

Normative Values of Spinal Flexibility for Nigerians Using the InclinoMetric Technique

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Abstract

Normative values of spine range of motion (ROM) are essential for proper diagnosis of spinal impairments and in the monitoring of effect of treatment and patient's recovery. This study established gender and age normative data and the correlates of spinal flexibility in apparently healthy Nigerians adults. 502 volunteers whose ages ranged between 18 and 47 years participated in the study. Dual inclinometric technique was used to measure spinal flexibility in forward flexion, extension, right and left lateral flexion. Flexibility levels were defined using percentiles as poor (<25th), moderate (between 25th and 75th), good (between 75th and 95th), and very good (>95th) respectively. Data was analyzed using descriptive and inferential statistics at 0.05 alpha level. The mean value for forward flexion, extension right and left lateral flexion for all participants was 43.3+12.7, 16.7+6.81, 17.3+6.25 and 17.0+5.65. Females exhibited significantly higher extension (17.4+6.34 vs. 16.1+7.14) and right lateral flexion (18.4+6.30 vs. 16.3+6.07) ROM than their male counterparts ($p<0.05$). Age and anthropometric parameters were significant correlates of spinal flexibility ($p<0.05$). In conclusion, this study established a set of reference values for lumbar spinal flexibility in healthy Nigerians. Increasing age was associated with decreased spinal flexibility.

Key words: Spinal flexibility, dual inclinometer, normative data, Nigerians

Introduction

The nature of flexibility is complex, involving not only the range of motion of a joint or series of joints (Anderson and Burke, 1991) but it is affected by internal influences such as the type of joint, the elasticity of muscle tissues, tendon, ligaments, and the skin and also by external influences such as age, gender, the stage in the recovery process of a joint, time of the day (Alter, 1996; Gummerson, 1990). Good flexibility aids in the elasticity of the muscles (Nelson and Kokkonen, 2007), provides ease in movement and a wider range of motion in the joints (Nelson and Kokkonen, 2007; Manescu, 2010), aids with injury prevention (Shellock and Prentice, 1985),

helps to minimize muscle soreness and improves efficiency in all physical activities (Nelson and Kokkonen, 2007), improves quality of life and functional independence (Podrasky, 1983; Nelson and Kokkonen, 2007).

Specifically, previous studies have established a relationship between flexibility of the lumbar spine and back health (Foster and Fulton, 1991; Plowman, 1992; Stutchfield and Coleman, 2006; Battié et al, 2008). Adequate flexibility of the lumbar spine and the surrounding soft tissues provides for a functional mechanical advantage (Farfan, 1975), healthy lower back (Foster and Fulton, 1991; Plowman, 1992), attainment of important functional skills and activities of daily living (Podrasky,