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Relationship among various methods for measuring cervical range of motion

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Abstract
Introduction: Range of motion analysis is majorly used by physiotherapist for functional evaluation. Cervical ROM is important part for assessment of neck pain and other related conditions. Many devices are available for measuring cervical ROM. So, this study was conducted to correlate cervical ROM by using different devices.
Aim and Objective: To measure and correlate cervical ROM with different methods.
Methodology: 30 participants were assessed for cervical ROM by using Universal Goniometer, Bubble Goniometer, Measuring tape and cervical ROM device.
Result: Weak correlation was found for all measuring devices.
Conclusion: There is weak correlation among different methods for measuring cervical range of motion.

Keywords: cervical ROM measurement, goniometry

Introduction

Range of motion analysis is majorly used by physiotherapist for functional evaluation. Cervical ROM is important part for assessment of neck pain and other related conditions. Because of more digitalization and use of electronic devices has altered the neck postures and hence young individuals are suffering from trapezitis, text neck syndrome and other chronic musculoskeletal disorders. Restricted Cervical ROM is usually found along with neck pain and is one of the factors for limitation in functional activities. Assessment of ROM is important for evaluation as well as for knowing effectiveness of treatment. Many devices are available for measuring cervical ROM e.g. Universal Goniometer, Bubble Goniometer, Measuring tape, large goniometers and cervical ROM device. Studies are done for validity and reliability of different devices. Limited studies are found for comparison or correlation of different devices. So, this study was conducted to correlate cervical ROM by using different devices [1, 2, 3].

Methodology

A total of 30 young individual from Physiotherapy College and OPD were assessed for Cervical ROM by using Universal Goniometre, Bubble Goniometer, Measuring tape and cervical ROM device, after taking permission from the institute and proper explanation of the procedure. Inclusion criteria were kept as young females, age between 18 to 25 years, willing to participate to participate while having any pathological conditions affecting cervical spine (Orthopedic, Cardiorespiratory, neurological and /or surgical conditions). All the participants were assessed for Cervical Flexion, Extension, Side flexion and Rotation ROM by using all four measuring devices. The sequence for all four device assessment was kept random. All the measurements were taken according to the slandered guidelines given for goniometric measurement [4]. All the participants were asked to perform active neck movements before the assessment. There was 15 minutes of time before measuring ROM with other device. Photographs are showing assessment of cervical ROM with different devices.

Fig 1a & 1b: cervical Flexion with Bubble Goniometer

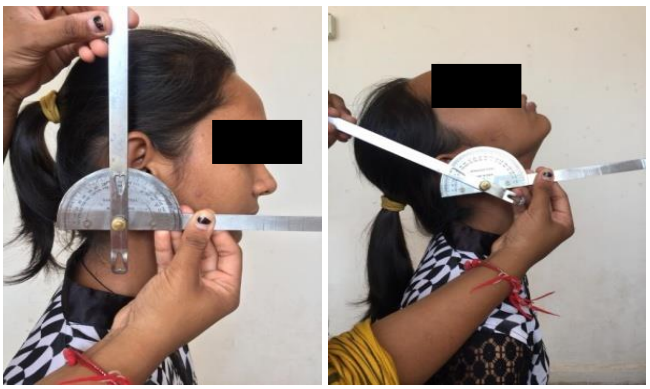

Fig 2a & 2b: cervical Extension with Universal Goniometer

Fig 3a & 3b: cervical Flexion with Measuretape

Fig 4a & 4b: cervical Side flexion with Cervical ROM device.

Result

Data of 30 Participants were analysed by using SPSS 16. Mean age of participants was 20.13±1.3. Pearson Correlation was applied to find out the correlation among all four devices.

Table 1: r values for Cervical Flexion ROM with different devices

		Bubble Goniometer	Universal Goniometer	Cervical ROM device	Measure tape
Cervical Flexion	Bubble Goniometer	1	0.027	0.199	-0.08
	Universal Goniometer	-	1	-0.137	-0.250
	Cervical ROM device	-	-	1	0.283
	Measure tape	-	-	-	1

Table 2: r values for Cervical Extension ROM with different devices

		Bubble Goniometer	Universal Goniometer	Cervical ROM device	Measure tape
Cervical Extension	Bubble Goniometer	1	-0.195	0.106	0.242
	Universal Goniometer	-	1	0.298	-0.081
	Cervical ROM device	-	-	1	0.344
	Measure tape	-	-	-	1

Table 3: r values for Cervical Side Flexion(RT) ROM with different devices

		Bubble Goniometer	Universal Goniometer	Cervical ROM device	Measure tape
Cervical Side Flexion(RT)	Bubble Goniometer	1	0.393	0.597	0.220
	Universal Goniometer	-	1	0.259	0.228
	Cervical ROM device	-	-	1	0.072
	Measure tape	-	-	-	1

Table 4: r values for Cervical Side Flexion (LT) ROM with different devices

		Bubble Goniometer	Universal Goniometer	Cervical ROM device	Measure tape
Cervical side Flexion(LT)	Bubble Goniometer	1	0.427	0.447	0.038
	Universal Goniometer	-	1	0.213	0.273
	Cervical ROM device	-	-	1	0.123
	Measure tape	-	-	-	1

Table 5: r values for Cervical Rotation(RT) ROM with different devices

		Bubble Goniometer	Universal Goniometer	Measure tape
Cervical Rotation (RT)	Bubble Goniometer	1	0.137	-0.178
	Universal Goniometer	-	1	0.196
	Measure tape	-	-	1

Table 6: r values for Cervical Rotation(LT) ROM with different devices

		Bubble Goniometer	Universal Goniometer	Measure tape
Cervical Rotation(LT)	Bubble Goniometer	1	0.223	0.011
	Universal Goniometer	-	1	0.242
	Measure tape	-	-	1

Discussion

The purpose of the study was to assess and correlate the Cervical ROM by using Universal Goniometer, Bubble Goniometer, Measuring tape and cervical ROM device. There was no conflict of interest and there was no financial burden on the participants. Total 30 participants were evaluated for all cervical ROM by using all four devices. Data analysis showed weak correlation among all the

devices for all the range of motion of cervical spine. Reliability for goniometric measurement is between moderate to high and can be easily used by the physiotherapist in clinic for quick assessment purpose. As there was weak correlation found from the present study, it is advisable to use only one measuring device for one individual for follow up measurements as change in the device may affect the prognostic outcome and hence while measuring ROM, documentation regarding the measuring device must be done along with the ROM values for the same [5, 6, 7].

Conclusion

There is weak correlation among different methods for measuring cervical range of motion and hence only one device should be used for one individual for follow up assessments.

References

1. Tousignant M, Smeesters C, Breton A, Breton E, Corriveau H. Criterion Validity Study of the Cervical Range of Motion (CROM) Device for Rotational Range of Motion on Healthy Adults. Journal of Orthopaedics & Sports Physical Therapy.
2. Florencio L, Pereira P, Silva E, Pegoretti K, Goncalves M, Bevilaqua-Grossi D. Agreement and reliability of two non-invasive methods for assessing cervical range of motion among young adults. Rev Bras Fisioter, Sao Carlos. 2010;14(2):175-81.
3. https://www.physio-pedia.com/Text_Neck
4. White D, Norkins C. Measurement of joint motion. A Guide to goniometry.
5. Sinha J. Reliability in Measuring the Range of Motion of the Aging Cervical Spine
6. Chaves TC, Nagamine HM, Belli JFC, de Hannal MCT, Brevilaqua-Grossi D, de Olivelra AS. Reliability of fleximetry and gonimetry for assessing cervical range of motion among children. Brazilian Journal of Physical Therapy.
7. Massouh L, Amirfeyz R, Bannister G, Whitcroft K. Assessment of Methods for the Measurement of Cervical Spine Range of Motion. European Federation of National Associations of Orthopaedics and Traumatology (10th Congress).