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S 23 NECK MUSCLE STRENGTH IN PATIENTS WITH THE LOSS OF CERVICAL LORDOSIS

Mahmut Alpayci[1], Emre Şenköy[1], Veysel Delen[1], Volkan Şah[2], Levent Yazmalar[3], Metin Erden[2], Murat Toprak[1], Şeyhmus Kaplan[4]

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Objective: The loss of cervical lordosis is associated with some negative clinical outcomes such as neck, upper thoracic, and shoulder pain, as well as tension and cervicogenic headaches and poorer health-related quality. Although many studies have examined neck strength in both patients with nonspecific neck pain and healthy subjects, there is currently no known study that has examined neck muscle strength in the loss of cervical lordosis. This study aims to investigate whether there is weakness of the cervical muscles or an imbalance between cervical flexor and extensor muscle strength in patients with the loss of cervical lordosis compared with healthy controls matched by age, gender, body mass index (BMI), and employment status.

Materials-Methods: Thirty-two patients with the loss of cervical lordosis (23 F, 9 M; mean age 25.0±5.9 years) and 31 healthy volunteers (23 F, 8 M; mean age 23.87±4.92) were included in the study. Maximal isometric neck extension and flexion strength, and the strength ratio between extension and flexion were used as evaluation parameters. All measurements were conducted by a blinded assessor using a digital force gauge. The participants were positioned on a chair in a neutral cervical position and without the trunk inclined during measurements (Figure 1).

Results: There were no significant differences in the participants' age, gender, BMI or employment status between the two groups (for all comparisons P>0.05). Maximal isometric neck extension and flexion strength values were significantly lower in the patients versus healthy controls (P<0.001 and P=0.040, respectively). The mean values of the extension/flexion ratio were 1.21±0.34 in the patients and 1.46±0.33 in the controls (P=0.004) (Table 1).

Conclusion: Patients with the loss of cervical lordosis have weak neck muscle strength, especially in the extensors. Accordingly, neck extensor strengthening exercises are likely suitable options for patients with the loss of cervical lordosis.

Keywords: Biomechanics, cervical lordosis, cervical muscles

Figure 1



Measurement of isometric neck flexion (a) and extension (b) strength. Arrow shows the placement of the force gauge.

Table 1

	Healthy controls (n=31)	The loss of cervical lordosis (n=32)	P
Extension strength (N)	79.37±30.53	53.01±20.05	<0.001
Flexion strength (N)	55.73±22.09	45.52±16.23	0.040
Extension/flexion	1.46±0.33	1.21±0.34	0.004

Data expressed as mean±standard deviation; N, Newton.