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Interrater reliability of Kraus - Weber exercise test as an evaluation tool in low back pain susceptibility among apparently healthy physiotherapy students

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Abstract
Background: The Kraus-Weber Test, involves a series of tests that measure minimum strength & flexibility of the back, abdominals, psoas, and hamstring muscles. But it has less number of article available for the adult population. For the clinician, the Kraus-Weber Test is made to reduce the assessment time in clinics and easily administer and less time-consuming.
Aim & Objective: To determine the inter-rater reliability of the Kraus-weber Test in physiotherapy students.
Methods: 426 subjects (59 male and 367 females); ages ranging between 19-22 years, with no previous or present complaints of injury to the back & lower limbs were selected for the study using the purposive sampling technique of sample of convenience. For inter-rater 2 raters were assessed K-W Test in 426 subjects. All raters were blinded to the procedure. Before collecting the data, training to each rater was given for the administration of the K-W Test.
Results: For reliability, ICC has been checked and for responsiveness & distribution based method, SEM & SRD has been analyzed. The K-W Test shows good inter-rater reliability by ICC value. ICC of inter-rater reliability for (A+), (A-) & (FL) is 1, for (P) is 0.998, for (UB) is 0.999 and for (LB) is 0.999. SEM value for inter-rater also finds & it shows there is less error that has been detected in all 2 raters.
Conclusion: K-W Test is very reliable tool to access fitness in physiotherapy students.

Keywords: Reliability, muscle flexibility, muscle strength, K-W Test, fitness, physiotherapy

Introduction
Low back pain is neither a disease nor any kind of diagnostic entity [1]. It is a source of disability that is extremely prevalent and stressful. It is common for all age groups, with the normal exception of infancy and adolescence [2]. A previous study has shown that 70% to 80% of the population in their lifetime had at least 1 episode of low back pain [3-10]. Though, the exact cause of mechanical LBP has not yet been identified due to its negative connection with social and work-related activities [5]. Several studies have attempted to identify & assess the contribution of various demographic, physical, social, psychological & occupational factors to spinal pain production. Ironically, 37% of LBP worldwide is due to occupational risk factors, which are many potentially preventable causes of pain [7]. However, contradictory findings have been documented in the literature with the implementation of different designs & testing procedures [5].
The development of LBP was correlated with several factors, based on observations, clinical results, and scientific experiments. One major theory has long speculated that changes in the size of the lumbar lordosis are the main cause of LBP [5]. Lumbar lordosis is mainly due to the following muscle problems:

Abdominal
Based on the anatomical location and abdominal muscle activity, it was hypothesized that abdominal muscle weakness causes an anterior pelvic tilt and lumbar hyperlordosis, leading to LBP [5].

Back Extensor
Back extensor muscles are considered to be postural muscles which help maintain a standing upright posture and control lumbar forward bending. Decreased muscle strength in the back is thought to cause muscle fatigue and overload soft tissue and passive structures of the lumbar spine, resulting in LBP [5].

Iliopsoas
Some research showed decreased muscle length and strength of the iliopsoas in LBP patients. Since the iliopsoas muscle is connected to the pelvis and lumbar spine, some have suggested that this muscle's tightness Causes increased lumbar lordosis and that this muscle's weakness causes reduced lumbar lordosis, which, in effect, can lead to LBP [5].

Hamstring
Hamstring tightness is among the most common findings in LBP patients. It is assumed that due to the attachments of hamstrings to ischial tuberosity tightness of the hamstrings generates posterior pelvic tilt and decreases lumbar lordosis which can lead to LBP [5].
Physiotherapist usually treats LBP. However, they have been identified as suffering from LBP, with Australian prevalence figures approximating those from British, Indian, Canadian & American surveys [11]. Several studies showed a high incidence and prevalence of LBP among physiotherapists [3, 6, 7, 11-14]. The physiotherapy profession's practice is linked with the production of LBP. Up to 60% of LBP events in this group are estimated to occur as a result of work-related injuries [11].
In reality, student of physiotherapy are potentially exposed to poor working posture and repeated manual handling task, repetitive movements, prolonged standing and somewhat uncomfortable postures (bending and stooping, twisting and turning, prolonged sitting or standing as well as cumulative load), patient transfer and lifting which are considered to be the risk factors for LBP and have been related to its onset [3, 6, 7, 13].
Along with the clinical hours of the training period, students who are in lectures or practical sessions are also prone to have these problems such as extended sitting thus making LBP a probable occurrence among students of physiotherapy [13].
Many studies have shown that trunk muscle weakness is a major risk factor for LBP [4, 5, 8, 15]. Also, clinical findings revealed that short hamstring muscles are associated with common lumbar spine disorders and low back syndromes of general dysfunctions [5, 9, 16]. In current literature, there are many tools to assess the strength of the muscles and flexibility of the muscle. But, Kraus Weber Test is the tool that checks strength as well as flexibility at the same time. In 1954, Kraus established minimum muscular fitness for school-going children. Today, this norm has become known as the Kraus Weber test [17].

Kraus – Weber Test
The K W Test is a fitness test created by Hans Kraus and Sonja Weber at Columbia Presbyterian posture clinic in New York City in 1950. It was designed to test muscle function at a minimum level. It takes only 90 seconds, and no computation is needed. Either you pass or flunk or it offers a lot of valuable information. He and his organization gave a battery of tests to back pain sufferers. Blood tests, urine analysis, orthopedic tests, neurological tests, psychiatric tests, and the K W Test. More than 80% of the subjects did not have any anatomical pathology. The only test they failed was for minimum strength and flexibility of the muscle. The pain went away as they got their muscle into a better state. We learned from that study that there is a level of fitness below which the average human can't fall without courting pain [18].
After 18 years of clinical experience, Kraus and Hirschland prepared a battery of 6 muscle strength tests, with failure on any item perceived as a failure in entire the Test. Such Kraus Weber tests can be easily performed by anyone (without much planning for the pre-procedure) without any apparent cost (with a little training) [19, 20].
These do not require any special equipment and as in other more complex tests like Electromyogram. The subject does not have to undergo a long and painful ordeal [20].

Significance of the study
There are so many tools available for strength assessment like MMT, isokinetic device, dynamometer, etc. And as well as many tools are used to assess the hamstring flexibility like sit and reach test, goniometry, 90 - 90 test, etc. But, K-W Test is the only tool that assesses the strength as well as flexibility. So it's less time consuming compared to others. The reliability of the K-W Test needs to be tested in physiotherapy students as the previous study has assessed the reliability in school-going children. Thus this study would add to the knowledge base on literature. If the results are found significant in the study, it can be used as an effective tool in the adult population.

Statement of problem
There is a paucity of literature measuring the reliability of the K-W Test in physiotherapy students.

Purpose of the study
The purpose of this study is to test the inter-rater reliability of the K-W Test in physiotherapy students.

Aims and objectives
To investigate: The inter-rater reliability of the K-W Test in physiotherapy students.

Hypothesis
Null hypothesis (H0)
K-W tests have no inter-rater reliability in the adult population of physiotherapy students.
Alternative hypothesis (H1)
K-W tests have good inter-rater reliability in the adult population of physiotherapy students.

Methodology
Study design
- Reliability study

Population
- 3rd and 4th-year physiotherapy student

Sampling Technique
- Purposive sampling

Sample Size
- The sample size for the research study was 426.

Study Duration
- 6 Months

Source of data collection
- S.S Agrawal Institute of Physiotherapy and Medical Care Education, Navsari.
- M.B Gohil College of Physiotherapy, Navsari.
- Shree Bharatimaiya College of Optometry & Physiotherapy, Surat.
- S.P.B Physiotherapy College, Surat.

Inclusion Criteria
- Age Group (19 – 22) Years.
- 3rd and 4th Year Students of Physiotherapy.
- Both Gender Male and Female.
- No Medical and Surgical History Present.
- No previous history of LBP.

Exclusion criteria
- Any Congenital or Structural Deformity
- Joint Pathology
- Subjects with a history of trauma of the Lumbar spine, pelvis were excluded
- An inflammatory condition that could affect motion
- Chronic back pain
- The subject of having any cardiac problem
- Spinal deformity
- Any Surgical History
- Chronic Illness
- Any recent injury and surgery

Tools and materials
- Yoga Mat
- Measure tape
- Stopwatch
- Pillow
- Pen
- Recording sheet
- Consent form

Outcome measures
- Kraus-Weber Test [18-22].

Test 1: Abdominal Plus Psoas (A+)

Aim: To test the strength of abdominal muscles and psoas.

Position: Lying supine with hands clasped straight behind head and legs are straight. Hold down with strong pressure on the feet.

Command: "Try to roll in a sitting position and clasped your hands behind your back".

Grading: If the person being examined is unable to lift his/her shoulders from the table, then 0 is the mark. If he/she can hit a sitting position unhelped, the grade is 10.

Fig 1: Test for Abdominal Plus Psoas (A+)

Test 2: Abdominal Minus Psoas (A-)

Aim: To Check the truer abdominal muscles.

Position: Lying supine with hands clasped straight behind the head with the knee flexed. Examiner's feet are kept down at the table.

Command: "Try rolling in a sitting position and clasped your hands behind your back".

Fig 2: Test for Abdominal Minus Psoas (A-)

Grading: Grading is the same as test 1.

Test 3: Psoas (P)

Aim: To test the strength of the psoas.

Position: Same as test 1.

Command: when I count." (Adding every three-syllable words after each number makes the count fairly time, like "one watermelon, two watermelons, three watermelons, etc.") and hold your feet ten inches off the table and with knee straight.

Fig 3: Test for Psoas (P)

Grading: Ten maximum seconds of keeping passes and is numbered as 10. Anybody. Anything less is reported as that part of the ten seconds held: 4 for 4 seconds, or 7 for 7 seconds, etc.

Test 4: Upper Back (UB)

Aim: Tests the strength of the upper back muscles.

Position: Lying prone with a pillow under his belly but far enough down to give the body the sensation of being a seesaw that could keep the other end in the air if weighted at either end. Such commands are most commonly used to do this.

Command: "keep hands behind your head. Raise your head, chest, and shoulders and hold that while I count."

Fig 4: Test for Upper Back (UB)

Grading: Ten complete seconds of keeping moves, and is classified as 10. Anybody. Anything less than ten seconds is recorded as the ten seconds portion that was kept. A person who stays up for four seconds, for example, would get a 4 rating.

Test 5: Lower Back (LB)

Aim: Test the strength of lower back muscles.

Position: He/she remains prone over the pillow, but removes his/her hands from behind his/her back, places them on the table, and lies on them with his/her head.

Command: "Raise your legs straight with knee straight and hold your legs up as I count".

Fig 5: Test for Lower Back (LB)

Grading: Ten maximum seconds of keeping moves, and is numbered as 10. Anything less is reported as, for example, the part of the ten seconds that was kept would be 4 seconds.

Test 6: Flexibility (FL)

Aim: To test the flexibility of Back and Hamstring muscles.

Position: Standing upright in storage or bare feet, hands on his/her side.

Command: "Keep your knee straight and slowly lean forward, and try to touch your fingertips on the floor. Keep there, if you can, as I count to three".

Fig 6: Test for Flexibility (FL)

Fig 7: Measurement of Hamstring Flexibility

Grading: The touch is labeled as the mark. Touch is only granted when three counts are holding with the floor touch. Less than touch is marked by the distance between the floor and the tips of the finger in centimeters. for example, A person who can not touch the floor by five centimeters would be marked as, -5cm.

Procedure

The study was conducted on 426 purposely selected students (studying in the 3rd & 4th year of physiotherapy) from different colleges of physiotherapy in southern Gujarat. Of those 59 were males and 367 were females. Students age between 19 to 22 year is selected. Age was confirmed through the college register. The informed consent was obtained from the principal and the parents after explaining to them the purpose and nature of the study and the role of their wards in it.

After proper explanation and reliving their anxiety, K-W Tests were performed on the participating student. Participants were instructed to take off their belts or any other tight clothes. The female students were checked in a female attendant's presence. There was no warm-up before the tests were passed on to the students. Tests were conducted on a mat. The subjects were shown how to correctly do each test object and were then asked to do the same. The test was conducted with the procedure as mentioned in the outcome measure.

Observations were reported after due care was taken to mitigate instrument and observer errors. Only if a student could successfully execute all of the above test items was he/she considered to have passed the K-W Tests. In the K-W Tests, failure in even one test element was deemed a failure. Measurement was obtained by the two physiotherapy students to test the inter-rater reliability of the K-W Test. The test content and procedures were briefly explained to each tester, but no specific training was conducted. Both the tester recorded the score on the scoring sheet and to avoid the exchanging of information, both testers were blinded to the score taken by each other.

Patients were not told the scores that they achieved through the first tester to avoid bias on the results of the performance level of the subjects. The same testing procedure was used for all the subjects.

Data Analysis

Data analysis was done using the SPSS software (version 20.0). Results were considered a significant level at $p< 0.05$ and a confidence interval of 95%. Data analysis is done by:

The intra-class correlation coefficient for inter-rater reliability is regarded as a key indicator of reliability [22].

The standard error of measurement (SEM) to calculate the variability in measurements of the same individual. The true measurement can be calculated as 1.96*SEM [23].

The smallest real difference (SRD) is the smallest change that can be interpreted as a real difference. It is calculated as SRD = $1.96*\sqrt{2} * SEM$ [24].

Results

In this study, a total of 426 students were taken.

Table 1: Gender Distribution of subjects

	Male	Female	Total
Frequency	59	367	426
Percentage	13.85%	86.15%	100%

Table 1 shows the gender distribution of all subjects in that 59 were male and 367 were female from a total of 426 subjects.

Table 2: Descriptive statistics of all components of the Kraus-Weber Test

	(A+)		(A-)		(P)		(UB)		(LB)		(FL)	
	R1	R2	R1	R2	R1	R2	R1	R2	R1	R2	R1	R2
Mean	9.15	9.15	8.40	8.40	8.31	8.29	9.56	9.56	8.94	8.92	-4.42	-4.42
SD	2.78	2.78	3.66	3.66	2.68	2.69	1.74	1.72	2.76	2.78	7.16	7.16
Minimum	0	0	0	0	0	0	0	0	0	0	0	0
Maximum	10	10	10	10	10	10	10	10	10	10	10	10

Table 2 showed the descriptive statistics as Mean and SD with minimum and maximum value for an individual component of the Kraus-Weber Test. Descriptive statistics showed good reliability.

Descriptive statistics showed that for both rater 1 and rater 2, the total number of subjects collected was 426. The rater 1 showed the minimum value for (A+) for all subjects was 0 and the maximum value was 10 with a mean 9.15 and standard deviation 2.78. The rater 2 showed the minimum value for (A+) for all subjects was 0 and the maximum value was 10 with a mean 9.15 and standard deviation 2.78. The rater 1 showed the minimum value for (A-) for all subjects was 0 and the maximum value was 10 with a mean 8.40 and standard deviation 3.66. The rater 2 showed the minimum value for (A-) for all subjects was 0 and the maximum value was 10 with a mean 8.40 and standard deviation 3.66. The rater 1 showed the minimum value for (P) for all subjects was 0 and the maximum value was 10 with a mean 8.31 and standard deviation 2.68. The rater 2 showed the minimum value for (P) for all subjects was 0 and the maximum value was 10 with a mean 8.29 and standard deviation 2.69. The rater 1 showed the minimum value for (UB) for all subjects was 0 and the maximum value was 10 with a mean 9.56 and standard deviation 1.74. The rater 2 showed the minimum value for (UB) for all subjects was 0 and the maximum value was 10 with a mean 9.56 and standard deviation 1.72. The rater 1 showed the minimum value for (LB) for all subjects was 0 and the maximum value was 10 with a mean 8.94 and standard deviation 2.76. The rater 2 showed the minimum value for (LB) for all subjects was 0 and the maximum value was 10 with a mean 8.92 and standard deviation 2.78. The rater 1 showed the minimum value for (FL) for all subjects was -37 and the maximum value was 0 with a mean -4.42 and standard deviation 7.16. The rater 2 showed the minimum value for (FL) for all subjects was -36.5 and the maximum value was 0 with a mean -4.42 and standard deviation 7.16.

Table 3: ICC (Inter-rater reliability) of an individual test of Kraus-Weber test

Variable	(A+)	(A-)	(P)	(UB)	(LB)	(FL)
ICC	1	1	0.998	0.999	0.999	1

Table 3 shows the ICC (Intraclass correlation coefficient) for the inter-rater reliability taken by rater 1 and rater 2. The ICC value showed good reliability.

Table 4: SEM of inter-rater reliability

Variable	(A+)	(A-)	(P)	(UB)	(LB)	(FL)
SEM	0	0	0.12	0.05	0.08	0

Table 4 shows the SEM value of variability between the two raters.

The SEM (Standard error of measurement) is a measure of absolute reliability - The smaller the SEM more reliable the measurement [23].

SEM is calculated by the formula: SEM = SD*$\sqrt{1-ICC}$

In the above formula, SD (Standard deviation) and ICC are taken from the reliability testing procedure from different raters.

Variability in measurements between rater 1 and rater 2 for (A+) is 0. so, there is no error in between rater results thus these measurements are highly reliable. Variability in measurement between rater 1 and rater 2 for (A-) are 0. so, there is no error in between rater results thus these measurements are highly reliable. Variability in measurements between rater 1 and rater 2 for (P) is 0.12 which is very small that indicates the measurement is very reliable. Variability in measurements between rater 1 and rater 2 for (UB) is 0.05 which is very small that indicates the measurement is very reliable. Variability in measurements between rater 1 and rater 2 for (LB) is 0.08 which is very small that indicates the measurement is very reliable. Variability in measurements between rater 1 and rater 2 for (FL) is 0. so, there is no error in between rater results thus these measurements are highly reliable.

Table 5: True SEM values for inter-rater reliability

Variable	(A+)	(A-)	(P)	(UB)	(LB)	(FL)
True SEM	0	0	0.23	0.09	0.15	0

Table 5 shows the True SEM value of variability between the two raters.

The true SEM of (A+), (A-), and (FL) value for variability in measurements between two raters (0*1.96=0) suggests that there is no error between the rater's results.

The true SEM of (P) value for variability in measurements between two raters (0.12*1.96=0.23) suggests that any individual value lies within the range of ±0.23 (P) from their measured value. The true SEM of (UB) value for variability in measurements between two raters (0.05*1.96=0.09) suggests that any individual value lies within the range of ±0.09 (UB) from their measured value. The true SEM of (LB) value for variability in measurements between two raters (0.08*1.96=0.15) suggests that any individual value lies within the range of ±0.15 (LB) from their measured value.

SRD (The smallest real difference) can be calculated by the formula: SRD = 1.96*√2SEM [24].

Table 6: SRD of inter-rater reliability

Variable	(A+)	(A-)	(P)	(UB)	(LB)	(FL)
SRD	0	0	0.96	0.63	0.78	0

Table 6 shows SRD values for variations in measurements of two raters

The smallest real difference (SRD) of (A+), (A-), and (FL) value for the variability of measurements between the two raters (1.96*√2 ∗ SEM=0) was claimed to be capable of representing the "real" change. The smallest real difference (SRD) of (P) value for the variability of measurements between the two raters (1.96*√2 ∗ SEM=0.96), (UB) value for the variability of measurements between the two raters (1.96*√2 ∗ SEM=0.63), (LB) value for the variability of measurements between the two raters (1.96*√2 ∗ SEM=0.78) was claimed to be capable of representing the "real" change.

Discussion

In this reliability study, which aimed at measuring the inter-rater reliability of the K-W Test in physiotherapy students by using 6 abdominal tests plus psoas (A+), abdominal minus psoas (A-), psoas (P), upper back (UB), lower back (LB) & flexibility(FL), the reliability estimates ranged from satisfactory to excellent for inter-rater conditions.

High-quality outcome measures that meet rigorous measurement requirements are needed for valid decision-making in clinical practice. The present research is to determine if the K-W Test in students of physiotherapy has good reliability for evaluating health. Upon testing, our findings indicated that a brief K-W Test is an effective method in physiotherapy students for evaluating fitness.

In clinical practice, it was common for the patient to be evaluated several times by some or by different examiners. Therefore it was important to know the reproducibility of measures nd tasks used by the same examiner on different occasions as well as by different examiners.

The main aim of the study to find out the reliability of the K-W Test in physiotherapy students and the results show that a brief K-W Test is a reliable tool by analyzing ICC value. ICC (Intraclass correlation coefficient) is measured on a scale of 0 to 1 in which 1 represents perfect reliability with no measurement error were as 0 indicates poor reliability and no correlation between raters. An ICC of 0.80 or higher indicates an excellent correlation and good reliability. The value of 0.60 to 0.80 indicates an adequate correlation and moderate reliability and the value of ICC of 0.40 to 0.60 indicates a poor correlation and weak reliability [22].

Here, in the present study for Inter-rater reliability ICC for rater 1 and 2 for (A+) is 1 at confidence interval (95%) which shows excellent correlation and perfect reliability between rater 1 and 2. An ICC value of rater 1 and 2 for (A-) is 1 at a confidence interval (95%) indicate perfect reliability and the excellent correlation between rater 1 and 2. An ICC value of rater 1 and 2 for (P) is 0.998 at a confidence interval (95%) indicate good reliability and the excellent correlation between rater 1 and 2. An ICC value of rater 1 and 2 for (UB) is 0.999 at a confidence interval (95%) indicate good reliability and the excellent correlation between rater 1 and 2. An ICC value of rater 1 and 2 for (LB) is 0.999 at confidence interval (95%) indicate good reliability and the excellent correlation between rater 1 and 2. An ICC value of rater 1 and 2 for (FL) is 1 at confidence interval (95%) indicate perfect reliability and the excellent correlation between rater 1 and 2. But after doing reliability based on the average mean & standard deviation ICC for the whole K-W Test value comes 0.999 which indicates excellent correlation & good reliability at confidence interval (95%) at p-value < 0.05.

The study by Marjorie Phillips et al. [25] found that the ICC value for inter-rater reliability of K- W Test comes 0.954 which means K-W Test has excellent reliability in assessing fitness in school-going children. ICC value for inter-rater reliability of (FL) comes 0.954 that means (FL) has excellent reliability in assessing fitness in school-going children. ICC value for inter-rater reliability of (A+) comes 0.986 that means (A+) has excellent reliability in assessing

fitness in school-going children. ICC value for inter-rater reliability of (A-) comes 0.974 which means (A-) has excellent reliability in assessing fitness in school-going children. ICC value for inter-rater reliability of (P) comes 0.990 that means (P) has excellent reliability in assessing fitness in school-going children. Above all results shows K-W Test can be used for assessing fitness in school-going children. No study was conducted for the adult population so this study was done on the adult population and the results were compared to the school-going children. While comparing the ICC value of the K-W Test of previous studies with a present study which is almost nearer to all values of other studies that suggested that the present study had done the same procedure as in other studies.

For making more reliable SEM value, MDC value and item correlation should be checked so that it analyze reliability in more details and bias can be detected by all these values. In terms of absolute reliability, no systematic bias was found for inter-rater and, thus, it seems that clinicians can be confident in using these fitness test to assess fitness impairments in physiotherapy students.

This study also found SEM for (A+), (A-), and (FL) of 0 for inter-rater reliability. The SEM for

(P) of 0.12 for inter-rater reliability. The SEM for (UB) of 0.05 for inter-rater reliability. The SEM for (LB) of 0.08 for inter-rater reliability. The true SEM for (A+), (A-), and (FL) inter-rater is 0 which suggests the absolute measurement error. The true SEM for (P) inter-rater is 0.23 which suggests the absolute measurement error. The true SEM for (UB) inter-rater is 0.09 which suggests the absolute measurement error. The true SEM for (LB) inter-rater is 0.15 which suggests the absolute measurement error. The SRD value of (A+), (A-), and (FL) for inter-rater is 0, for (P) is 0.96, for (UB) is 0.63, for (LB) is 0.78 which suggest that there should be at least a change of these values to say that "real" change has occurred.

The scoring of inter-rater reliability was taken by both the raters together so that duration of contraction or fatigue has a homogenous effect on all patients and to avoid the effect of fatigue on the performance level of the patients. If the scores are taken at different times than it was difficult to decide that scores are the result of the true performance of the patient or have fatigue affected the level of performance of the subject.

Limitation of the study

- The study was bounded to asymptomatic healthy young adults within the age group 19-22 years. So, results cannot be generalized to the geriatric and pediatric population.
- Blinding of the raters was not possible. To minimize the error on the results of patients, both the raters didn't discuss anything during the recording of the scores.
- The study was only limited to inter-rater reliability, intra-rater reliability cant be assessed.

Conclusion

Thus from this study, it could be concluded that the inter-rater reliability of the Kraus Weber Test was "high" in apparently healthy physiotherapy students.

Future implications

- The study can be done with a larger population.
- The study can be done with variation in age groups for generalizing the result to the maximum population.
- A study should be done on subjects with low back pain.
- The study can be done with different raters to find out the intra rater reliability.

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