129.0 With in GP=±6.1

1.6 shows LAT Pinch-1 score among two groups. One way ANOVA (analysis of variance) shows that at pre 0 day , F=21.0.1,P=0.00Whereas the student t – test (paired) shows that there is significant difference groups (p<0.0001).

1.7 LAT Pinch-2 among two group

LAT PINCH-2	GROUP A	GROUP B	SIGNIFICANT
	19.7	24.6	F=61.8,P=0.00 B/W GP=±370.0 With in GP=±5.9

Table7 7:- shows LAT Pinch-2 score among two groups. One way ANOVA (analysis of variance) shows that at pre 0 day , F=61.8.1,P=0.00Whereas the student t – test (paired) shows that there is significant difference groups (p<0.0001).

1.8 T-T Pinch-3 among two group

T-T PINCH-3	GROUP A	GROUP B	SIGNIFICANT
	9.6	12.4	F=21.7,P=0.00 B/W GP=±120.4 With in GP=±5.5

1.8 shows T-T Pinch-3 score among two groups. One way ANOVA (analysis of variance) shows that at pre 0 day , F=21.7.1,P=0.00Whereas the student t – test (paired) shows that there is significant difference groups (p<0.0001).

1.9 P-P Pinch-3 among two group

P-P PINCH-3	GROUP A	GROUP B	SIGNIFICANT
	15.2	18.0	F=14.5,P=0.00 B/W GP=±123.2 With in GP=±8.4

1.9 shows P-P Pinch-3 score among two groups. One way ANOVA (analysis of variance) shows that at pre 0 day , F=14.5,P=0.00Whereas the student t – test (paired) shows that there is significant difference groups (p<0.0001).

1.10 LAT Pinch-3 among two group

LAT PINCH-3	GROUP A	GROUP B	SIGNIFICANT
	19.5	25.1	F=56.8,P=0.00 B/W GP=±476.0 With in GP=±8.3

1.10 shows LAT Pinch-3 score among two groups. One way ANOVA (analysis of variance) shows that at pre 0 day , F=56.8,P=0.00 Whereas the student t – test (paired) shows that there is significant difference groups .(p<0.0001).

VI. DISCUSSION:-

The main findings of the study was that cigarette smoking was associated pinch grip strength in smoker and non smoker Indian rule. In one cross sectional study of sarcopenia in 4000 community dwelling older Chinese men and women was associated with cigarette smoking , chronic illness , physical activity , underweight , poorer overall well being. In a longitudional study reported that knee muscles strength was inversely associated with cigarette smoking. In additions smoking 100 g a week resulted in a reduction of 2.9% knee muscles strength in men and a reduction of 5.0% in women. In this study, we compaired to check the pinch strength in relation between cigarette smoker and non cigarette smoker, strength/body weigth in Japanese men. Without adjusting for confounding factor.

pinch strength in cigarette-smoking men , was higher than that in men who did not smoke .taken together the degree of smoking in heavy current smokers may affect muscle strength, especially pinch grip strength. A combination of promoting exercise habits and prohibiting smoking habit should be considered for improving muscle strength in Indian men.

Potential limitations remains in the study. First, our study was a RCT and not a longitudinal study. We could show a clear relationship between cigarette smoking and muscle strength in men. Fourth , we did not evaluate swomen. Fifth, we could not identify the mechanism that the links cigarette smoking and muscle strength. In addition those are potential factors that may influence muscles strength and could not be evaluated in this study

Nonetheless , it seems reasonable to suggest that prohibiting smoking and promoting exercise habits might result in improved muscles strength in some Indian men. To demonstrate this clearly, further prospective studies of the Indian are needed. Current smoker were found to have higher risk of decreased grip strength compared with non
smoker. Smoker may have different taste perception , leading them to choose unhealthy food , and may take less exercise compared with non smokers.

Grip strength is a simple test and an important index of the body's muscle situation and can predict disability in the nearer future. Grip strength was tested first, followed by tip(2 point) pinch, key (lateral) pinch, and palmer (3 point pad) pinch. The hand strength , the subjects were seated with their shoulder adducted and neutrally rotated , elbow flexed at 90* , forearm in neutral position , and wrist between 0*-30* dorsi flexion and between 0* and 15* of ulnar deviation. The scores of three successive trials were recorded for dominant hand. The sample was randomized , which is a random sample of natural grouping of individuals in the population.

The initial sampling was of 60 males , but as the requirement was mainly performed directly with individuals under 20-40 years of age. From the results of this study, both the mean power grip and lateral pinch strength are significantly different between hands within each group of subjects.

VII. CONCLUSION:-

After analyzing the result it can be concluded that the smokers were less pinch grip strength than non smokers. In addition, the grip strength in young smokers were decreased .Therefore, smoking will cause a gradual loss of pinch grip strength.

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