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Effects Of Stretching Exercise On The Management Of Knocked Knee Genu Valgum Focusing On Genu Valgum

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ABSTRACT

Knock knees (genu Valgum) are an ailment of the body in which the knees incline inward while the ankles stay away from each other. All body movements are affected by this problem. This deformity affects both gender equally. This research study aimed at to assess the effects of stretching exercise on knocked knees with special reference to Genu valgum. A single-dimensional experimental design was used in this study. Male student-athletes were randomly selected from the University of Science and Technology Bannu (UST, Bannu), Khyber Pakhtunkhwa (KP), [1]Pakistan. Participants were categorized into two groups, i.e., control group (CG), and experimental group (EG), stretching exercise group. Each group comprised of fifteen (15) subjects. A significance difference was found between pre- and post- genu Valgum after the the implication of the exercise protocol. The mean and standard deviation of CG during the post-test was 13.40±.89, t value was -2.55. The mean and standard deviation of EG during the post-test were 13.70±.512, and t value was 2.55 and the P value was.222. It was concluded on the basis of finding that stretching exercise has a significant impact on Genu Valgum, student-athletes of university of science and technology Bannu.

Keywords: *Stretching Exercise, Management, Knocked knees, Genu Valgum*

INTRODUCTION

Knee abnormalities fall into two main types: genu valgum and genu Varus. Genu valgum, known as knock knee syndrome, involves a misalignment that moves the weight-bearing axis to the outer side of the knee joint, causing the knees to angle inward. Genu Varus, or bowleg syndrome, shifts the leg's weight-bearing axis inward, pushing the knees outward. Knocked knees can stem from shinbone injury (leading to misalignment in one leg), osteomyelitis (bone infection), excessive weight, or rickets, a condition caused by insufficient vitamin D (McIntire, S. et al., 2021). Rickets and other systemic/metabolic medical problems (mucopolysaccharidosis), skeletal dysplasia (multiple epiphyseal dysplasia, pseudo achondroplasia), and Neoplasms (multiple hereditary exocytosis are also the top listed causes of knocked knees (Rosenfeld & Duryea, 2022). Several factors can contribute to developing knocked knees, including factors like injury, arthritis, obesity, insufficient nutrients such as vitamin D and calcium, exercising with improper posture, and walking incorrectly (Yeo, James & Ramachandran, 2015).

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Knocked Knee may cause various complications such as difficulty in walking (sporadic), self-esteem modifications associated to the cosmetic appearance of crash knees and early arthritis of the knee. Knee deformities can also lead to issues like knee pain, meniscal tears, dislocation of the patella (kneecap), or damage to the cartilage (arthritis) (Krych, et al; 2015).

Knee issues are always related to vitamin D deficiency. Therefore, vitamin D is usually suggested for children with knee issues. In some cases, children with knee issues, particularly during bones disease like Rickets, might need special care from health experts. Due to a genetic condition, Rickets may need more specialized treatment by an endocrinologist (a doctor who treats endocrine system diseases) (Misra et al., 2008; Holick, M. F., 2004). Pain in the knees or hips, discomfort in the feet or ankles, inability of the feet to touch when standing with knees together, stiffness or soreness in the joints, and walking with a noticeable limp (Foster & Jandial, 2008; Jandial, & Foster, 2015).

Exercise is a basic tool for promoting health and reducing health problems. Regular exercise promote health by strengthening bones, muscles, tendons and cartilages etc. A person with sound physique always stay healthy without any kind of postural deformities (Eckstein et al., 2006).

METHODS AND MATERIALS

The study is linked with stretching exercise and its role in management of knee deformities, therefore to reach at certain findings, and conclusion, the study followed experimental design with two groups, i.e. Control group (CG) and experimental group (EG, stretching exercise group) of the study. The study participants were recruited from the University of Science and Technology, Bannu, KP, Pakistan. Each group comprised of fifteen (15) subjects. Subjects of the experimental groups were undergone stretching exercises for eight (08) weeks.

Subjects aged 18-22 years, Subjects using no medications, Subjects having no chronic health problem, Subjects who voluntarily participate in the study and only male subjects were included in the study. The researcher adopted the stretching exercise protocol of Doctor Jared, applied on EG. The total time duration of the exercise was eight weeks, the researcher personally monitored the whole session. Pre- and post-test results were administered through the statistical package for social sciences (SPSS, version-26); thus, independent t-test, mean and paired sample t-test was used as statistical tools. P-value <0.05 will be considered significant.

PRESENTATION OF DATA

Table no.1 showing the descriptive analysis of Control Group in term of Weight, Age and Geno- Valgum

Descriptive Statistics

	N	Tiniest	Extreme	Mean	Std. Deviation
GROUPS	5	1.00	1.00	1.0000	.00000
Geno Valgum pre	5	12.00	14.00	13.2000	.83666
Geno Valgum post	5	12.00	14.00	13.4000	.89443
Weight of Geno Valgum pre	5	64.00	70.00	67.0000	2.54951
Weight of Geno Valgum post	5	64.00	70.00	67.2000	2.38747
Age of Geno Valgum	5	1.00	2.00	1.6000	.54772

Valid N (list wise)	5				

The above table displays the descriptive analysis of CG in terms of weight, age and Geno-Valgum. The over-all number of subjects was 15. The Data were reported as mean and standard deviation.

The pre-test result of CG in terms of Geno-Valgum as shown by mean and standard deviation was 13.20±.83, the Tiniest range was 12.00 and the Extreme range was 14.00, Post-test result of CG in terms of Geno-Valgum as shown by mean and standard deviation were 13.40±.89, the Lowest range was 12.00 and Extreme range was 14.00.

The pre-test result of CG in terms of weight as shown by mean and standard deviation were 67.00±2.54 of Geno-Valgum, Tiniest range was 64.00 and Extreme range was 70.00, Post-test result of CG in terms of weight of Geno-Valgum as shown by mean and standard deviation were 67.00±..2.54, lowest range was 14.00 and Extreme range was 16.00.

The pre-test result of CG in terms of age of Geno-Valgum as shown by mean and standard deviation was 1.60±.54, the Tiniest range was 1.00 and the Extreme range was 2.00, Post-test result of CG in terms of age as shown by mean and standard deviation was 1.80±.54, the Tiniest range was 1.00 and the Extreme range was 2.00.

Table no.2 showing the descriptive analysis of Experimental Group (Starching) in term of Weight, Age and Geno-Valgum

Descriptive Statistics

	N	Tiniest	Extreme	Mean	Std. Deviation
GROUPS	5	2.00	2.00	2.0000	.00000
Geno Valgum pre	5	13.00	14.15	13.6300	.57836
Geno Valgum post	5	14.00	15.00	14.6000	.54772
Weight of Geno Valgum pre	5	61.00	69.00	64.4000	3.13050
Weight of Geno Valgum post	5	60.00	69.00	64.0000	3.51781
Age of Geno Valgum	5	1.00	2.00	1.4000	.54772
Valid N (list wise)	5				

The above table shows the descriptive analysis of EG in terms of weight, age and Geno-Valgum. The total number of subjects was 15. Data were expressed as mean and standard deviation.

The pre-test result of CG in terms of Geno-Valgum as shown by mean and standard deviation was 13.63+.57, the Tiniest range was 13.00 and the Extreme range was 14.15, Post-test result of CG in terms of Geno-Valgum as shown by mean and standard deviation was 14.60±.54, the Tiniest range was 14.00 and Extreme range was 15.00.

The pre-test result of CG in terms of weight as shown by mean and standard deviation was 1.40 ±.54 of Geno-Valgum, Tiniest range was 61.00 and Extreme range was 69.00, Post-test result of CG in terms of weight of Geno-Valgum as shown by mean and standard deviation was 1.60 ±.54, the Tiniest range was 60.00 and the Extreme range was 69.00.

The pre-test result of CG in terms of age of Geno-Valgum as shown by mean and standard deviation was 1.60±.54, the Tiniest range was 1.00 and the Extreme range was 2.00, Post-test result of CG in terms of age as shown by mean and standard deviation was 1.80±.54, the Tiniest range was 1.00 and the Extreme range was 2.00.

The Post-test result of CG in terms of weight of Geno-Valgum as shown by mean and standard deviation was 67.96±2.57, tiniest range was 64.00 and Extreme range was 70.30.

Table no.3 Paired Sample T test showing the Pre and Post Test Analysis of Geno-Valgum of Stretching Exercise

Table no.3
Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Geno Valgum pre	13.6300	5	.57836	.25865
	Geno Valgum post	14.6000	5	.54772	.24495

Table no. 4
Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Geno Valgum pre & Geno Valgum post	5	.994	.001

Table no. 5
Paired Samples Test

		Paired Differences					T	Df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Geno Valgum pre - Geno Valgum post	-.97000	.06708	.03000	-1.05329	-.88671	-32.333	4	.000

The above table's no.3 shows the pre- and post-test analysis of EG in terms of both parameters i.e. Geno Valgum. The data were elaborated using the Paired sample t-test by calculating means, standard deviation, t value and df, and significance level. The total number of subjects was 15. The mean and standard deviation of pre and post-test in the term Geno-Valgum was -.97±.067, the t-value was, df was 4 and the level of significance was .000. The outcomes indicated noteworthy difference in pre and post-test outcomes of CG in terms of Geno-Valgum.

Table no. 6 Paired sample t-test showing the comparison of both CG and EG(Stretching Exercise Group) in term of Geno Valgum

Group Statistics

		GROUPS	N	Mean	Std. Deviation	T	Sig
Geno pre	Valgum	CG	5	13.2000	.83666	-.894	.447
		EG-III	5	13.6000	.54772	-.894	
Geno post	Valgum	CG	5	13.4000	.89443	-.781	.164
		EG-III	5	13.7600	.51284	-.781	

The table above shows the pre and post-test comparison of CG and EG in term Geno Valgum. The total number of subjects in each group was 15. Data were expressed in terms of mean standard deviation, t- value and P value. The mean and standard deviation of CG during the pretest was 13.20±.83, t value was -.945 likewise the mean and standard deviation of EG during the pretest was 13.60±.54, t value was -.945 and the P value was.521. The result indicates no noteworthy difference in both CG and EG-I in terms of Geno Valgum during the pre-test.
The mean and standard deviation of CG during the post-test was 13.40±.89, t value was -2.55 likewise the mean and standard deviation of EG during the post-test were 13.70±.512, and t value was 2.55 and the P value was.222. The result indicated a significance difference in both CG and EG-I in terms of Geno Valgum during the post-test.

Discussion

The current study was associated with the stretching exercises among student-athletes of the University of Science and Technology Bannu, KP, Pakistan on the title "the effect of stretching exercise on the management of knocked knee genu valgum focusing on genu valgum". Thus eight weeks stretching exercise treatment was given to the experimental group of the study. The knocked knee is a deformity of knee alignment which causes early age. Knocked knee affects people of all ages, but in children, it is usual and common and corrects itself, but in some cases, it continues in adolescents (Ballal, 2010). Such an emerging concept is supported by Munzer et al (2023) stating that Knocked knees are a common health issue in children but with time they cure automatically, Sometime this issue can occasionally last till death. It can cause difficulties in walking, running, daily activities, and knee pain. Therefore, exercise is an essential for the development of body and prevent human body from disease. The Eight (08) weeks starching exercise was given to the male athletes students of the UST,Bannu having the age 18 to 25 years of age.
The results of the study shows that after the prescribed exercise treatment for 08-weeks it was found that there is a significance improvement in the genu valgum. In the line the stance of the study was also supported by the Bahadori et al (2020), the result of their study shows that after the finalization of the study, they concluded that TheraBand exercises significantly reduced the Q angle and the distance between the ankle medial malleolus in individuals with genu valgum deformity. The same supportive finding was also drawn by the Ghorbaniou et al, (2023). The results of this study show that elastic band workouts help people with genu valgum because they enhance performance and balance.
The result of the current study showed that especially the implication of 08-weeks stretching exercise has a great impact on the foot having the deformity of the genu valgum. The previous studies conducted by the many researchers has also shown and support the stance of the current study. Results of the previous studies have shown that exercise has a great effect of the knock knee, supporting the results of the present study.

Conclusion

The researcher concluded on the basis of findings of the present research that stretching exercise has a significant impact on Genu Valgum, and performance of student's athletes of university of science and technology Bannu.

Recommendations

In light of the findings and conclusion, the below recommendations are made:-

- Knocked knees are common postural deformities linked with different health complications, early diagnostic procedures are considered important, therefore, it is

important to diagnose this postural deformity among children otherwise this will lead to serious health complications in the lateral stage of life.

- In educational institutions particularly at the school and college level, all the concerned physical education authorities must examine the postural deformities of their students to diagnose this serious postural deformities especially the knocked knees.
- Regular exercise sessions in educational institutions may be conducted to maintain and promote the good posture among the students.
- Endurance, as well as starching exercise, may be suggested to students, particularly for those students having problems of knocked knees.
- Awareness among the students through seminars, workshops and training sessions be created about the health benefits of exercise.
- Physiotherapists be appointed in educational institutions to support physical educationists in helping with the diagnostics postural and other physical and health related complications.

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